

**TECHNICAL REPORT  
ON THE  
MARSHALL LAKE PROPERTY  
NORTHWESTERN, ONTARIO  
LATITUDE 50° 23' N, LONGITUDE 87° 32' W  
For  
EAST WEST RESOURCE CORPORATION  
AND  
MARSHALL LAKE MINING PLC  
By  
P. NIELSEN, P. Geo,  
R.S. MIDDLETON, P. Eng,  
N.A. BENNETT, H.BSc.**

**NI 43-101 & 43-101F1  
TECHNICAL REPORT**

**Mr. P. Nielsen, P. Geo.  
Mr. R.S. Middleton, P.Eng  
Mr. N.A. Bennett, H.BSc.**

**Signing Date: Jan 27<sup>th</sup>, 2010**

***IMPORTANT NOTICE***

*This report was prepared as a National Instrument 43-101 Technical Report, in accordance with Form 43-101F1, for East West Resources and Marshall Lake Mining PLC. The quality of information, conclusions and estimates contained are based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended to be used by East West Resources and Marshall Lake Mining PLC. This contract permits East West Resources and Marshall Lake Mining PLC to file this report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects. Any other use of this report by any third party is at that party's sole risk.*

## TABLE OF CONTENTS

<b>3. SUMMARY .....</b>	<b>8</b>
Recommendations .....	10
<b>4. INTRODUCTION .....</b>	<b>12</b>
<b>5. RELIANCE ON OTHER EXPERTS .....</b>	<b>12</b>
<b>6. PROPERTY DESCRIPTION AND LOCATION .....</b>	<b>13</b>
<b>7. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY .....</b>	<b>20</b>
<b>8. HISTORY .....</b>	<b>22</b>
<b>9. GEOLOGICAL SETTING .....</b>	<b>25</b>
9.1 Metavolcanics.....	25
9.2 Metasediments .....	25
9.3 Archean intrusive rocks .....	25
9.4 Proterozoic dikes .....	26
9.5 Structure.....	26
9.6 Regional Geology and Tectonic Setting .....	27
9.6.1 The Superior Province.....	27
9.6.2 Superior Province Geology .....	29
9.6.3 Superior Province Tectonic, Structural and Metamorphic History.....	29
9.6.4 VMS deposits of the Superior Province .....	31
9.6.5 The Wabigoon Sub-Province .....	31
9.7 Local geology, structure, metamorphic history and mineral.....	32
9.7.1 Lithostratigraphy.....	32
9.7.2 Metamorphic assemblages .....	35
<b>10. DEPOSIT TYPES .....</b>	<b>38</b>
10.1 Volcanogenic Hosted Massive Sulphide Deposits (VHMS).....	38
<b>11. MINERALIZATION .....</b>	<b>40</b>
<b>12. EXPLORATION .....</b>	<b>42</b>

<b>Trenches: a) Gazooma Grid .....</b>	<b>48</b>
<u>Cherry Hill Trench</u> .....	48
<u>Teck Trench</u> .....	49
<u>Line 2E Trench</u> .....	51
<u>Lease Trench</u> .....	52
<u>Line 4W 4+75N Trench</u> .....	52
<u>Line 3W 5N Trench</u> .....	52
<u>Line 3W 3N Trench</u> .....	53
<u>Tala Trench</u> .....	53
<u>Line 7+50E Trench</u> .....	53
<u>Line 6E Trench</u> .....	54
<u>Line 7E Trench</u> .....	55
<u>Line 5W Trench</u> .....	55
<u>Line 4W 3+75N Trench</u> .....	55
<u>Jewel Box Trench</u> .....	56
<u>Gazooma Trench</u> .....	56
<u>G Zone Trench</u> .....	56
<u>Line 9E or Enzo Trench</u> .....	57
<u>Lin Zn Trench</u> .....	58
<u>Line 13E Baseline Trench</u> .....	58
<u>Line 13E 2S Trench</u> .....	58
<u>Line 13+50E 2+50S Trench</u> .....	58
<u>Line 14E Baseline Trench</u> .....	58
<u>Line 15E Baseline Trench</u> .....	59
<u>Line 26+50E Trench</u> .....	59
 <b>Trenches: b) Main Showing Grid .....</b>	 <b>59</b>
<u>D Zone Trench</u> .....	59
<u>Line 4W Trench</u> .....	59
<u>Line 3W Trench</u> .....	60
<u>North Cu Zone Trench</u> .....	60
<u>Main Zone Trench</u> .....	60
<u>North Diabase Trench</u> .....	61
 <b>13. DRILLING .....</b>	 <b>62</b>
<u>MAR-06-01</u> .....	62
<u>MAR-06-02</u> .....	62
<u>MAR-06-03</u> .....	62
<u>MAR-06-04</u> .....	63
<u>MAR-06-05</u> .....	63
<u>MAR-06-06</u> .....	64
<u>MAR-06-07</u> .....	64
<u>MAR-06-08</u> .....	64
<u>MAR-06-09</u> .....	65
<u>MAR-06-10</u> .....	65
<u>MAR-07-11</u> .....	66
<u>GAZ-06-01</u> .....	66
<u>GAZ-06-02</u> .....	66
<u>GAZ-06-03</u> .....	67
<u>GAZ-07-04</u> .....	67
<u>GAZ-07-05</u> .....	67
<u>GAZ-07-06</u> .....	68
<u>GAZ-07-07</u> .....	68
<u>GAZ-07-08</u> .....	69
<u>GAZ-07-09</u> .....	70



<u>GAZ-07-10</u> .....	70
<u>GAZ-07-11</u> .....	71
<u>GAZ-08-12</u> .....	72
<u>GAZ-08-13</u> .....	72
<u>GAZ-08-14</u> .....	73
<u>TH-07-01</u> .....	73
<u>TH-07-02</u> .....	73
<u>TH-07-03</u> .....	74
<u>NWT-07-01</u> .....	74
<u>GAZN-07-01</u> .....	75
<u>GAZN-07-02</u> .....	75
<u>GAZN-07-03</u> .....	75
<u>GAZN-07-04</u> .....	76
<u>GAZN-07-05</u> .....	76
<u>GAZN-08-06</u> .....	76
<u>GAZN-08-07</u> .....	77
<u>GAZN-08-08</u> .....	77
<u>G-07-01</u> .....	77
<u>DZ-07-01</u> .....	77
<u>TK-07-01</u> .....	77
<u>TK-07-02</u> .....	78
<u>TK-07-03</u> .....	78
<u>TK-07-04</u> .....	79
<u>TK-07-05</u> .....	79
<u>TK-08-06</u> .....	80
<u>TK-08-07</u> .....	80
<u>TK-08-08</u> .....	80
<u>TK-08-09</u> .....	80
<u>SA-08-01</u> .....	81
<u>SA-08-02</u> .....	81
<u>SA-08-03</u> .....	81
<u>SA-08-04</u> .....	81
<u>SA-08-05</u> .....	82
<u>MG-08-01</u> .....	82
<u>MG-08-02</u> .....	82
<u>MG-08-03</u> .....	82
<u>MG-08-04</u> .....	82
<u>SC-08-01</u> .....	83
<b>14. SAMPLING METHOD AND APPROACH .....</b>	<b>86</b>
<b>15. SAMPLE PREPARATION, ANALYSES AND SECURITY .....</b>	<b>86</b>
15.1 ALS Chemex Analytical Protocol.....	87
<b>16. DATA VERIFICATION.....</b>	<b>88</b>
<b>17. ADJACENT PROPERTIES .....</b>	<b>89</b>
17.1 The VW Nickel Deposit.....	89
17.2 B4-7 Nickel-Copper Deposit .....	89

<b>18. MINERAL PROCESSING AND METALLURGICAL TESTING .....</b>	<b>90</b>
<b>19. MINERAL RESOURCE AND MINERAL RESERVE ESTIMATE .....</b>	<b>90</b>
<b>20. OTHER RELEVANT DATA AND INFORMATION .....</b>	<b>91</b>
<b>21. INTERPRETATION AND CONCLUSIONS .....</b>	<b>91</b>
<b>21.1 Volcanogenic-Hosted Massive Sulphide Deposits and their relation to the Marshall Lake Base-Metal Occurrence .....</b>	<b>91</b>
21.1.1 Characteristics of VMS and VHMS genetic and descriptive models .....	91
22.1.2 VHMS Alteration-Stringer Zone Models and the relation to Marshall Lake.....	95
<b>22. RECOMMENDATIONS .....</b>	<b>99</b>
<b>23. REFERENCES .....</b>	<b>101</b>
<b>24. DATE AND SIGNATURE PAGES .....</b>	<b>106</b>
R.S. Middleton, P.Eng .....	106
Neal A. Bennett H.BSc.....	107
Paul E. Nielsen, P.Geo.....	108
<b>25. ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON .....</b>	<b>109</b>

## **LIST OF FIGURES**

<b>Figure 3.1 - Marshall Lake Property Location Map .....</b>	<b>11</b>
<b>Figure 6.1 - A map showing the Marshall Lake property as of December 2010.....</b>	<b>17</b>
<b>Figure 6.2 – Location of Mineralized Zones .....</b>	<b>18</b>
<b>Figure 6.3 – Location of Lease Claims .....</b>	<b>19</b>
<b>Figure 7.1 – Marshall Lake (Dome) Camp .....</b>	<b>21</b>
<b>Figure 7.2 - Regional Location Map of Project Area .....</b>	<b>22</b>
<b>Figure 9.1 - The Superior Province craton .....</b>	<b>27</b>
<b>Figure 9.3 - North-south cross-section of the Superior Province with Wabigoon Sub-province highlighted .....</b>	<b>30</b>
<b>Figure 9.4 - The Marshall Lake property located on the Onaman-Tashota Belt, East Wabigoon .....</b>	<b>33</b>
<b>Figure 9.5 - Tectonostratigraphic cross-section (AB) of the Marshall Lake Felsic volcanic stratigraphy with reference to the copper-rich stringer zone study area...</b>	<b>34</b>
<b>Figure 9.7 – The regional geology of the Superior Province in the vicinity of Marshall Lake. Black lines indicate the edges of the subprovinces .....</b>	<b>37</b>
<b>Figure 10.1 – The genetic model for the formation a VHMS type deposit. The black arrows represent fluid flow and the elements that are affected are in white boxes..</b>	<b>39</b>

<b>Figure 11.1 – Marshall Showings. Leased Claims in yellow and blue outlined and East West Resources Claims outlined in red.....</b>	<b>40</b>
<b>Figure 11.2 - Conceptual Model of the Marshall Lake felsic volcanic stratigraphy showing the stratigraphic position of the mineralized zones including reference to the copper-rich stringer zone study area.....</b>	<b>41</b>
<b>Figure 12.1 – Gazooma Trench. Up to: 4.5% Cu, 0.2% Zn, 79 g/t Ag, and 5.49 g/t Au in Grab samples. ....</b>	<b>43</b>
<b>Figure 12.2 - Airborne MAG survey done for East West Resource Corporation (Geotech Ltd).....</b>	<b>45</b>
<b>Figure 12.3 – Airborne EM survey done for East West Resource Corporation by Geotech Ltd. ....</b>	<b>46</b>
<b>Figure 12.4 – Marshall Lake IP anomaly Compilation Map.....</b>	<b>47</b>
<b>Figure 12.5 – Gazooma and Teck Hill area IP anomalies .....</b>	<b>48</b>
<b>Figure 12.6 - Teck Hill Trench.....</b>	<b>51</b>
<b>Figure 12.7 - Main Billiton Zone Trench.....</b>	<b>61</b>
<b>Figure 13.2 - Up to: 1.25% Cu, 1.1% Zn 56 g/t Ag and 0.16 g/t Au over 10.05m in drilling (MAR-06-03) .....</b>	<b>63</b>
<b>Figure 13.1 - Up to: 4.47% Cu, 0.25 % Zn, 87 g/t Ag, and 0.62 g/t Au over 6.7m (GAZ-07-05).....</b>	<b>68</b>
<b>Figure 13.2 - Gazooma Copper Zone .....</b>	<b>72</b>
<b>Figure 17.1 - Landore VW and B4-7 Deposits – Junior Lake Property NW, Ontario, Canada .....</b>	<b>90</b>
<b>Figure 21.1 - Bimodal Mafic Tectonic Setting.....</b>	<b>93</b>
<b>Figure 21.2 - Cross-section of regional scale Descriptive Model for a bimodal mafic VMS deposit with the perceived copper-rich stringer zone study area at Marshall Lake highlighted .....</b>	<b>94</b>
<b>Figure 21.3 - Typical bimodal mafic alteration-stringer zone and massive sulphide model with reference to the perceived copper-rich stringer zone at Marshall Lake highlighted .....</b>	<b>95</b>
<b>Figure 21.4 – Marshall Lake property claims with mineralized zones shown .....</b>	<b>98</b>
<b>Figure 22.1 – Lead-zinc massive sulphide potential in red parallel lines .....</b>	<b>100</b>

## LIST OF TABLES

<b>Table 6-1 - Marshall Lake Property Claim Information. ....</b>	<b>13</b>
<b>Table 6.2 - Marshall Lake Property, Leased Claim Information.....</b>	<b>15</b>
<b>Table 9.1 - VHMS and equivalent Lower Amphibole mineralogical assemblages..</b>	<b>36</b>
<b>Table 13.1 – Marshall Lake Drill Hole Information for 2006 and 2007 .....</b>	<b>84</b>
<b>Table 13.2 – Marshall Lake Drill Information for 2008.....</b>	<b>85</b>
<b>Table 15.1 – The precision of analyses done for a whole rock analysis (a. and b.), and for a metal analysis (c.) .....</b>	<b>88</b>

### 3. SUMMARY

The following report was prepared to provide an NI 43-101 compliant Technical Report of the Marshall Lake Property. The deposit is located near the northern border of the Wabigoon sub-province, east of Lake Nipigon in northwestern Ontario. Paul Nielsen, Neal Bennett and R.S. Middleton prepared this report. East West Resource Corporation staff supervised all the work completed on the Marshall Lake property, since the acquisition of the property in 2006. The Marshall Lake property is currently in the exploration stage.

The Marshall Lake property consists of 65 unpatented mining claims and 89 leased mining claims, making up a total size of 965 claim units or approximately 60 square miles. The property is located approximately 390 km north-northeast of the City of Thunder Bay, Ontario. The property was acquired in 2006 when the N.W.T and Teck leases were optioned. Further staking then expanded the property up until 2008. The property can be easily accessed by following Highway 11/17 west of the City of Thunder Bay to Highway 11 at Nipigon, Ontario. One then travels north on Highway 11 for approximately 120 km turning north onto the Kinghorn Road, 7km east of Jellicoe. One then travels approximately 125 km north where the Kinghorn Road intersects the southern portion of the Marshall Lake property. Further access from this point is by ATV or on foot. The property is about 45 km from Aroland First Nations Reserve. Access from the reserve is down the Ogoki road about 55km (45km by air) and then by boat on Marshall Lake. The claim group covers the VHMS (volcanogenic hosted massive sulphide) deposit to the southwest of Marshall Lake, which was originally discovered in 1954 by Teck Corporation. The deposit is located near the northern border of the Wabigoon sub-province, north east of Lake Nipigon. Rocks in this area of the Wabigoon sub-province are generally Archean age metasediments and metavolcanics that are associated with orogenic activity that was active around 2.7 Ga (Percival et al., 2004).

The Marshall Lake property is a 50:50 joint venture between East West Resource Corporation “East West” (1158 Russell Street, Thunder Bay, Ontario, P7B 5N2) and Eyeconomy Holdings PLC “Eyeconomy” of the United Kingdom where the claims are 100% held by East West and Eyeconomy is earning a 50% interest by participating 50:50 in exploration expenditures.

Pursuant to an agreement with Carey Lance, the company has been granted an option to acquire a 100% interest in certain surface and mineral rights comprising 421 claim units located in the Sollas Lake and Summit Lake area, Thunder Bay mining division, Ontario. In consideration therefore, the company is required to issue 200,000 common shares in two stages and pay \$150,000 in stages over seven years. A 2% net smelter royalty (NSR) is being retained by the vendor, 1% of which may be purchased for \$1-million and the company has the right of first refusal to purchase the remaining 1%.

A 100% interest can be acquired from NWT Copper Mines Ltd by making three option payments of \$25,000 for a total of \$75,000 and spend \$1-million in exploration over three years. A work commitment of \$55,000 for backhoe trenching of mineral showings will be completed as part of the exploration program. NWT will retain a 2% net smelter return royalty on base metals and a 3% NSR on precious metals where 1% of either royalty may be bought on a first-right-of-refusal basis.

East West will seek to issue to Teck Cominco and Mr. Baker 250,000 units with each unit consisting of one share and one two-year share purchase warrant priced at 13 cents. East West has also committed to spend \$100,000 on the three claims within three years (Dec. 31, 2009). Mr. Baker will receive a 0.1% net smelter return (NSR) royalty and Teck Cominco may exercise the back-in up to five years after East West completes the initial \$100,000 program. The Marshall Lake property is a 50:50 joint venture between East West Resource Corporation "East West" (1158 Russell Street, Thunder Bay, Ontario, P7B 5N2) and Eyeconomy Holdings PLC "Eyeconomy" of the United Kingdom where the claims are 100% held by East West and Eyeconomy is earning a 50% interest by participating 50:50 in exploration expenditures.

East West Resource Corporation has drilled 58 holes on the property, which tested targets outlined by airborne surveys (1486.9 line kilometres of VTEM and magnetic surveys) and induced polarization "IP" ground surveys carried out on the property (144km including 118.8km of IP and 84.4km of total field magnetics survey). The airborne surveys covered 1486.9 line-kilometres and the principle geophysical sensors included a versatile time domain electromagnetic (VTEM) system and a caesium magnetometer. Induced polarization surveys have covered 118.8 line kilometres along portions of the seven grids of line cutting on the property. In addition 31 trenches have been opened up on the property. Extensive prospecting of the property has also been ongoing throughout East West's ownership of the property. Two Misse a la Masse surveys were also conducted in the Gazooma area; one from a surface showing and the other 22 meters down hole in drill hole GAZ-06-02.

The Marshall Lake copper-zinc-silver-gold property is currently East West Resource Corporation's most extensive exploration effort with drill programs (58 holes) conducted in December 2006, May-September 2007 and May-June 2008. These efforts were directed at the Gazooma, North Gazooma, Teck Hill, Cherry Hill areas where extensive copper mineralization exists. Ground IP surveys were carried out in the fall of 2007 and winter of 2008. Subsequent to an initial test of VTEM airborne survey in early 2007, the entire property was flown in September. The surveys produced a large number of quality anomalies, and helped map out the geometry and extent of mineralization. In the eastern portion of the property near surface anomalies were found in 2 distinct geological environments; in a gabbroic intrusion in contact with iron formation with potential Co-Ni-PGE mineralization; and within the volcanic pile in proximity to sulphide facies banded iron formation south of the Main and Billiton occurrences, an area likely to host zinc rich massive sulphide deposits. In addition, deep anomalies were detected beneath the Gazooma and Teck zones. An estimated 3000-4000m-drill program is required on the Gazooma-Teck Hill area to initiate a resource calculation while further exploration is warranted in the upper stratigraphy below the iron formation in order to locate further zinc and massive sulphide mineralization.

No metallurgical or hydrological test work has been completed on the Marshall Lake property.

## **Recommendations**

***Phase 1*** – A total proposed budget of \$1,000,000 is recommended to follow up on the Marshall Lake Property with \$200,000 allocated to drill holes at 25m step outs from GAZN-02-07 and GAZN-06-08 as well as 25m step out holes both east and west from GAZN-07-08 and GAZN-08-08. These holes will test for copper mineralization in order to find a Gazooma type mineralized system within a VHMS setting. The holes are estimated to be about 150 meters in length. Drilling is recommended along the IP trend and existing grid at 50m intervals moving eastward from Gazooma to Teck Hill zones. Further drilling is warranted below the main zone and a hole to the south of the main zone that intersected 30m of copper mineralization.

Extensive mapping should also be conducted in the vicinity of the iron formation in order to discover the potential lead-zinc rich horizon of the deposit.

***Phase 2*** – A total of \$300,000 to follow up on results contingent on phase 1 to further explore areas of interest on the Marshall Lake Property as well definition drilling of the Gazooma and Teck Hill zones.

***Phase 3*** – A total of \$500,000 to follow up on results and definition drilling contingent on previous phases of exploration results.



Figure 3.1. Marshall Lake Property Location Map

#### **4. INTRODUCTION**

This technical report has been prepared for East West Resources and Marshall Lake Mining PLC in order to outline the past work and recommend further exploration programs on the Marshall Lake property. The purpose of this report is to describe and interpret information gathered from the property to date in addition to making sound scientifically based recommendations for future work on the Marshall Lake Property. The sources of data used to write this report include academic papers, government reports as well as company reports listed in the references section of this report (section 23). Regional geological information was gained from earlier reconnaissance geology and geophysics performed by the federal and provincial geological surveys as well as other company reports, combined with knowledge gained during East West Resources geological programs from 2006 to 2009. Detailed geology mapped in the area was completed by S.E. Amukun in 1989 and published in the Ontario Geological Survey report on the Precambrian Geology of the Little Marshall Lake area. Further information was gained through the undergraduate studies of Nathan Forslund and the masters thesis of Peter Nason. The authors and staff of East West Resource Corporation supervised and managed the staking, ground and airborne surveys, as well as the drill programs conducted on the property. The drill programs were based out of the three active bush camps on the claims, known as the Marshall Lake camp, Gripp Lake camp and the Dome camp which is on the main logging roads that access the southern portions of the property. Drill core was logged and inspected by the qualified person R.S. Middleton and East West Resource Corporation project geologists. Mineralized sections were transported to Thunder Bay for splitting and assaying and are stored in secured warehouse facilities in Thunder Bay, Ontario.

#### **5. RELIANCE ON OTHER EXPERTS**

The authors of this report P. Nielsen, R.S. Middleton, and N.A. Bennett are not relying on other opinions of experts concerning legal, environmental, political or any other issues and factors relevant to the technical report. Furthermore, the authors of this report have done the interpretation of the geophysical data, selected the holes that were drilled, then logged and sampled the holes after drilling. The current authors have in writing this report used sources of information as listed in the 'References' section. This report is a compilation of proprietary and publicly available information as well as information obtained by East West Resource Corporation personnel during the 2006 to 2009 exploration programs. The government and other geological reports were prepared by persons holding a post secondary geology or related University level degree(s), prior to the implementation of the standards relating to National Instrument 43-101. The information in these reports is therefore assumed to be accurate. Peoples of various academic backgrounds prepared all assessment reports, however these reports are not considered materially important to the interpretations, conclusions and recommendations outlined within this technical report.



## 6. PROPERTY DESCRIPTION AND LOCATION

The Marshall Lake property consists of 55 claims (836 claim units) with an area of 163.50km<sup>2</sup> and is located in Northwestern Ontario. The approximate centre of the property is located in Zone 16 at 457,500E and 5,584,500N in the UTM NAD83 coordinate system. The property is located approximately 390 km north-northeast of the City of Thunder Bay, Ontario and can be easily accessed by following Highway 11/17 west of the City of Thunder Bay to Highway 11 at Nipigon, Ontario. One then travels north on Highway 11 for approximately 120 km turning north onto the Kinghorn Road, 7km east of Jellico. One then travels approximately 125 km north where the Kinghorn Road intersects the southern portion of the Marshall Lake property. Further access from this point is by ATV or on foot. Claims 1234636 and 3014193 are where drill holes MG-08-01 to MG-08-04 are located; these claims can be accessed off the Ogoki road which begins north of Geraldton (and before Nakina). The claims are about 55km up the Ogoki road and then one must make a left (south) down an ATV trail towards the north side of Marshall Lake to access the 4 drill sites on the north side of Marshall Lake. The Marshall Lake Property claim group covers the VHMS (volcanogenic hosted massive sulphide) deposit to the southwest of Marshall Lake, which was originally discovered in 1954 by the Teck Corporation. The deposit is located near the northern border of the Wabigoon sub-province, east of Lake Nipigon. Rocks in this area of the Wabigoon sub-province are generally Archean age metasediments and metavolcanics that are associated with orogenic activity that was active around 2.7 Ga (Percival et al., 2004). The Marshall Lake property is a copper-zinc-rich volcanic-hosted massive sulphide (VHMS) deposit. The property geology consists of a series of Archean rocks such as volcanics that range in composition from mafic to felsic, and sedimentary units, both clastic and chemical. They are intruded by Archean intrusions like the Marshall Gabbro and the Summit Lake Pluton, and Proterozoic mafic dikes. Claim posts and corners of the property are generally established with the aid of handheld GPS receivers, whose accuracies are in the order of +/- 10 metres. The claims can be brought to lease when they qualify under regulations set out by the Ministry of Northern Development Mines and Forestry of the Province of Ontario. A map showing the claims is presented in Figure 6.1 and a list of the claims is presented in Tables 6-1 and 6-2. Currently exploration is supported from Thunder Bay, Beardmore, Aroland and Geraldton, Ontario.

**Table 6-1. Marshall Lake Property Claim Information.**

<b>MARSHALL LAKE PROPERTY CLAIMS</b>				
<b>Township/Area</b>	<b>Claim Number</b>	<b>Recording Date</b>	<b>Claim Due Date</b>	<b>Percent Option</b>
SOLLAS LAKE	1234638	2008-Mar-28	2010-Mar-28	100%
SOLLAS LAKE	3014194	2006-Jul-31	2010-Jul-31	100%
SOLLAS LAKE	4207314	2005-Aug-18	2010-Aug-18	100%
SOLLAS LAKE	4207315	2005-Aug-18	2010-Aug-18	100%
SOLLAS LAKE	4207316	2005-Aug-18	2010-Aug-18	100%
SOLLAS LAKE	4207317	2005-Aug-18	2010-Aug-18	100%
SOLLAS LAKE	4207411	2005-Aug-18	2010-Aug-18	100%
SOLLAS LAKE	4207412	2005-Aug-18	2010-Aug-18	100%

SOLLAS LAKE	4215365	2007-Sep-24	2010-Sep-24	100%
SUMMIT LAKE	1234628	2007-Aug-08	2010-Aug-08	100%
SUMMIT LAKE	1234629	2007-Aug-08	2010-Aug-08	100%
SUMMIT LAKE	1234630	2007-Aug-08	2010-Aug-08	100%
SUMMIT LAKE	1234631	2007-Aug-08	2010-Aug-08	100%
SUMMIT LAKE	1234635	2008-Mar-28	2010-Mar-28	100%
SUMMIT LAKE	1234636	2008-Mar-28	2010-Mar-28	100%
SUMMIT LAKE	1234637	2008-Mar-28	2010-Mar-28	100%
SUMMIT LAKE	3011538	2006-Aug-28	2010-Aug-28	100%
SUMMIT LAKE	3014193	2006-Jun-20	2010-Jun-20	100%
SUMMIT LAKE	3014196	2006-Aug-28	2010-Aug-28	100%
SUMMIT LAKE	3014197	2006-Aug-28	2010-Aug-28	100%
SUMMIT LAKE	3014198	2006-Aug-28	2010-Aug-28	100%
SUMMIT LAKE	3014199	2006-Aug-28	2010-Aug-28	100%
SUMMIT LAKE	3014200	2006-Sep-11	2010-Sep-11	100%
SUMMIT LAKE	3014201	2006-Sep-11	2010-Sep-11	100%
SUMMIT LAKE	4204000	2005-Jun-03	2012-Jun-03	100%
SUMMIT LAKE	4204001	2005-Jun-03	2012-Jun-03	100%
SUMMIT LAKE	4204004	2005-Oct-19	2010-Oct-19	100%
SUMMIT LAKE	4204433	2005-Oct-20	2010-Oct-20	100%
SUMMIT LAKE	4204434	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204435	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204436	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204437	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204438	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204439	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204440	2005-Sep-19	2010-Sep-19	100%
SUMMIT LAKE	4204441	2005-Jul-22	2010-Jul-22	100%
SUMMIT LAKE	4204442	2005-Oct-20	2010-Oct-20	100%
SUMMIT LAKE	4207318	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207319	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207320	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207321	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207322	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207323	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207355	2005-Sep-23	2010-Sep-23	100%
SUMMIT LAKE	4207356	2005-Sep-23	2010-Sep-23	100%
SUMMIT LAKE	4207357	2005-Oct-20	2010-Oct-20	100%
SUMMIT LAKE	4207410	2005-Aug-18	2010-Aug-18	100%
SUMMIT LAKE	4207413	2005-Sep-19	2010-Sep-19	100%
SUMMIT LAKE	4207414	2005-Sep-19	2010-Sep-19	100%
SUMMIT LAKE	4211246	2006-Sep-11	2010-Sep-11	100%
SUMMIT LAKE	4213141	2007-Feb-23	2010-Feb-23	100%
SUMMIT LAKE	4213142	2007-Feb-23	2010-Feb-23	100%
SUMMIT LAKE	4215366	2007-Sep-24	2010-Sep-24	100%
SUMMIT LAKE	4221033	2007-Oct-02	2010-Oct-02	100%
SUMMIT LAKE	4221034	2007-Oct-02	2010-Oct-02	100%
SUMMIT LAKE	4221086	2007-Aug-27	2010-Aug-27	100%

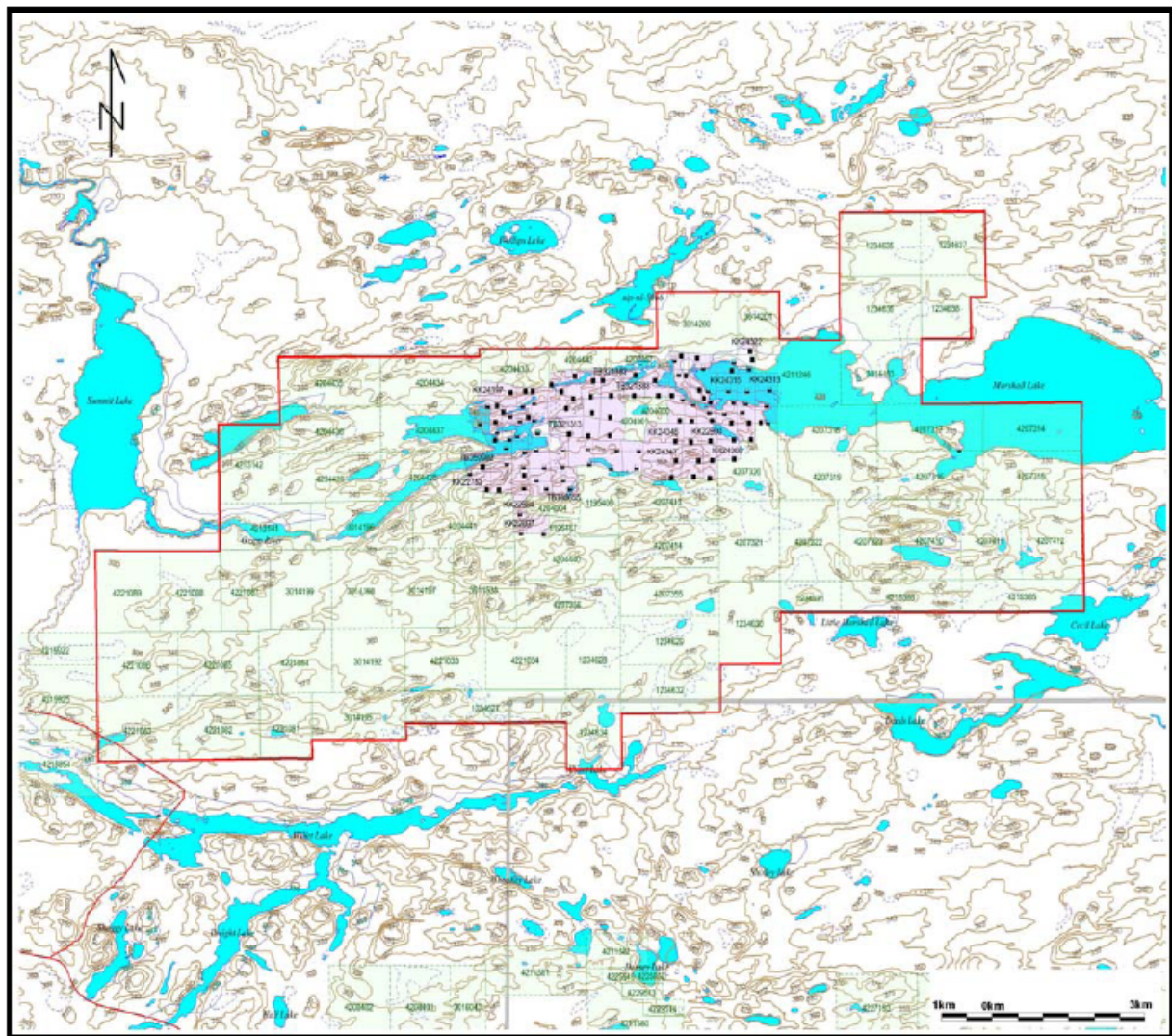
SUMMIT LAKE	4221087	2007-Sep-24	2010-Sep-24	100%
SUMMIT LAKE	4221088	2007-Sep-24	2010-Sep-24	100%
SUMMIT LAKE	4221089	2007-Sep-24	2010-Sep-24	100%
WILLET LAKE	1234627	2007-Aug-08	2010-Aug-08	100%
WILLET LAKE	1234632	2007-Aug-08	2010-Aug-08	100%
WILLET LAKE	1234634	2007-Aug-08	2010-Aug-08	100%
WILLET LAKE	3014192	2006-Aug-28	2010-Aug-28	100%
WILLET LAKE	3014195	2006-Aug-28	2010-Aug-28	100%
WILLET LAKE	4221081	2007-Aug-27	2010-Aug-27	100%
WILLET LAKE	4221082	2007-Aug-27	2010-Aug-27	100%
WILLET LAKE	4221083	2007-Aug-27	2010-Aug-27	100%
WILLET LAKE	4221084	2007-Aug-27	2010-Aug-27	100%
WILLET LAKE	4221085	2007-Aug-27	2010-Aug-27	100%

**Table 6.2. Marshall Lake Property, Leased Claim Information**

<b>Marshall Lake Property, Leased Claims</b>					
<b>Township</b>	<b>Claim #</b>	<b>Lease/License</b>	<b>Area (ha)</b>	<b>Expiry Date</b>	<b>Short Description</b>
Summit Lake	KK22684	105011	1.32	2029-Nov-30	KK22684 ETAL
Summit Lake	KK22696	105012	21.01	2029-Nov-30	KK22696
Summit Lake	KK22697	105013	10.72	2029-Nov-30	KK22697
Summit Lake	KK22753	105395	25.31	2010-Aug-31	KK22753
Summit Lake	KK22798	105335	14.95	2010-Jun-30	KK22798
Summit Lake	KK22799	105334	16.65	2010-Jun-30	KK22799
Summit Lake	KK22800	105331	18.36	2010-Jun-30	KK22800
Summit Lake	KK22801	105330	13.30	2010-Jun-30	KK22801
Summit Lake	KK22802	105329	12.34	2010-Jun-30	KK22802
Summit Lake	KK22808	105355	22.46	2010-Jun-30	KK22808
Summit Lake	KK23034	105328	16.24	2010-Jun-30	KK23034
Summit Lake	KK23035	105327	20.24	2010-Jun-30	KK23035
Summit Lake	KK23036	105326	20.21	2010-Jun-30	KK23036
Summit Lake	KK24194	105161-1	12.79	2030-Nov-30	KK24194
Summit Lake	KK24195	105161-2	13.23	2030-Nov-30	KK24195
Summit Lake	KK24196	105161-3	18.84	2030-Nov-30	KK24196
Summit Lake	KK24197	105161-4	23.52	2030-Nov-30	KK24197
Summit Lake	KK24198	105161-5	22.89	2030-Nov-30	KK24198
Summit Lake	KK24199	105161-6	12.90	2030-Nov-30	KK24199
Summit Lake	KK24200	105161-7	11.03	2030-Nov-30	KK24200
Summit Lake	KK24201	105161-8	12.59	2030-Nov-30	KK24201
Summit Lake	KK24202	105161-9	14.88	2030-Nov-30	KK24202
Summit Lake	KK24203	105161-10	12.88	2030-Nov-30	KK24203
Summit Lake	KK24204	105161-11	10.32	2030-Nov-30	KK24204
Summit Lake	KK24205	105161-12	14.32	2030-Nov-30	KK24205
Summit Lake	KK24301	105344	18.26	2010-Jun-30	KK24301
Summit Lake	KK24302	105343	15.70	2010-Jun-30	KK24302
Summit Lake	KK24303	105342	17.75	2010-Jun-30	KK24303

Summit Lake	KK24304	105325	14.73	2010-Jun-30	KK24304
Summit Lake	KK24305	105324	15.49	2010-Jun-30	KK24305
Summit Lake	KK24306	105323	23.06	2010-Jun-30	KK24306
Summit Lake	KK24310	105341	14.97	2010-Jun-30	KK24310
Summit Lake	KK24311	105340	13.92	2010-Jun-30	KK24311
Summit Lake	KK24312	105339	18.17	2010-Jun-30	KK24312
Summit Lake	KK24313	105338	19.30	2010-Jun-30	KK24313
Summit Lake	KK24314	105337	15.79	2010-Jun-30	KK24314
Summit Lake	KK24315	105336	17.90	2010-Jun-30	KK24315
Summit Lake	KK24316	105348	24.45	2010-Jun-30	KK24316
Summit Lake	KK24317	105350	14.99	2010-Jun-30	KK24317
Summit Lake	KK24319	105333	14.97	2010-Jun-30	KK24319
Summit Lake	KK24320	105332	25.84	2010-Jun-30	KK24320
Summit Lake	KK24321	105347	17.90	2010-Jun-30	KK24321
Summit Lake	KK24322	105349	14.42	2010-Jun-30	KK24322
Summit Lake	KK24328	105351	16.10	2010-Jun-30	KK24328
Summit Lake	KK24329	105346	17.30	2010-Jun-30	KK24329
Summit Lake	KK24330	105345	8.01	2010-Jun-30	KK24330
Summit Lake	KK24346	105354	37.66	2010-Jun-30	KK24346
Summit Lake	KK24347	105353	38.92	2010-Jun-30	KK24347
Summit Lake	KK24348	105352	34.79	2010-Jun-30	KK24348
Summit Lake	TB321308	107795	26.62	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321309	107795	24.37	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321310	107795	18.04	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321311	107795	15.93	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321312	107795	27.99	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321313	107795	31.07	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321314	107795	13.56	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321315	107795	10.95	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321380	107795	21.66	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321381	107795	12.27	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321382	107795	10.74	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321383	107795	13.34	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321384	107795	9.96	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321385	107795	12.07	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321386	107795	15.18	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321387	107795	19.99	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321388	107795	17.81	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321389	107795	17.29	2026-Nov-30	TB321308 ETAL
Summit Lake	TB321713	108233	15.60	2029-Mar-31	TB321713-26
Summit Lake	TB321714	108233	10.86	2029-Mar-31	TB321713-26
Summit Lake	TB321715	108233	17.42	2029-Mar-31	TB321713-26
Summit Lake	TB321716	108233	14.24	2029-Mar-31	TB321713-26
Summit Lake	TB321717	108233	15.08	2029-Mar-31	TB321713-26
Summit Lake	TB321718	108233	15.14	2029-Mar-31	TB321713-26
Summit Lake	TB321719	108233	13.06	2029-Mar-31	TB321713-26
Summit Lake	TB321720	108233	13.69	2029-Mar-31	TB321713-26
Summit Lake	TB321721	108233	12.92	2029-Mar-31	TB321713-26

Summit Lake	TB321722	108233	17.25	2029-Mar-31	TB321713-26
Summit Lake	TB321723	108233	15.47	2029-Mar-31	TB321713-26
Summit Lake	TB321724	108233	20.91	2029-Mar-31	TB321713-26
Summit Lake	TB321725	108233	26.03	2029-Mar-31	TB321713-26
Summit Lake	TB321726	108233	20.05	2029-Mar-31	TB321713-26
Summit Lake	TB359982	107795	23.15	2026-Nov-30	TB321308 ETAL
Summit Lake	TB359983	107795	24.54	2026-Nov-30	TB321308 ETAL
Summit Lake	TB395050	107871	12.23	2027-Jun-30	TB395050-55
Summit Lake	TB395051	107871	15.55	2027-Jun-30	TB395050-55
Summit Lake	TB395052	107871	18.79	2027-Jun-30	TB395050-55
Summit Lake	TB395053	107871	9.11	2027-Jun-30	TB395050-55
Summit Lake	TB395054	107871	15.60	2027-Jun-30	TB395050-55
Summit Lake	TB395055	107871	19.52	2027-Jun-30	TB395050-55



**Figure 6.1 - A map showing the Marshall Lake property as of December 2010 (Modified from the ministry of Northern Development and Mines website <http://www.claimaps.mndm.gov.on.ca/>)**



East West Resource Corporation has explored the Marshall Lake copper-zinc-silver-gold property since December 2006. The exploration efforts have discovered mineralization at the Gazooma, North Gazooma, Teck Hill, Cherry Hill, Main zone, Lease, Jewel Box, G-Zone, D-Zone, Open Pit, Anarod, North Zone, West Zone, Swamp Zone, South Zone as well as unnamed showings on the west and south sides of Gripp Lake (Figure 6.2). These areas consist primarily of copper mineralization and primary zinc discoveries located in the Main zone south of Marshall Lake.

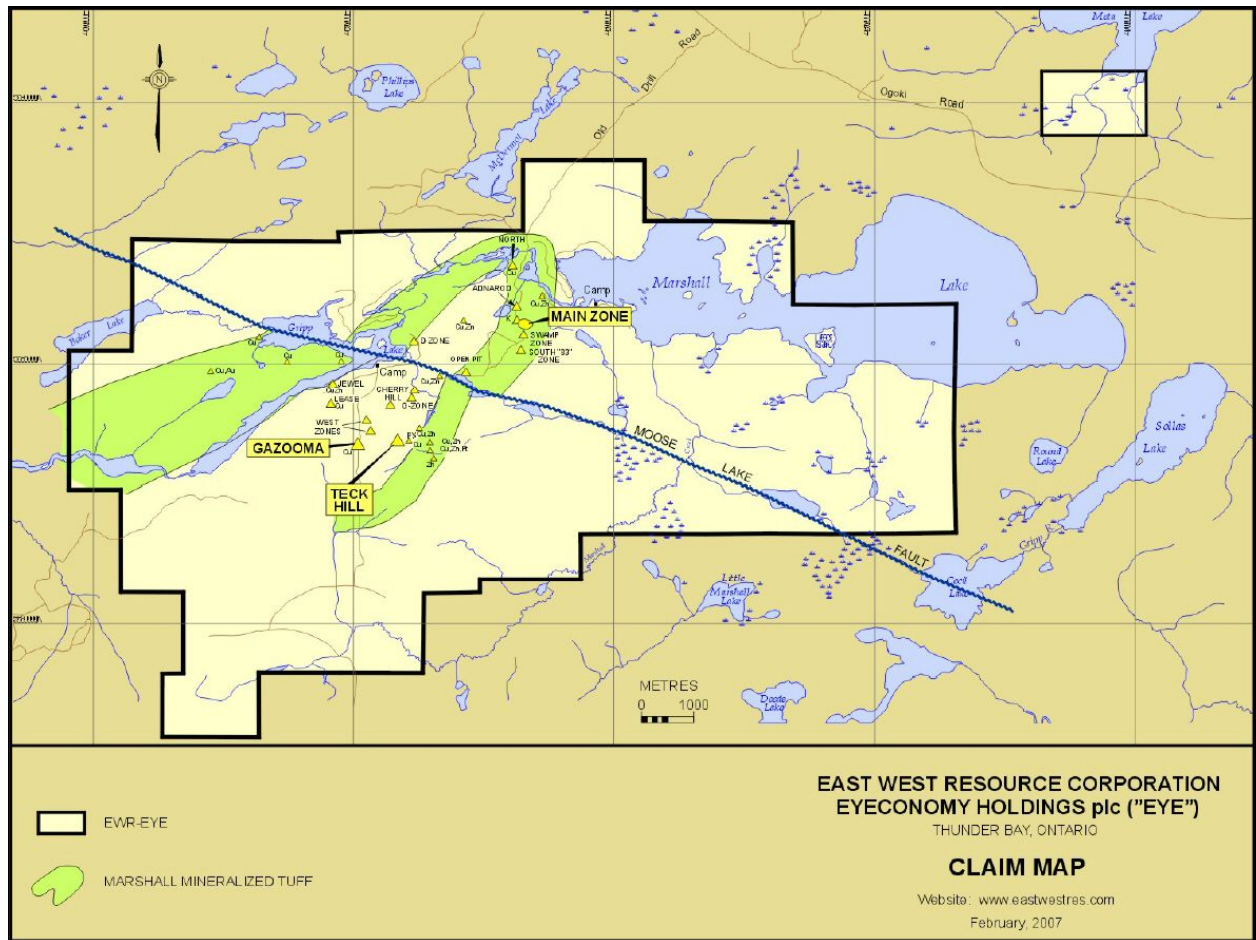
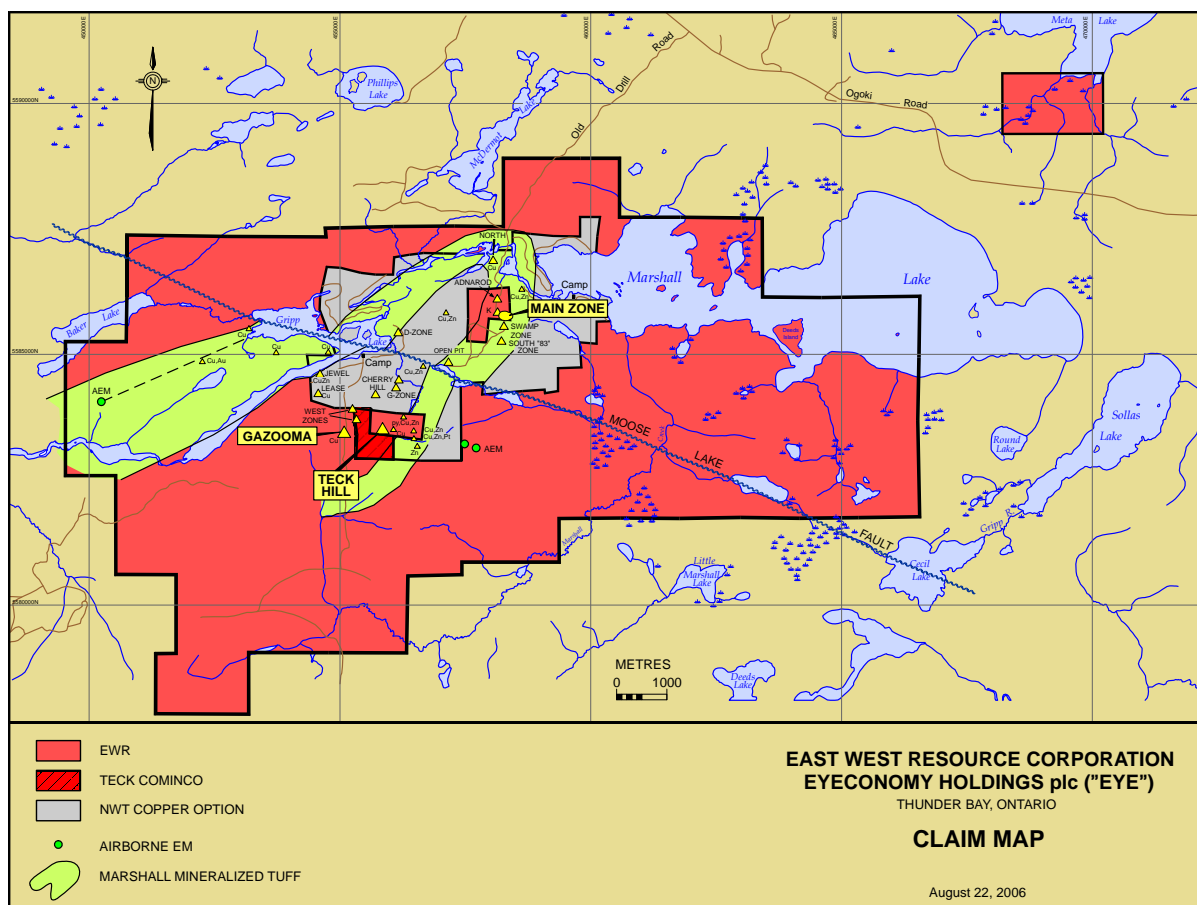


Figure 6.2 – Location of Mineralized Zones.



**Figure 6.3 – Location of Lease Claims.**

The Marshall Lake property is a 50:50 joint venture between East West Resource Corporation “East West” (1158 Russell Street, Thunder Bay, Ontario, P7B 5N2) and Eyeconomy Holdings PLC “Eyeconomy” of the United Kingdom where the claims are 100% held by East West and Eyeconomy is earning a 50% interest by participating 50:50 in exploration expenditures.

Pursuant to an agreement with Carey Lance, the company has been granted an option to acquire a 100% interest in mineral rights comprising 421 claim units located in the Sollas Lake and Summit Lake area, Thunder Bay mining division, Ontario. In consideration therefore, the company is required to issue 200,000 common shares in two stages and pay \$150,000 in stages over seven years. A 2% net smelter royalty (NSR) is being retained by the vendor, 1% of which may be purchased for \$1-million and the company has the right of first refusal to purchase the remaining 1%.

A 100% interest can be acquired from NWT Copper Mines Ltd by making three option payments of \$25,000 for a total of \$75,000 and \$1-million in exploration expenses over three years. A work commitment of \$55,000 for backhoe trenching of mineral showings will be completed as part of the exploration program. NWT will retain a 2% net smelter return royalty (NSR) on base metals and a 3% NSR on precious metals where 1% of either royalty may be bought on a first-right-of-refusal basis.

East West will seek to issue to Teck Cominco and Mr. Baker 250,000 units with each unit consisting of one share and one two-year share purchase warrant priced at 13 cents. East West has also committed to spend \$100,000 on the three claims within three years (Dec. 31, 2009). Mr. Baker will receive a 0.1% net smelter return (NSR) royalty and Teck Cominco may exercise the back-in up to five years after East West completes the initial \$100,000 program. The Marshall Lake property is a 50:50 joint venture between East West Resource Corporation "East West" (1158 Russell Street, Thunder Bay, Ontario, P7B 5N2) and Eyeconomy Holdings PLC "Eyeconomy" of the United Kingdom where the claims are 100% held by East West and Eyeconomy is earning a 50% interest by participating 50:50 in exploration expenditures.

Historically the work by A. S. Bayne (1970) resulted in a calculation of a 1,174,810 ton resource on the Main Billiton zone grading 0.82% copper, 2.71 % zinc, 1.77 ounces silver and 0.006 oz. gold based on 58 holes which was completed prior to NI43-101 guidelines. All of the exploration results disclosed herein are historic in nature and do not presently conform to National Instrument 43-101 Standards of Disclosure for Mineral Projects. They have been reviewed, but not verified, by Robert S. Middleton, PEng, who is the company's designated qualified person and responsible for the verification and quality assurance of its exploration data and analytical results. In the opinion of the qualified person, based on the information available, the mineralization on the Main Billiton or "K" Zone would be classified as an Inferred Mineral Resource based on the definition by the CIMM, since further infill drilling will be required to establish grades. Therefore, the historic figures should not be relied on. The Teck Hill showing was previously known as the north and south showings. The North resource calculation (non 43-101 compliant) is 132,342 tons of 1.10% Cu. The South resource calculation (non 43-101 compliant) 346,921 tons of 1.01% Cu (From historical records of Teck-Cominco that cannot be verified by the authors and therefore cannot be relied upon)

To the extent known there are no environmental liabilities outside of the responsible code of conduct and current environmental guidelines and policies. The Mining Act of Ontario covers the permits required for exploration and no further permits for exploration are required at this time.

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

The property lies within the central plateau section of the Boreal Forest Region. Topography in the area has moderate relief, with elevations ranging from 320 meters above sea level at the lakes, to 380 meters above sea level on some of the cliffs in the area. There are a few high hills with excellent exposure and vegetation consisting of poplar, birch, black spruce and jack pine. Low valleys dominated by cedar swamp, tamarack and black spruce typify other areas. The snow free season occurs from approximately April to October with temperatures as high as 35 degrees Celsius; while the winter season occurs from November to March with temperatures as low as -50 degrees Celsius.

Beardmore (92km), Jellicoe (80km) and Geraldton (88km) are the most proximal population centres to the property and are of sufficient size to provide most exploration



needs on the property. Samples for geochemical analysis were sent to laboratories in Thunder Bay.

The approximate centre of the property is located in Zone 16 at 457,500E and 5,584,500N in the UTM NAD83 coordinate system. The property is located approximately 390 km north-northeast of the City of Thunder Bay, Ontario and can be easily accessed by following Highway 11/17 west of the City of Thunder Bay to Highway 11 at Nipigon, Ontario. One then travels north on Highway 11 for approximately 120 km turning north onto the Kinghorn Road, 7km east of Jellicoe. One then travels approximately 125 km north where the Kinghorn Road intersects the southern portion of the Marshall Lake property. Further access from this point is by ATV or on foot. Claims 1234636 and 3014193 are where drill holes MG-08-01 to MG-08-04 are located; these claims can be accessed off the Ogoki road, which begins north of Geraldton (and before Nakina). The claims are about 55km up the Ogoki road and then one must make a left (south) down an ATV trail towards the north side of Marshall Lake to access the 4 drill sites on the north side of Marshall Lake.

The Marshall Lake property is connected by road to the main CN rail line, which lies 22km south of the property. Aroland First Nation is the closest source of power; the community lies 55km from the property following the Ogoki road to the north eastern edge of the property. Water is available from many nearby lakes and rivers and personnel available from the nearby communities of Aroland, Geraldton, Beardmore and Thunder Bay.

**Figure 7.1 – Marshall Lake (Dome) Camp**

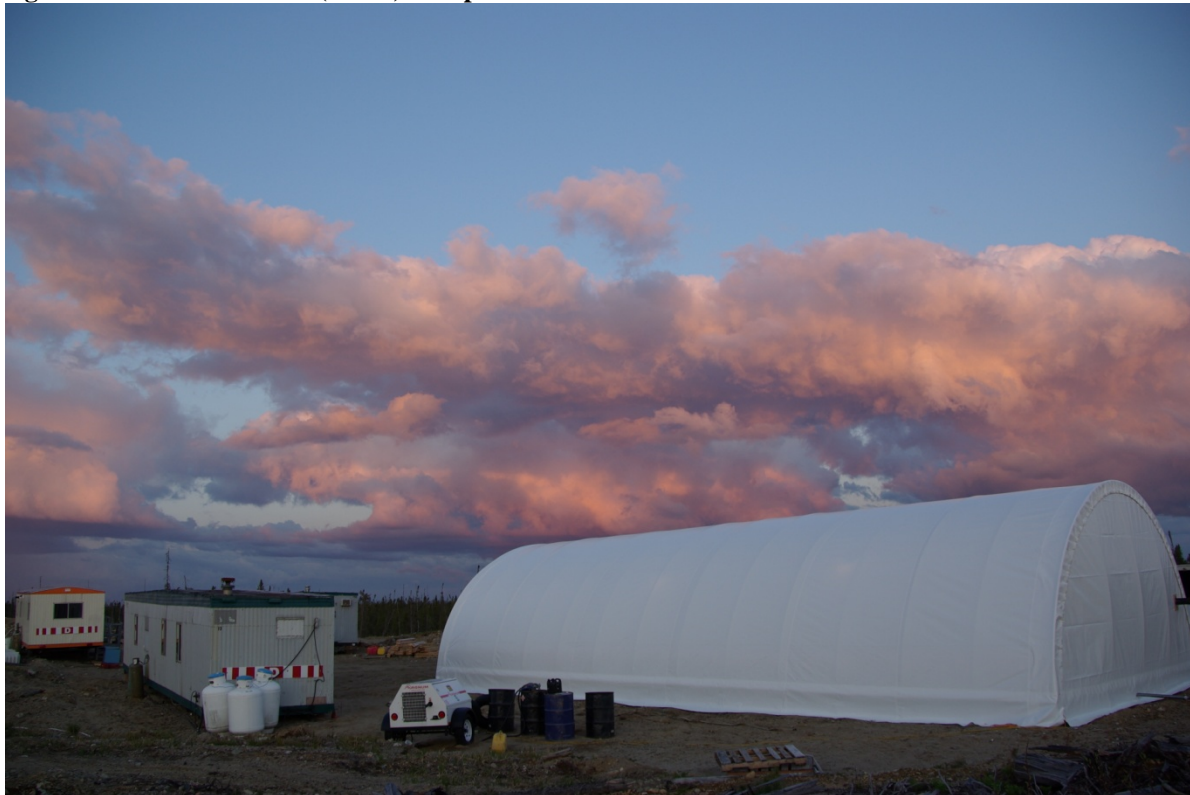
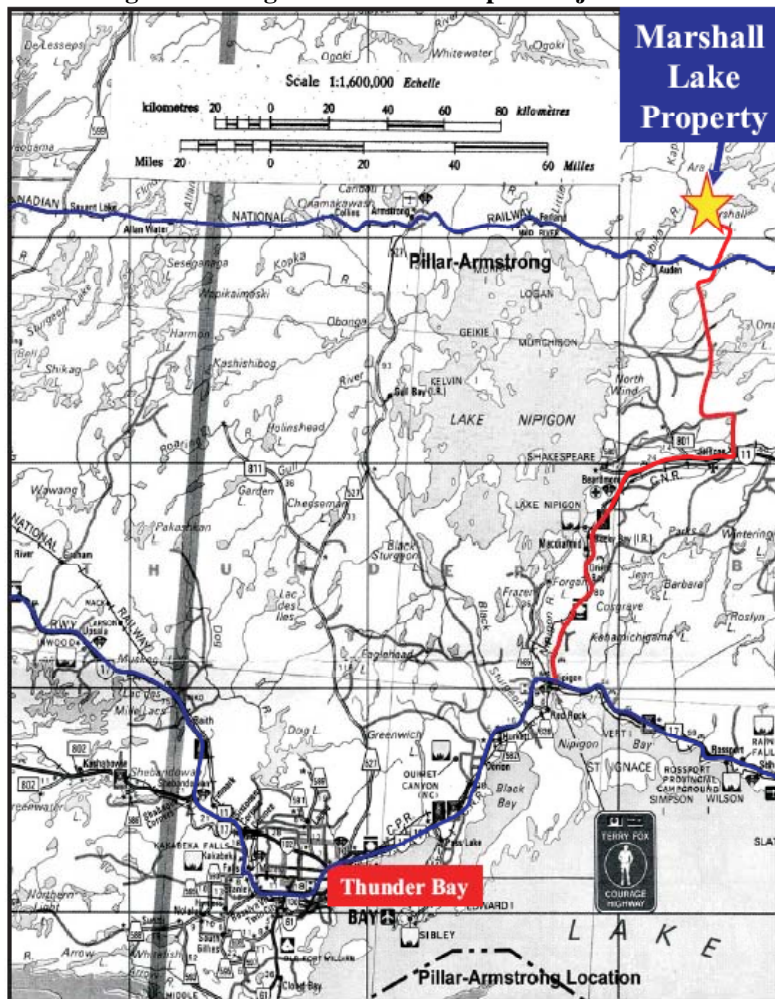


Figure 7.2: Regional Location Map of Project Area



## 8. HISTORY

The following is a list of all the previous exploration work that has been conducted on the property prior to 2006 when East West Resources Corporation together with Eyeconomy Holdings formed an equal 50% joint venture, acquiring a 100% stake in the property for the first time since its discovery in 1954. This allowed complete coverage of the Main Billiton Zone, peripheral satellite deposits, the Teck Hill showing and the interpreted stringer deposits. Geophysical methods were conducted on the property, such as previous unused Induced Polarisation (IP) surveys over the majority of the property. Airborne Electro-magnetic surveys (AEM) and MAG surveys complemented the IP survey and a majority of previously unexplored and un-highlighted anomalies were identified and subsequent diamond drilling programs ensued to delineate and identify the targets up until July 2008. Specific attention towards establishing an inferred resource of portions of the stringer zone (Gazooma, Gazooma North and Teck Hill) were selected, along with identifying a possible extension to mineralization to the

southern region of the property at the felsic conformity with the regional banded iron formation proposed by Forslund (2008). Previous work conducted on the property prior to East West Corporation includes:

- 1954 Teck Corporation discovered a high grade Cu/Zn showing to the South of Gripp Lake.
- 1955 Teck Corporation carried out magnetic surveys, EM surveys followed by a 20 hole diamond drilling program.
- 1958 George Langford carried out geological mapping for the Ontario Ministry of Northern Development and Mines, Ontario Geological Survey.
- 1961 Teck Corporation carried out a 12-hole diamond drilling program.
- 1962 Min-Ore Mines Ltd. carried out a six-hole diamond drilling program.
- 1962 Sheridan Geophysics Ltd. carried out an EM survey, a magnetic survey and a four-hole diamond drilling program.
- 1965 Vincent Feely carried out a diamond-drilling program.
- 1965 Marshall Lake Mines Ltd. carried out a five hole diamond drilling program.
- 1968 Kendon Copper Mines Ltd. carried out a diamond drilling program.
- 1969 NWT Copper Mines Ltd. carried out a 13-hole diamond drilling program, as well as a property report.
- 1970 A.S. Bayne carried out a feasibility study resulting in the calculation of a 1,174,810 ton resource on the Main Billiton zone grading 0.82% copper, 2.71% zinc, 1.77 ounces silver and 0.006 oz. gold based on 58 holes which was completed prior to NI43-101.
- 1971 Teck Corporation carried out an EM survey, a magnetic survey and self potential.
- 1974 Giant Gripp Mines Inc. carried out an EM survey.
- 1976 St. Josephs Exploration completed a mapping program as well as a magnetic survey and soil sampling.
- 1978 Imperial Oil carried out a diamond drilling program.
- 1981 Corporation Falconbridge Copper carried out a ground magnetic survey, VLF-EM and soil geochemistry, followed by a geological report and plans.

- 1983 Corporation Falconbridge Copper carried out a three hole diamond drilling program with assays and a report by G. Wells.
- 1989 S.E. Amukun carried out a geological program, Precambrian Geology: Little Marshall Lake Area.
- 1990 T. Keast carried out the writing of a report of work by Granges Inc. for NWT Copper Mines Ltd.
- 1992 Giant Gripp Mines Inc. carried out a diamond drilling program.
- 1993 H. Hugon wrote a report on the structure of the Marshall Lake for Challenger Minerals Ltd.
- 1994 Challenger Minerals Ltd. carried out an EM survey as well as diamond drilling with assays.
- 1995 Ian Campbell wrote the report for the airborne EM survey, airborne magnetic survey, and a five-hole diamond-drilling project for Consolidated Abitibi Resources.
- 1996 NWT Copper Mines Ltd. carried out a diamond drilling program.
- 2000 G. Stott carried out geological mapping for the Ontario Ministry of Northern Development and Mines, Ontario Geological Survey.
- 2006 East West and Eyeconomy acquire the entire Marshall Lake property and begin the current phase of exploration including mapping and prospecting, trenching, drilling (58 holes), Induced Polarization, Magnetics, and VTEM surveys.

## **9. GEOLOGICAL SETTING**

The Marshall Lake property is classified as a bimodal mafic volcanic hosted massive sulphide (VHMS) deposit according to Franklin's classification of VHMS deposits (1981). The deposit is located near the northern border of the Wabigoon sub-province, east of Lake Nipigon. Rocks in this area of the Wabigoon sub-province are generally Archean age metasediments and metavolcanics that are associated with orogenic activity that was active around 2.7 Ga (Percival et al., 2004). These rocks were then penetrated by felsic to mafic composition intrusions such as the Summit Lake Stock (quartz monzonite) or the Marshall Gabbro (originally gabbro, now amphibolite). During the Proterozoic, the region was further penetrated by dikes of mafic composition (Amukun, 1989).

### **9.1 Metavolcanics**

The metavolcanics in the region make up a large portion of the geology (over 80 percent). These range from felsic to mafic in composition, but most have been significantly deformed, metamorphosed or altered to conceal any primary textures (Stott and Straub, 1999). Most of the mafic to intermediate flows are pillowed, but have been intensely deformed, thus obliterating most of the useful structural data (such as top determination). The other mafic to intermediate rocks are tuffs, lapilli tuffs, tuff breccias or pyroclastic breccias. These are usually identified in the field by a greyish-green mafic matrix surrounding white felsic to intermediate fragments. Intermediate to felsic metavolcanics are much more common to the region than the more mafic units, but no less deformed. These rocks make up more than 90 percent of the metavolcanics in the area. Compositionally, they range from andesitic to rhyolitic and are typically of a calc-alkalic affinity.

### **9.2 Metasediments**

The metasediments in the region are represented by both clastic and chemical varieties (Amukun, 1989). The clastic units are derived from weathering and deposition of the nearby volcanic material, although metamorphism makes clasts difficult to use in a grain size analysis. Chemical metasediments in the area are represented by iron formation and iron rich (ferruginous) chert. Banded iron formations composed of interbedded magnetite and graphitic chert have been well defined as a continuous unit by AEM geophysical surveys. These have been intensely folded and have been used to trace folding in other regional units.

### **9.3 Archean intrusive rocks**

Several intrusive units of varying composition postdate the deposition of the volcanic and sedimentary units (Amukun, 1989). These include the Marshall and Little Marshall Gabbros (mafic), and the Summit Pluton (felsic). Intense metamorphism of all of these intrusive bodies makes their differentiation from extrusive equivalents difficult, especially when volcanic textures are absent. In the case of the Summit Pluton, zones

near the boundaries of the intrusion have been noted to be intensely strained (Stott and Straub, 1999).

#### **9.4 Proterozoic dikes**

Many mafic dikes that are Middle to Late Proterozoic in age (Amukun, 1989) postdate all other bedrock geology in the area. These dikes typically range from 10m to 40m in width and grain sizes depend on this thickness. Many of these dikes display an ophitic texture suggesting that they are diabase rather than gabbro.

#### **9.5 Structure**

This area has been intensely deformed as a result of a complicated structural history. Original bedding is very difficult to find, let alone follow. Many structural measurements taken in the past as bedding have been reinterpreted as an S1 foliation regionally striking  $140^\circ$  on average, the dip is difficult to tell, although seems close to vertical. A second fabric (S2) can be seen regionally striking  $118^\circ$  and dipping sub-vertically. Several large, regional scale features that have been mapped in previous studies as faults show up on airborne magnetic surveys as distinctive linear magnetic lows. These features follow the regional  $140^\circ$  fabric. The Proterozoic mafic dikes are cut by these features, suggesting that they are Proterozoic or younger. The folding in the area can be traced out by following folds seen in the banded iron formation. This behaviour can be extrapolated to produce a similar pattern in the surrounding volcanics, but physical evidence of this is scarce due to the lack of traceable bedding. Stott and Straub (1999) show several bands of more intermediate composition within the surrounding dacite. They have traced these units geochemically and have shown that they are folded in a similar manner to the iron formation. The few top direction indicators that have been analyzed vary locally due to the folding but seem to suggest a regional topping direction towards the northeast (Amukun, 1989). These indicators include very thin graded bedding within the pyroclastic units and pillow lavas in the southwest.

This succession has been structurally deformed (and metamorphically modified) since deposition by polyphase deformation events to create, in the majority of field observations, the obliteration of primary depositional textures, synvolcanic alteration assemblages and stratigraphic top directions. Many contrasting interpretational attempts at understanding the stratigraphy have been made, yet the majority agree to the following assignment of stratigraphic characteristics; a lithological strike of north-south exists in the felsic pile and a stratigraphic top direction towards the east, capped by a regional banded iron formation (Morton, 1983). This indicates a massive fold axis eastwards within a broadly easterly facing antiformal structure (Campbell, 1994) that trends around the Summit Lake trondhjemitic quartz-monzonite pluton located to the west of the Marshall Lake assemblage (Amukun, 1989). The rocks dip away from the intrusion, eastwards, and are mostly sub-vertical angles (Amukun, 1989). The Archean stratigraphic pile in its present form outcrops at surface to near surface levels due to a massive unconformity until the Pleistocene, with glacial deposits and recent alluvial, peat, bog and swamp deposits existing as superficial deposits on top of the underlying geology (Amukun, 1989).



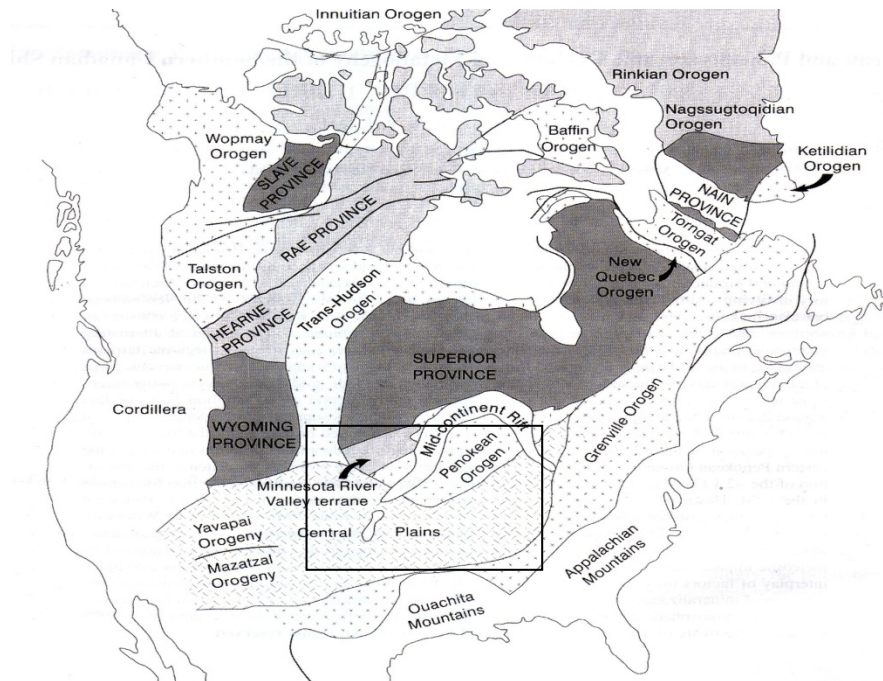
The structural history of the property is complex with polyphase deformation and large-scale regional tectonic events transecting the property (Campbell, 1996). The northern edge of the property is situated 8km (Campbell, 1994) from the Sidney Lake Fault (Card and Poulsen, 1998), an inferred suture zone (Campbell, 1994) that represents the major regional boundary between the greenstone-granite dominated Wabigoon sub-province and the meta-sedimentary dominated English River sub-province to the north. This regional strike-slip dextral transpressional fault has a major effect on the supracrustal rocks in and around the Marshall Lake property (Campbell 1994), including intense structural deformation and several fold events and shear patterns.

## **9.6 Regional Geology and Tectonic Setting**

### **9.6.1 The Superior Province**

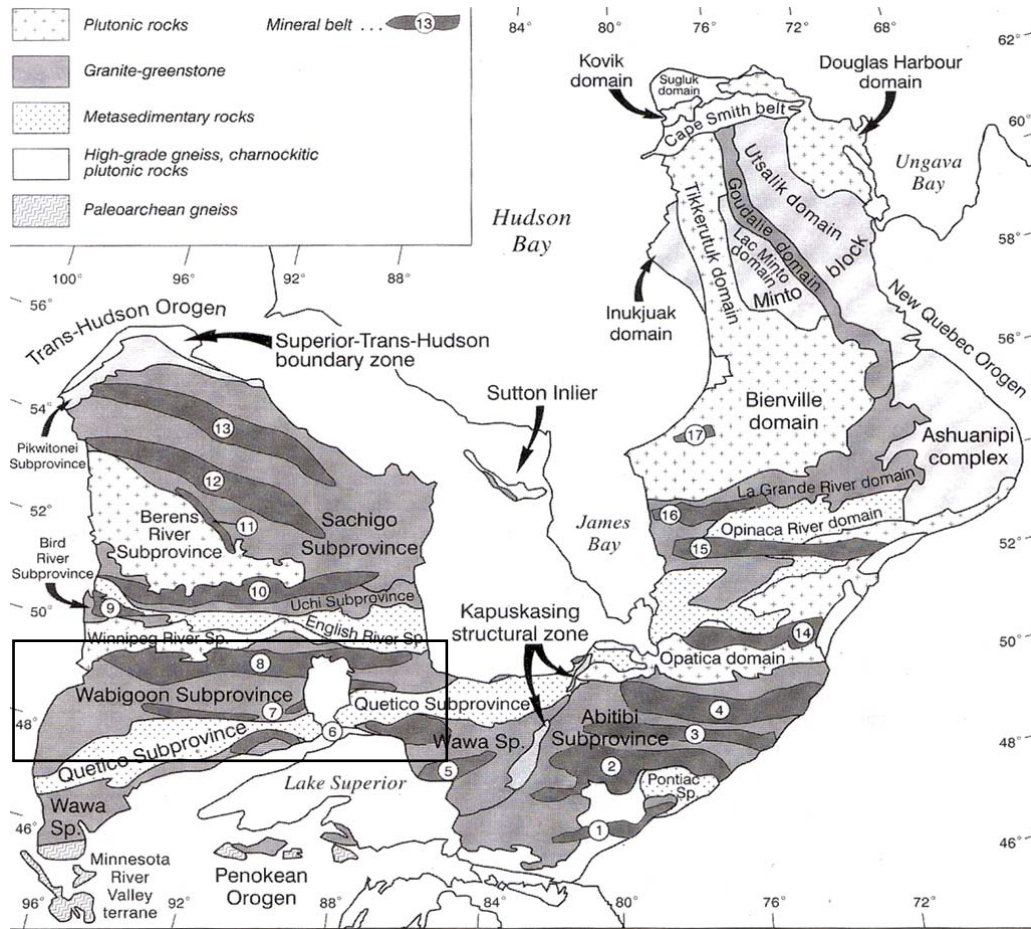
The Archean craton of the Superior Province marks a major geological subdivision of the South Canadian Shield and accounts for much of the metalliferous mineral production of North America (Card and Poulsen, 1998). It formed as part of a larger cratonic mass in the early Archean as part of the Wyoming and Baltic Shield (Card and Poulsen, 1998). The Archean history of the craton is varied and several distinct cycles of volcanism, plutonism and tectonism existed in the Neo-Archean (2.8-2.5Ga), the Meso-Archean (3.4-2.8Ga) and the Paleo-Archean (>3.4Ga). The Superior province remained relatively stable after Neo-Archean orogenesis. It is the largest well-exposed studied region on Earth of ancient crust (Card and Poulsen, 1998).

**Figure 9.1: The Superior Province craton (modified after Card and Poulsen, 1998)**



The Superior Province craton encompasses a land mass area of 2 million km<sup>2</sup> that forms the core of the North American craton (Card and Poulsen, 1998) (Figure 9.1). It is generally divided up into geological sub-divisions called sub-provinces which were

regarded to be assembled in the late Neo-Archean (2.65Ma) as tectonic terrains formed by accretion. They are separated by distinct geological boundaries consisting of complex lithological, structural and metamorphic transitions, notably by major faults (Corey, et al, 1980) some of which are major suture zones (Hall and Brisbin, 1982). They were assembled in the Neo-Archean (Card, 1990). The sub-provinces are sub-divided in respect to their compositions as greenstone-granite, meta-sedimentary, plutonic and high-grade gneiss sub-provinces (Card and Ciesielski, 1986) and can be seen in Figure 9.2.



**Figure 9.2: Sub-provinces of the Superior Province craton with the Wabigoon sub-province highlighted (modified after Card and Poulsen, 1998)**

The craton is surrounded by Proterozoic Orogens, mainly the Trans-Hudson and Grenville Tectonic Orogens to the west, north and north-east, and the Penokean and New Quebec Paleoproterozoic supercrustal sequences to the south and east, all of which have been thrust onto the margins of the Superior Province craton (Card and Poulsen, 1998).

The most important metallogenic mineral occurrences in the Superior Province exist as Volcanogenic Massive Sulphides (VMS), magmatic Ni-Cu sulphides, Cr-stratiform deposits, and Algoma banded iron formations. These all occur within the Greenstone-Granite sub-terrains and were all deposited within the Neo-Archean within a



brief geological period revolving around 2.7Ga within a brief 100-150Ma time period (Card and Poulsen, 1998).

### **9.6.2 Superior Province Geology**

As discussed, the Superior Province of Central North America has been sub-divided in smaller sub-provinces based upon geological specifications, and bounded by, largely major thrust fault or suture zones. These geological terranes have been classified by Card and Poulsen (1998) into four discrete units based upon lithological characteristics as follows:

- 1) **Greenstone-Granite Sub-Provinces:** These represent medium to low grade volcanic dominated supracrustal sequences with complex isoclinal upright recumbent folds and steeply dipping faults, foliations and lineations.
- 2) **Meta-sedimentary Sub-Provinces:** These alternate between greenstone-granite terranes as deformed and metamorphosed turbidites and granites and REE pegmatites. These normally consist of aluminous sedimentary rocks.
- 3) **Plutonic Sub-Provinces:** Consisting of felsic to intermediate plutonic rocks that may represent magmatic arcs and deeply eroded greenstone-granite terranes.
- 4) **High Grade Gneiss Sub-Provinces:** These comprise of Granitite and upper amphibolite facies gneisses derived from sedimentary and intrusive rocks. They form complex ductile deformation structures.

### **9.6.3 Superior Province Tectonic, Structural and Metamorphic History**

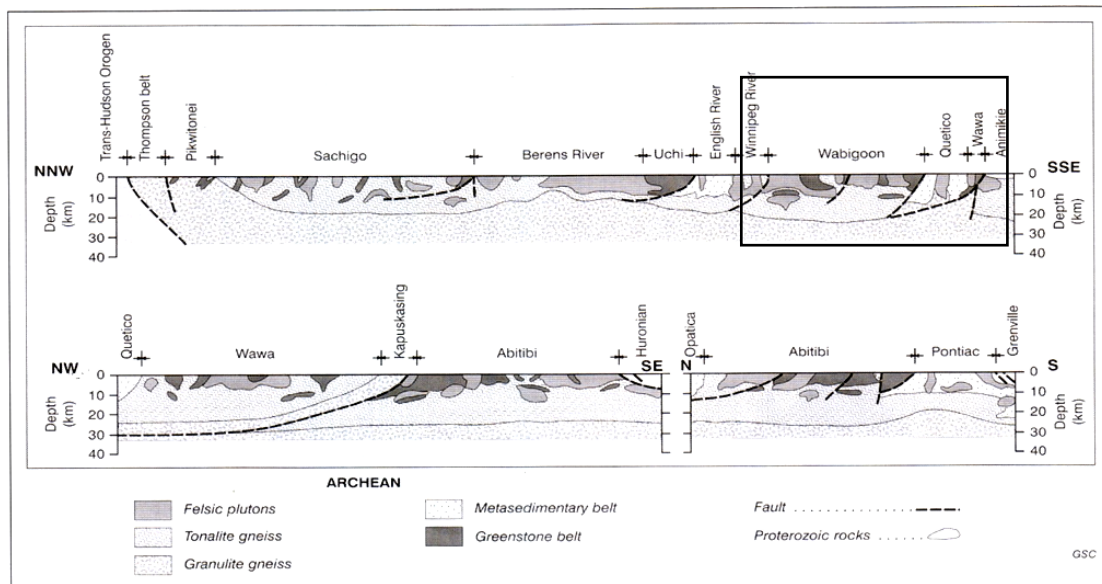
The Marshall Lake property falls within the Wabigoon sub-province, which is a Greenstone-Granite sub-province with a large economic focus directed towards volcanogenic-hosted massive sulphide (VHMS) deposits among other metallogenic deposit types. Volcanogenic massive sulphide deposits (VMS) formed within a very distinctive geological time period approximately 2.7Ga in the Neo-Archean within a 100-150Ma period of cyclic volcanism (Card and Poulsen, 1998). This was related to a major cyclical deposition and orogenic process that had existed from the Meso-Archean, yet formed distinct economic mineral belts within the Greenstone-Granite sub-provinces only. This preceded a major period of Neo-Archean orogenesis, and since this occurrence, in terms of mineralogical deposition, the Superior Province has received little or no activity (Roscoe and Card, 1993). The main orogenic event, the Kenoran Orogeny (Stockwell, 1982), that occurred before the main cycle of VMS deposition, commencing approximately 2.87Ga (Stott and Corfu, 1991), accounted for much of the mafic and felsic volcanism that hosts these deposits.

However, since 2.7Ga, much of the Superior province has undergone intense major polyphase deformation, regional metamorphism and widespread plutonism causing complete obliteration to host rocks formed in the Archean (Card and Poulsen, 1998). Deformation included a north-south compression in a dextral transpressional regime, causing transcurrent faulting, shearing and emplacement of post-tectonic intrusions (Card and Poulsen, 1998). Other major events that occurred to the Superior Province included uplift and erosion of the craton, Palaeoproterozoic and Palaeozoic collision events around

the margins of the craton and a failed rifting event of the craton in the Late Proterozoic whereby mafic dykes and major mafic sills were emplaced into the Archean rocks (Card and Poulsen, 1998). Therefore, most of the rocks that occur within the Superior Province craton were sourced from a mantle source within a 200 million year period in the early Neo-Archean (Shirey and Hanson, 1986).

Structurally, the sub-provinces of the Superior Province have an east-west structural trend and southward younging assemblage, specifically in the central sub-provinces such as Abitibi, Wawa Belt, Quetico and Wabigoon sub-provinces. They largely alternate between greenstone-granite and meta-sedimentary terranes banded by zones of structural and metamorphic transition, whereby complex faulting and igneous activity have obliterated away any pre-existing geological transitions (Card and Poulsen, 1998). Some of these sub-province boundaries are over 10km wide, trending hundreds of kilometres, consisting of inverted stratigraphy, folding and thrust stacking and suture zones (Hall and Brisbin, 1982). Most have complex movement histories such as dip-slip and late-stage strike-slip displacements (Card and Poulsen, 1998).

The general stratigraphy of the greenstone-granite supercrustal rocks is as follows (Card and Poulsen, 1998); an upper layer (<10km depth) comprises of greenschist to lower amphibole metamorphic facies, cut by discordant plutons and high angle fault structures. They are underlain by an intermediate layer (10-25km depth) of plutonic foliated tonalite-granodiorite and supercrustal remnants that have been metamorphosed under medium to high temperatures and pressures in ductile and shallow deformation zones. Lastly, a lower layer (25-40km depth) consists of granulite facies of plutonic and supercrustal origin with ductile structures. A cross section of the Superior Province north to south can be viewed in **Figure 9.3**. This is evidential of a major extensional tectonic regime for formation in the middle to lower parts of the Archean crust (Moser, 1994). Shortening of the supercrustal rocks then occurred, creating regional north-south deformation, forming greenstone belts with juxtaposed panels of volcanic and sedimentary rocks, and ultimately, thrust stacking (Poulsen, et al, 1980).



**Figure 9.3: North-south cross-section of the Superior Province with Wabigoon Sub-province highlighted (modified after Card and Poulsen, 1998)**

Regional metamorphism in the greenstone-granite terranes ranges from greenschist to lower amphibolite facies. The greenstone-granite belts consist of low metamorphic grades created by burial pressures from the high stratigraphic thicknesses of overlying rocks. However, the main regional metamorphism was created by the Neo-Archean Kenoran Orogeny, which altered any original VMS mineral assemblages and alteration zones (James, et al, 1978) to upper greenschist-lower amphibolite metamorphic grades.

#### **9.6.4 VMS deposits of the Superior Province**

The VMS metallogenic history of the Superior Province concerns only the greenstone-granite sub-provinces, whereby the formation of economic metallogenic mineral belts was created within a short time period (2750-2690Ma) (Card and Poulsen, 1998). These were created from multiple VMS volcanic cycles that were deposited successively into the Neo-Archean stratigraphy. An example from the Abitibi greenstone-granite sub-province highlights this cyclic depositional trend during this period; deposited into a thick oceanic rift and caldera complex, volcanically derived VMS deposits formed at 2730Ma, 2715Ma, 2705Ma and 2700Ma (Barrie, et al, 1991; Gibson and Watkinson, 1990).

The VMS and VHMS deposits that form in metallogenic mineral belts within the greenstone-granite sub-provinces are therefore Primitive Type Mattabi VMS deposits (Barrie and Hannington, 1999), based upon their relative ages, deposit types and lithology/mineralogy. However, based upon the tectonic environment and lithostratigraphy, Franklin et al (2005) has classified them as bi-modal mafic/felsic VMS deposits.

#### **9.6.5 The Wabigoon Sub-Province**

The Wabigoon geological sub-province is composed of a greenstone-granite composition in the central regions of the Superior Province (Card and Poulsen, 1998). The sub-province trends east-west and is bounded by two meta-sedimentary sub-provinces to the north and south. To the north, the transcurrent Sidney Lake Fault separates the Wabigoon sub-province from the English River sub-province. To the south, the Gravel River thrust fault separates the Wabigoon sub-province from the Quetico sub-province (Card and Poulsen, 1998). The Wabigoon sub-province is composed of alternating felsic plutons and greenstone belts, underlain by tonalite gneisses and Granulite gneisses at depth (Card and Poulsen, 1998).

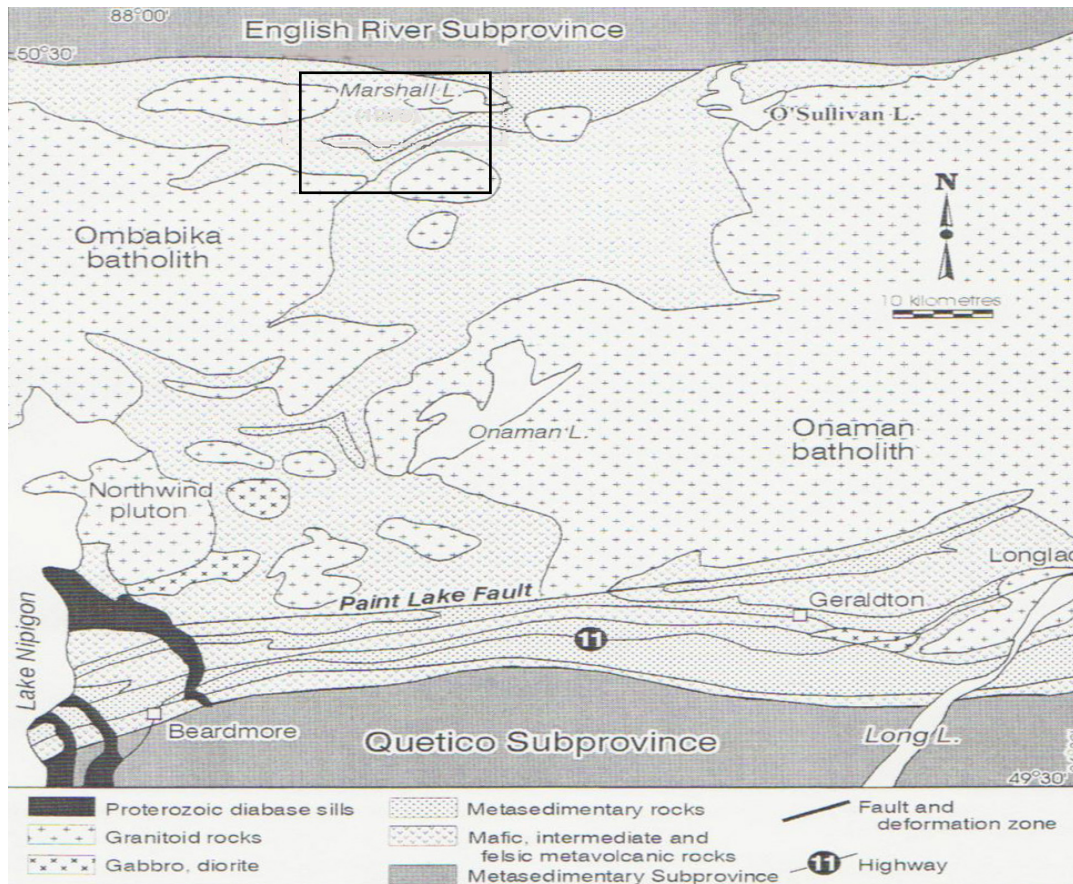
The Wabigoon sub-province, like many similar greenstone-granite terranes in the Superior Province craton, is known to host an array of economic metalliferous deposits; such as the Sturgeon Lake Zn-Cu VMS deposit(s), the Geraldton epithermal gold deposit(s), the Onaman Zn-Pb VMS deposit, Cu-Ni sulphides in layered mafic intrusions, stratiform chromite deposits and several Algoma-type iron formations (Card and Poulsen, 1998).

As opposed to other more VMS prosperous greenstone-granite sub-provinces such as the Abitibi and Wawa belts to the south, the Wabigoon sub-province only comprises of a single VMS deposit, the Sturgeon Lake Mining Camp in central Wabigoon sub-province. A comparison of economic volumes of VMS occurrences provided by Franklin (2008) states that if all the volcanics were removed from the stratigraphy, the Wabigoon sub-province would only contain approximately an economic value of US\$140k value per 1km<sup>2</sup> land surface area for VMS deposits as opposed to US\$1M in the Abitibi sub-province to the south. This is even in respect to an equal status in exploration history. Therefore the Wabigoon sub-province is believed to only herald an eighth of the unit volume of VMS deposits as to the Abitibi sub-province. Despite, this figure, only one other potentially economic VMS deposit has been recognized in the Wabigoon sub-province (Franklin, 2008), the Marshall Lake VHMS prospect, in the Onaman-Tashota greenstone belt in the eastern portion of the Wabigoon sub-province (Straub, 2000).

## **9.7 Local geology, structure, metamorphic history and mineral occurrences of the Marshall Lake VHMS occurrence**

### **9.7.1 Lithostratigraphy**

The Marshall Lake property area comprises of a sequence of Neo-Archean calc-alkaline metamorphic-volcanic rocks and volcanogenically derived clastic and chemically derived meta-sedimentary rocks (Amukun, 1989) within the Marshall Lake Series, an accumulation of felsic to intermediate bimodal rocks (Campbell, 1996) over 9000m thick (Amukun, 1989). The property is situated on the southern limb of a regional antiformal fold at the top of the Marshall Lake Series and is a deformed acidic met-volcanic complex (Straub, 1999). It is comprised of a large dacitic volcanic pile located (Figure 2.4) on the northern margin of the Onaman-Tashota greenstone belt within the eastern portion of the Wabigoon sub-province (Straub, 1999). The geology of the area is dated at 2739<sup>±</sup>-1Ma (Stott, et.al., 1998).



**Figure 9.4: The Marshall Lake property located on the Onaman-Tashota Belt, East Wabigoon (modified after Stott and Straub, 1999)**

The Marshall assemblage as it is so called, is an east-trending assemblage comprised of felsic to intermediate composited volcanic rocks including volcanoclastic, effusive units and porphyritic felsic intrusions, intruded by Proterozoic mafic dykes trending north-south (Amukun, 1989). The felsic volcanics range from massive aphyric to quartz-feldspar phyrlic flows, tuffs, lapilli tuff (massive and banded), coarse agglomerates and breccia units (Amukun, 1989; Campbell, 1994) and consist of between 80-90% of the rocks on the Marshall Lake property (Amukun, 1989). Both clastic and chemical meta-sedimentary units and conformable mafic flows overlie the assemblage. The clastic meta-sediments are derived from weathered portions of the underlying felsic stratigraphic pile and deposited flanking the deposit. The chemical meta-sedimentary rocks comprise of a regional banded iron formation to the east and south of the felsic pile (Amukun, 1989) that is composed of oxide-sulphide iron facies and ferruginous chert layers (Morton, 1983).

The Marshall Lake property is defined and classified as a primitive type (Barrie and Hannington, 1999) bimodal mafic type volcanogenic hosted massive sulphide (VHMS) (Franklin, et al, 2005; Franklin, 2008). VHMS mineralization and associated synvolcanic alteration assemblages are evident in the felsic to intermediate volcanic pile (Straub, 1999). However, due to regional metamorphism to upper greenschist-lower amphibolite grade, most original synvolcanic mineralogical assemblages have been either



obliterated or recrystallized to an aluminosilicate rich mineral assemblage (Campbell, 1994; Amukun, 1989), whilst retaining the original ore mineralogy.

The volcanic environment of deposition indicates a growing sub-aqueous felsic dome (Morton, 1983) in a relatively shallow water depth (<1900m) (Franklin, 2008), which on the margins, flow front breccias and hyaloclastics developed. Slumping and reworking of the formed both debris flows and bedded flows (Morton, 1983). The meta-volcanics were sourced from several volcanic centres (Amukun, 1989), defined by pumice dispersal areas and coarse-grained pyroclastic rocks. Immediately overlying the felsic pile and underlying the regional conformable banded iron formation, is evidence of discharge vents for hydrothermal solutions evidential by hydrothermal explosion breccias around Marshall Lake in the east of the property (Amukun, 1989). The entire sequence is illustrated by the geological map in Figure 9.6 and a tectonostratigraphic cross-section of the deposit in Figure 9.5 developed Stott and Straub (1999)(Nason,2008).

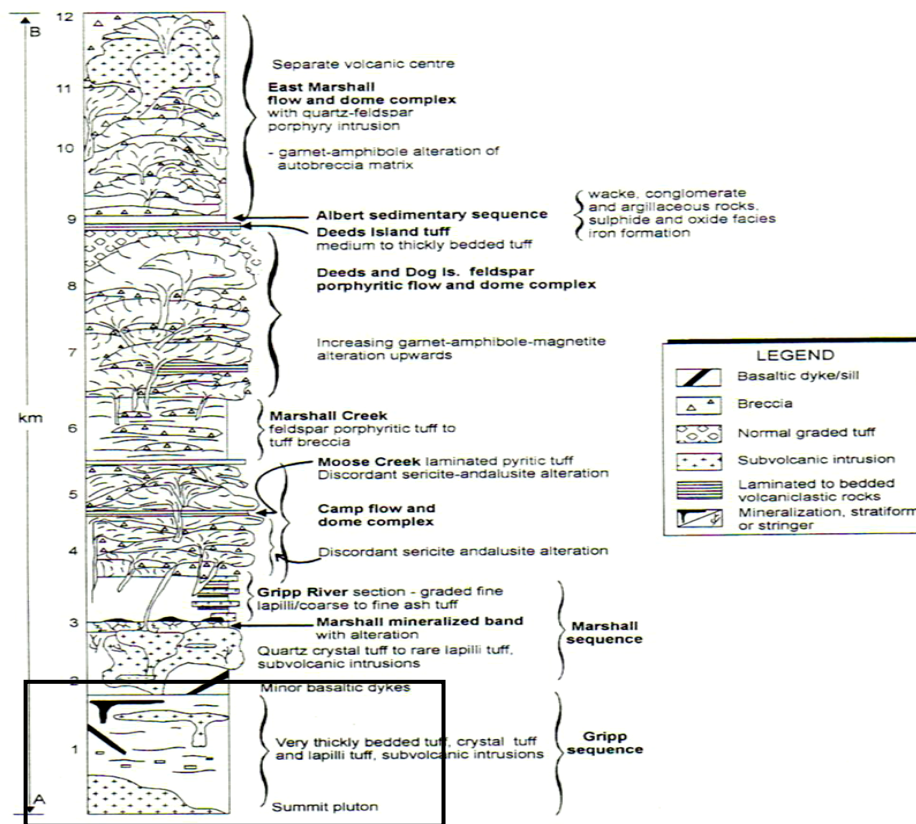
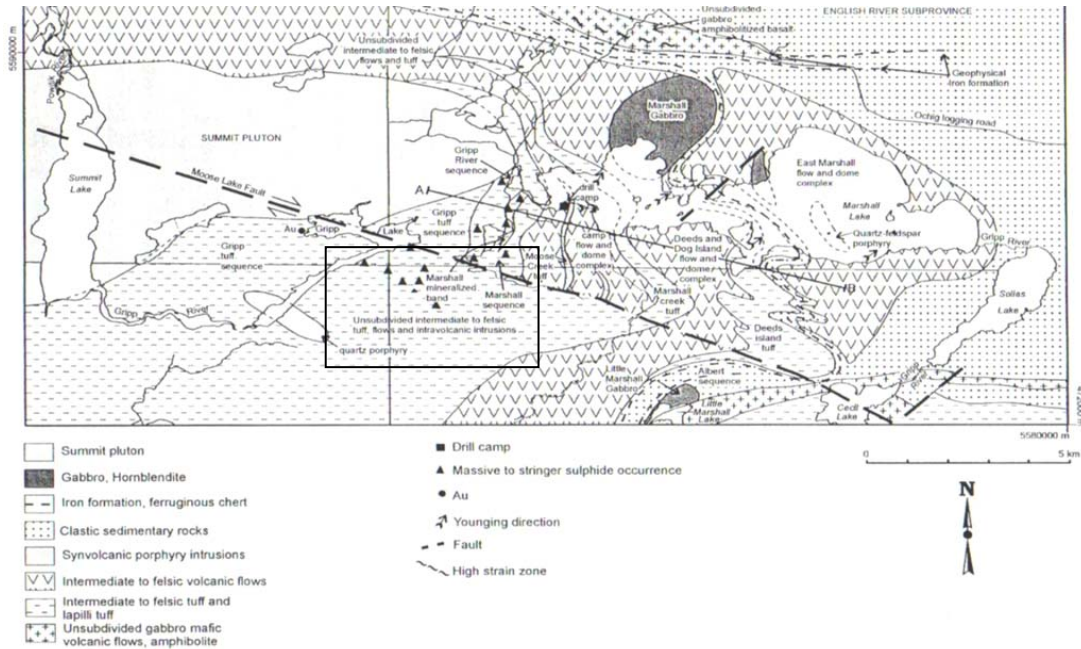


Figure 9.5: Tectonostratigraphic cross-section (AB) of the Marshall Lake Felsic volcanic stratigraphy with reference to the copper-rich stringer zone study area (modified after Stott and Straub, 1999)



**Figure 9.6: Geological map of the Marshall Lake property and cross-section highlighting study area sequence within the Gripp Sequence (AB) (modified after Stott and Straub, 1999)**

### **9.7.2 Metamorphic assemblages**

The regional metamorphic assemblage at the Marshall Lake property is suggested at lower amphibolite facies due to many field observations and studies conducted on the property. The Ontario Geological Survey conducted a geological survey on the property by Amukun (1989) and established a metamorphic grade of upper greenschist. However, more recent attempts at classifying the deposit suggest a maximum metamorphic grade at lower amphibolite facies (Connelly, 1983) which is based upon the mineralogy encountered on the property, including recrystallisation and reaction of the original felsic volcanic stratigraphy and synvolcanic alteration mineral assemblages (Barrett and MacLean, 1994).

The distinctive original synvolcanogenic alteration assemblages that occur in the Marshall Lake VHMS system such as seritisation, chloritisation and silicification, have all been metamorphosed to lower amphibolite facies to produce a distinctive assemblage of lower amphibolite grade metamorphic minerals (Barrett and MacLean, 1994). Identifying and characterising the metamorphic mineralogy that is indicative of an original VHMS mineral assemblage is the most important method for petrographic analysis for an exploration tool at the Marshall Lake property. Therefore an understanding of the main metamorphic assemblages is required to understand this property (Nason, 2008).

VHMS systems, as discussed, have distinct alteration mineral assemblages with relation to particular alteration zones in a deposit (Barrie and Hannington, 1999). This distinctive mineralogy is therefore recrystallized into a distinctive metamorphic mineral assemblage when subjected to regional metamorphism to lower amphibolite grade facies.

Several minerals are indicative in this study in order to define the copper-rich stringer zone alteration assemblages in the south-west of the property. The following represents a list of common VHMS mineralogical alteration assemblages with the equivalent lower amphibolite metamorphic assemblage classified by Bernier, et al, (1987):

<b>VHMS Alteration Assemblage</b>	<b>Lower Amphibole Metamorphic Assemblage</b>
<b>Mg-rich chlorite + quartz</b>	<b>Cordierite + Anthophyllite</b>
<b>Fe-Mg rich chlorite + quartz</b>	<b>Staurolite + Gedrite</b>
<b>Fe-Chlorite + quartz</b>	<b>Staurolite</b>
<b>Sericite &gt; Mg-chlorite + quartz</b>	<b>Biotite + Sillimanite</b>
<b>Sericite &lt; Mg-chlorite + quartz</b>	<b>Biotite + Cordierite + Anthophyllite</b>
<b>Sericite &lt; Mg-chlorite + quartz</b>	<b>Biotite + Staurolite + Gedrite</b>

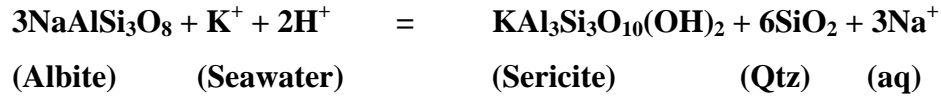
**Table 9.1: VHMS and equivalent Lower Amphibole mineralogical assemblages (Bernier, et al, 1987).**

Additionally, VHMS systems almost never create kaolinite or aluminosilicate rich minerals such as actinolite as these minerals are indicative of extremely acidic rich alteration (Barrett and MacLean, 1994). This is a very important characteristic when regarding the fact that actinolite <sup>±</sup> hornblende <sup>±</sup> sillimanite are the primary components of lower amphibolite metamorphic facies that are encountered at the southwestern portion of the Marshall Lake property. These exist due to the metamorphic recrystallisation of chlorite to amphibole at these metamorphic grades (Forslund, 2008). Immobile elements that were immobile during VHMS synvolcanic alteration (Zr, Ti, Al) remained immobile during metamorphism to lower amphibolite grade (Bernier, et al, 1987), though may have become enriched due to the removal of other geochemical constituents. Therefore mass change calculations on these altered rocks using Zr, Al<sub>2</sub>O<sub>3</sub> and TiO<sub>2</sub> ratios may be performed (Nason, 2008).

An important metamorphic mineral that may indicate a metamorphosed VHMS alteration zone is chloritoid (Lockwood and Franklin, 1986). This aluminosilicate rich mineral may only form in the absence of sodium in the host rocks, and so forms the basis of a very unique exploration tool for VHMS deposits in Archean bimodal felsic/mafic host stratigraphies (Lockwood and Franklin, 1986). This is due to the fact that the primary feldspar mineral that occurs in the felsic volcanics in the greenstone-granite sub-provinces in the Superior Province, such as the felsic rhyolite/dacite stratigraphic pile at the Marshall Lake property (Barrett and MacLean, 1994), is albite, which contains sodium. If anomalous sodium depletion in the felsic host lithologies exist, this indicates a sericitic reaction of the albite by re-circulated seawater sourced hydrothermal fluids in a VMS hydrothermal system (Barrett and MacLean, 1994), specifically in a stringer zone deposit in an upper semi-conformable level in a VHMS deposit (Franklin, et al, 2005; Franklin, 2008) due to confining temperatures and pressures. The following (Barrett and



MacLean, 1994) equation displays the chemical reaction of albite to sericite through modified seawater circulation in hydrothermal fluids reacting with the host rock lithologies, with the release of sodium ions, allowing the sodium to be mobilized in the ascending hydrothermal fluids:



The chloritoid mineral is only stable up to upper greenschist metamorphic grades (Lockwood and Franklin, 1986). At lower amphibolite grade, chloritoid will recrystallise to staurolite, conforming to previous studies (Connelly, 1983) that lower amphibolite represents the maximum metamorphic grade on the property.

Therefore in order to identify a VHMS alteration system modified to a metamorphic mineral assemblage to lower amphibolite facies specifically within the stringer zone of a deposit, a distinctive mineralogy has to be distinguished. Seritisation will indicate areas of intense sodium depletion from the destruction of albite. These areas may help delineate an area whereby chloritoid/staurolite may be found. Intense actinolite alteration may indicate a precursor of chloritisation of the initial VHMS synvolcanic alteration assemblages. Biotite and anthophyllite may also indicate an original VHMS mineral alteration assemblage.

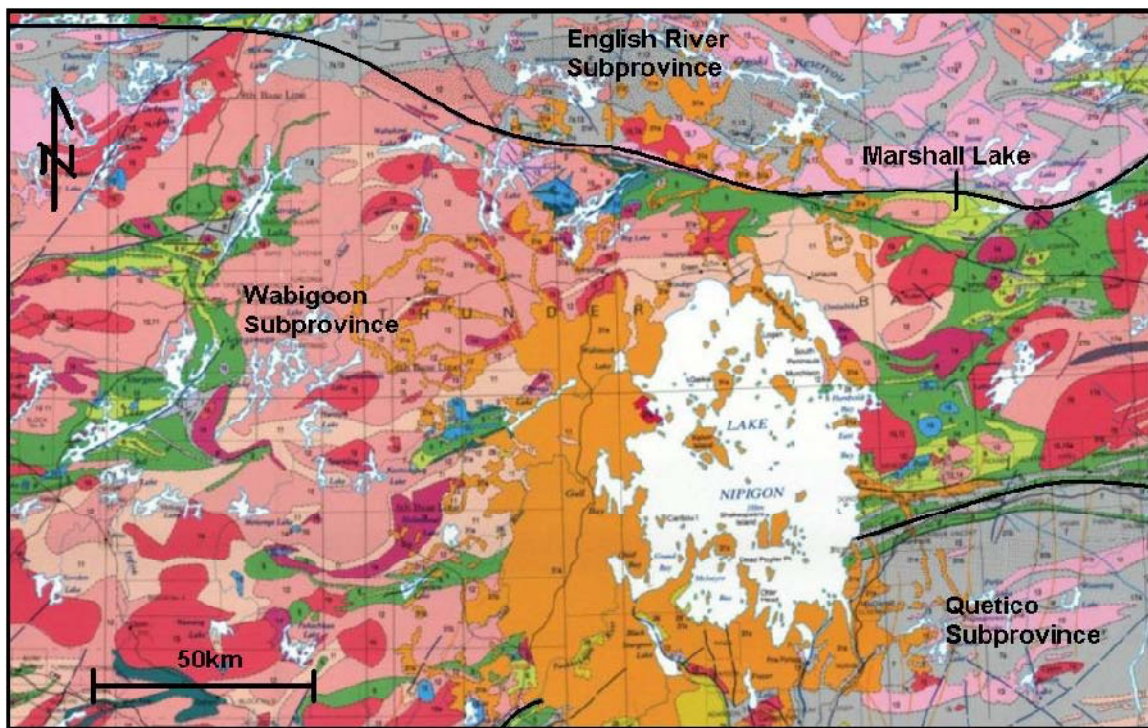


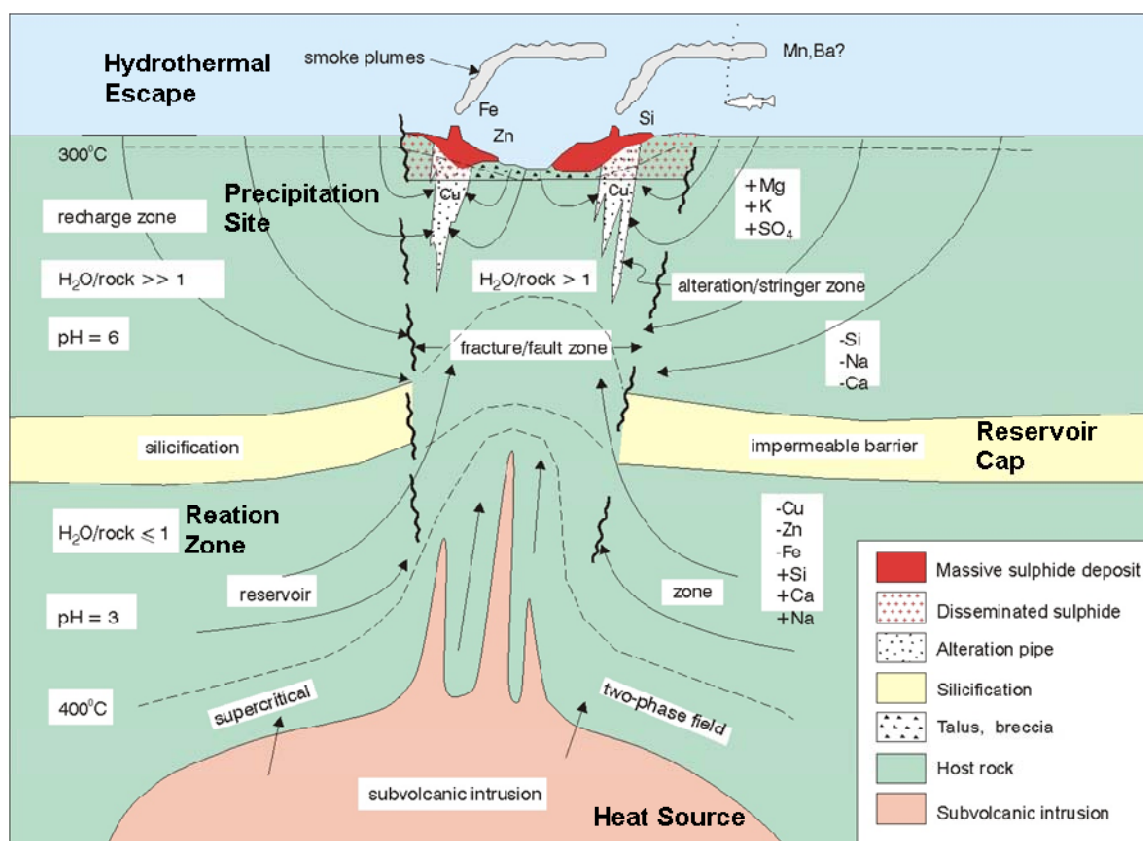
Figure 9.7 – The regional geology of the Superior Province in the vicinity of Marshall Lake. Black lines indicate the edges of the subprovinces (Ontario Geological Survey, 1991).

## **10. DEPOSIT TYPES**

### **10.1 Volcanogenic Hosted Massive Sulphide Deposits (VHMS)**

Volcanogenic hosted massive sulfide ore deposits or VHMS are a type of metal sulfide ore deposit, mainly Cu-Zn-Pb which are associated with and created by volcanic-associated hydrothermal events in submarine environments. They are synvolcanic accumulations of sulphide minerals that occur in geological domains characterized by submarine volcanic rocks. The deposits are composed of iron sulphides with subordinate amounts of chalcopyrite, spalerite and galena. Generally, a deposit consists of a stratiform lens of massive sulphide containing the bulk of the mineralization within hydrothermally altered rocks of the stratigraphic footwall. VHMS deposits are the result of special hydrologic, geothermal and topographic conditions on the ocean floor. They are predominantly stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids on or below the seafloor in a wide range of ancient and modern geological settings. In modern oceans they are synonymous with sulfurous plumes called black smokers. They represent a significant source of the world's Cu, Zn, Pb, Au, and Ag ores. The typical economic deposit may consist of several individual massive sulphide lenses or stockwork zones and contains 1-10 million tonnes of ore with an average grade of 2-10% Cu + Zn + Pb (Lydon, 1984). The largest of these deposits contain in excess of 100 million tonnes of ore. These deposits tend to form in clusters creating a mineralized region on average about 32km in diameter. VHMS deposits characteristically will show a zonation in ore (Fig. 10.1), gangue and hydrothermal alteration minerals both outwards and upwards in the system from the core of the stockwork zone and the base of the massive sulphide lens at the top. The gangue minerals present are mainly quartz and pyrite or pyrrhotite. The metal zonation is caused by the changing physical and chemical environments of the circulating hydrothermal fluid within the wall rock forming a core of massive pyrite and chalcopyrite, with a halo of chalcopyrite-sphalerite-pyrite grading into a distal sphalerite-galena and galena-manganese and finally a chert-manganese-hematite facies. The mineralogy of VHMS massive sulfide consists of over 90% iron sulfide, mainly in the form of pyrite, with chalcopyrite, sphalerite and galena also being major constituents. Magnetite is present in minor amounts; as magnetite content increases, the ores grade into massive oxide deposits (Gibson et al, 2000).

Volcanogenic hosted massive sulfide deposits are distinctive in that ore deposits are formed in close temporal association with submarine volcanism and are formed by hydrothermal circulation and exhalation of sulfides which are independent of sedimentary processes, which sets VHMS deposits apart from sedimentary exhalative (SEDEX) deposits. A common theme to all environments of VHMS deposits through time is the association with rift environments. The Noranda or Kuroko type deposits are typically associated with bimodal sequences. Bimodal-mafic VHMS deposits are associated with environments dominated by mafic volcanic rocks, but with up to 25% felsic volcanic rocks, the latter often hosting the deposits.



**Figure 10.1 – The genetic model for the formation a VHMS type deposit. The black arrows represent fluid flow and the elements that are affected are in white boxes. (Franklin *et al.*, 2005)**

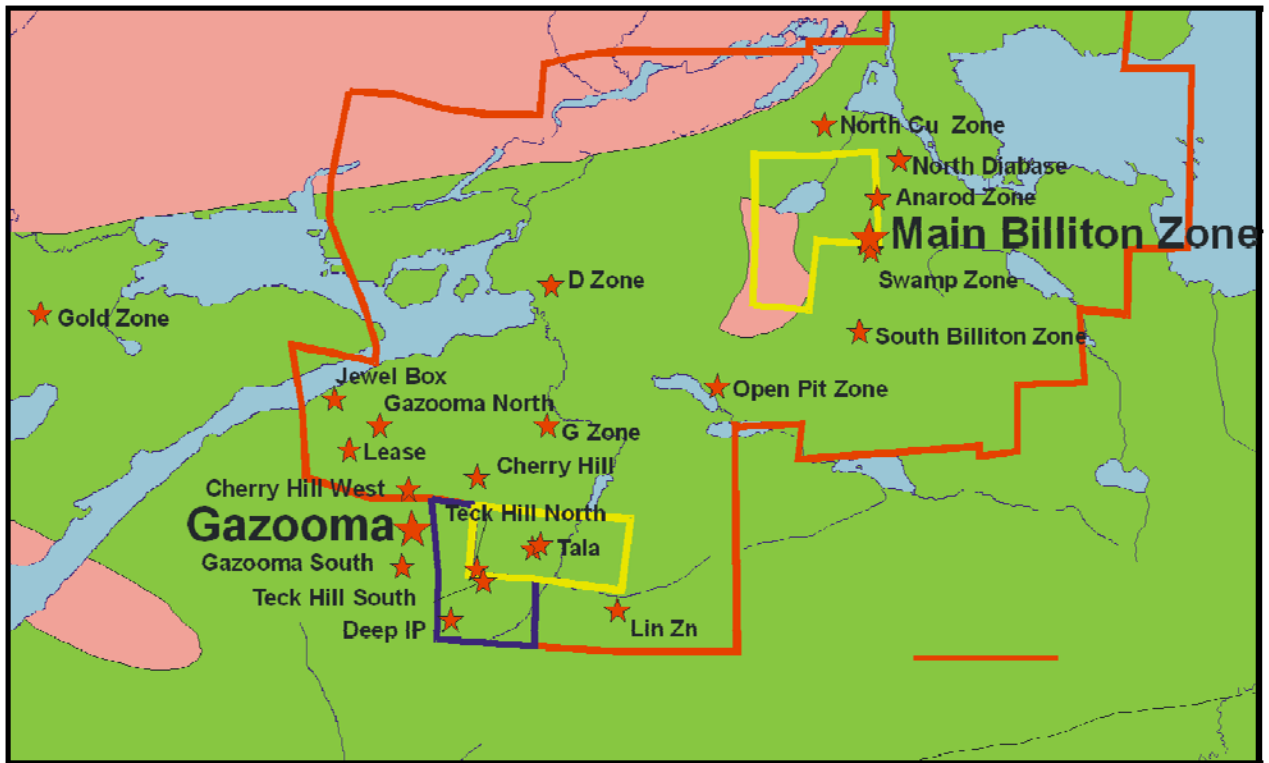
VHMS related metasomatism could greatly affect the geochemistry of a rock. The effects of hydrothermal alteration work in such a way that certain elements are leached out of the rock by hot fluids and precipitated elsewhere. There are several key elements to a VHMS type system that need to be understood in order to understand how the geochemistry will vary in different locations within the system (Franklin *et al.*, 2005). Perhaps the most critical element in the system lies at the base of the sequence and acts as a driving force (heat source) for the entire system. This comes in the form of an intrusion of some sort, usually a sub-volcanic sill. Just above this there is a high temperature reaction zone where dehydration reactions occur. The excess water will act as the primary hydrothermal fluid and will leach metals from the high temperature reaction zone. The typical geochemistry of one of these high temperature reaction zones will tend to be depleted in metals (e.g. Cu, Zn, Fe), but enriched in the elements that were left behind (e.g. Si, Ca, Na).

The uppermost part of the high temperature reaction zone will be highly silicified (or in some cases calcified) to the point where it becomes a “cap” and this insulates the upper zone from the heat. In order for the metal rich fluids to penetrate this cap, the system must be part of an extensional tectonic regime where normal faults can transect the cap and penetrate down into the high temperature reaction zone. These faults are usually created as rift-associated normal faults or normal faults on the margin of a caldera system. The fluids can now cool and precipitate their metals in the fractured area beneath the seafloor. If the fluid does not cool enough for certain metals to precipitate then they

escape through seafloor vents, commonly known as “black smokers”. Seawater will also be drawn into the marginal fractures and convect through the rocks to further alter the chemistry of the precipitation zone. A typical geochemical signature that one might expect in this zone would be characterized by enrichment in Mg, K and SO<sub>4</sub>, but depleted in Na and Si (Figure 10.1).

## 11. MINERALIZATION

Well over 112 known mineral occurrences of base-metal mineralization outcrop over an extensive area across the entirety of the Marshall Lake property (Campbell, 1994) interpreted as VHMS mineralogy present within synvolcanic alteration zones (Straub, 1999).



**Figure 11.1 – Marshall Showings. Leased Claims in yellow and blue outlined and East West Resources Claims outlined in red.**

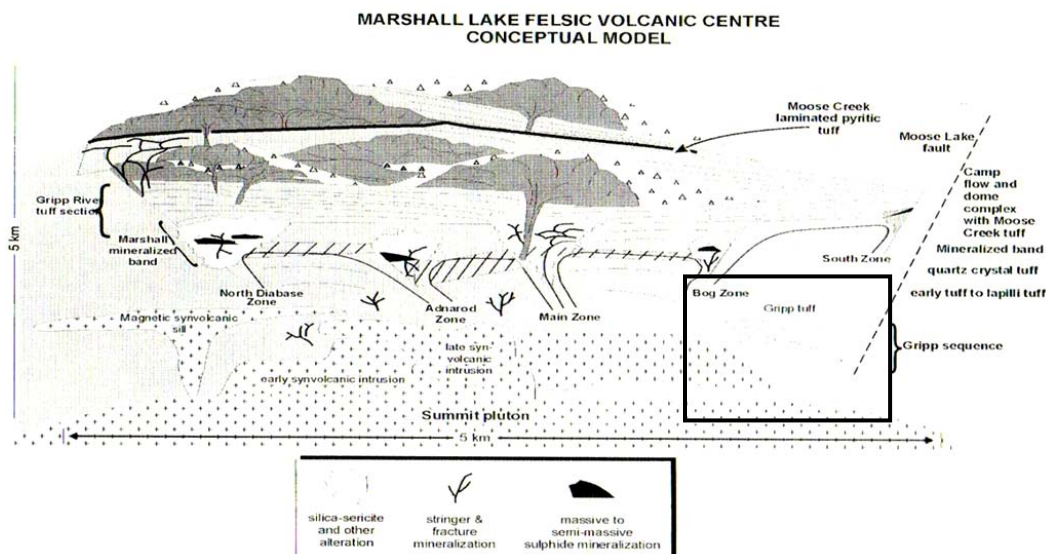
The mineral occurrences are spatially associated with the felsic calc-alkaline fragmental meta-volcanic rocks consisting of the following types classified by Amukun (1989):

- 1) Ubiquitous sulphide disseminations in thin metamorphic garnetiferous-amphibolite (actinolite-hornblende) lenses throughout the major showings, such as Teck and Billiton (Main).



- 2) Disseminated to massive lenticular sulphide shoots that represent migrated metal concentrations in the nose areas of minor folds, such as the Main Zone in the Marshall Mineralized Band.
- 3) Disseminated sulphide mineralization in local shears and silicified zones across the entire map area.

Since the most economically important Main Billiton Zone showing that was discovered in the Marshall Mineralized Band by Teck-Hughes Gold Mines Ltd (Amukun, 1989) in 1954, the property has been at the centre of a continued exploration focus for over 60 years. The inferred resource estimate of the Main Billiton Zone is 1.174Mt @ 2.7% Zn and 0.82% Cu (Bayne, 1970), with additional satellite deposits adding another ~0.75Mt resource at a similar concentration. This zone is not a massive sulphide horizon, and exists as five lenses of stratabound/stringer/disseminated sulphides hosted within hydrothermally altered felsic rocks (Straub, 2000) striking 1.5km. It is hosted within aphanitic to weakly quartz-porphyritic finely bedded laminated volcanoclastics and a laminated cherty tuffaceous unit (Straub, 2000). Mineralization exists in order of abundance, pyrite, chalcopyrite, sphalerite, silver-minerals, galena, gold, pyrrhotite and magnetite (Amukun, 1989). The Marshall Mineralized Band and associated mineral occurrences can be viewed from the plan map (Figure 6.2) and cross-sections (Figure 9.5) developed by Stott and Straub (1999) and from the conceptual model cross-section (Figure 9.6) developed by Straub (2000)(Nason, 2008).



**Figure 11.2: Conceptual Model of the Marshall Lake felsic volcanic stratigraphy showing the stratigraphic position of the mineralized zones including reference to the copper-rich stringer zone study area (modified after Straub, 2000)**

This zone represents a period during which concurrent mineralization occurred or that a favourable laminated or porous trap focused hydrothermal alteration (Straub, 1999). However, Amukun (1989) suggests that the mineralization appears to have been remobilized or concentrated by later folding. Therefore the Marshall Mineralized Band

does not represent an original massive sulphide horizon, but perhaps a remobilized component of one that has not yet been discovered.

The mining leases cover ten additional basemetal showings including the east extension of the Main "103" or Billiton Zone. The zones in part follow a trend called the Marshall Lake Tuff horizon that was not previously recognized by the original workers in the 1950's - 1970's. The majority of the zones contain high copper and/or silver values which are typical of a Volcanogenic Hosted Massive Sulphide "VHMS" stringer zone. The presence of numerous copper stringers suggests the presence of larger tonnage upper phases that would be zinc-copper-silver rich. The Main Billiton, South and North Diabase zones have zinc and have only been tested at shallow depths. Structural studies indicate these zones plunge to depth, which could add to the size of these deposits. In addition there are numerous other unnamed occurrences. It may be possible that two mineralized stratigraphic horizons occur. On the original 410 claim group the Main "103" or Billiton, Teck Hill and Gazooma Zones occurred (See News Release June 26, 2006). Historical near surface drill and trench results for the G, North Copper, D, Lease and Jewel Box Zones are examples of stringer style zones, and the Main and North Diabase are examples of the upper zinc rich phase.

The work by A. S. Bayne (1970) resulted in a calculation of a 1,174,810 ton resource on the Main Billiton zone grading 0.82% copper, 2.71 % zinc, 1.77 ounces silver and 0.006 oz. gold based on 58 holes which was completed prior to NI43-101. All of the exploration results disclosed herein are historic in nature and do not presently conform to National Instrument 43-101 Standards of Disclosure for Mineral Projects.

## **12. EXPLORATION**

East West Resource Corporation's exploration effort on the Marshall Lake copper-zinc-silver-gold property has consisted of drill programs conducted in December 2006, May-September 2007 and May-June 2008. These efforts were directed at the Gazooma, North Gazooma, Teck Hill, Cherry Hill areas where extensive copper mineralization exists. Exsics Exploration Ltd of Timmins Ontario carried out ground IP surveys in the fall of 2007 and winter of 2008. Subsequent to an initial test of VTEM airborne survey in early 2007 (178.9 line km), the entire property was flown in September of 2007 (1308 line km) (figs 12.2, 12.3). The airborne surveys were both conducted by Geotech Ltd. The surveys produced a large number of quality anomalies, and helped map out the geometry and extent of mineralization. In the eastern portion of the property near surface anomalies were found in two distinct geological environments; in a gabbroic intrusion in contact with iron formation with potential Co-Ni-PGE mineralization; and within the volcanic pile in proximity to sulphide facies banded iron formation south of Main and Billiton occurrences, an area likely to host zinc rich massive sulphide deposits. In addition, deep anomalies were detected beneath the Gazooma and Teck zones.

**Figure 12.1 – Gazooma Trench. Up to: 4.5% Cu, 0.2% Zn, 79 g/t Ag, and 5.49 g/t Au in Grab samples.**



Results were produced by the spring 2007 drilling program, highlighted by assays such as 2.45% copper, 47.6 g/tonne silver over 14.8 metres; and, 1.67% copper, 32g/tonne silver, 0.37g/tonne gold over 22.50 metres at the Gazooma Zone. The Gazooma Zone has now been linked by a continuous IP anomaly to the Teck Hill occurrence 600 metres to the southeast, and has led to optimism that follow-up drilling could generate both volume and grade necessary for economic feasibility.

In addition to proving this potential, new discoveries were also made. The first hole drilled at an occurrence called North Gazooma intersected 0.71% copper over 31.9 metres, and drilling a VTEM anomaly 4 km to the east, south of the Billiton occurrence, produced assays of 0.94% copper, 1.03% zinc, 49 g/tonne silver over 15 metres.

The 20 hole, 2950 metre diamond drilling program that took place during the months of May and June, 2008 was under very wet conditions, limited drilling of targets in the driest areas only. Many targets were left untested and can only be addressed in winter conditions. Five anomalies detected in gabbro in the eastern section of the property were drill tested in May 2008. Pyrrhotite sulphides were found to be the cause of the anomalies. Five anomalies in the volcanic pile were drilled, and again pyrrhotite sulphides were the cause of the anomalies, however, minor zinc sulphides and wall rock alteration minerals found in VHMS systems were noted. Therefore, continued exploration



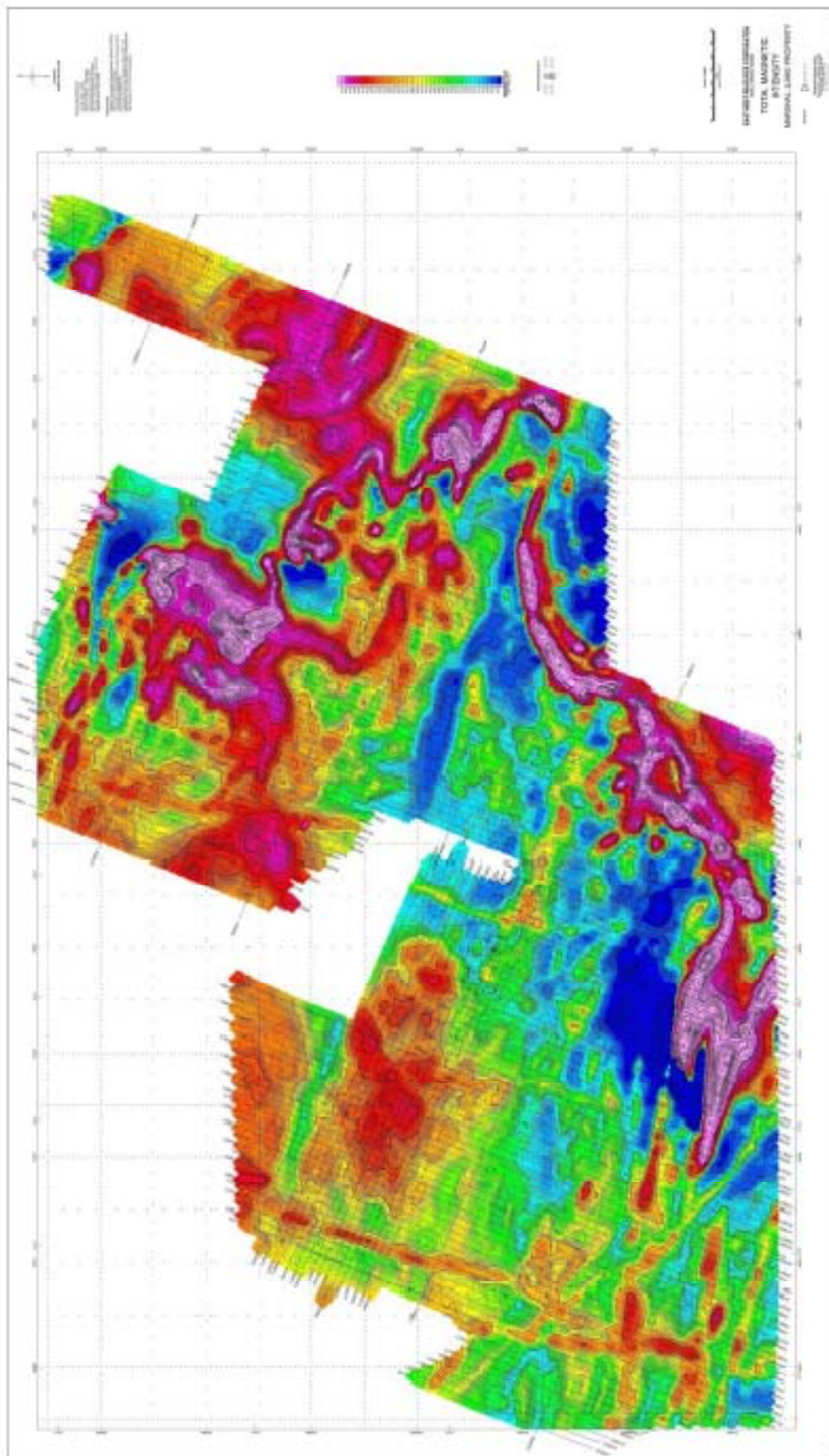
for zinc is recommended in the upper sequence of the felsic volcanics pile near some of the anomalies structurally below the iron formation.

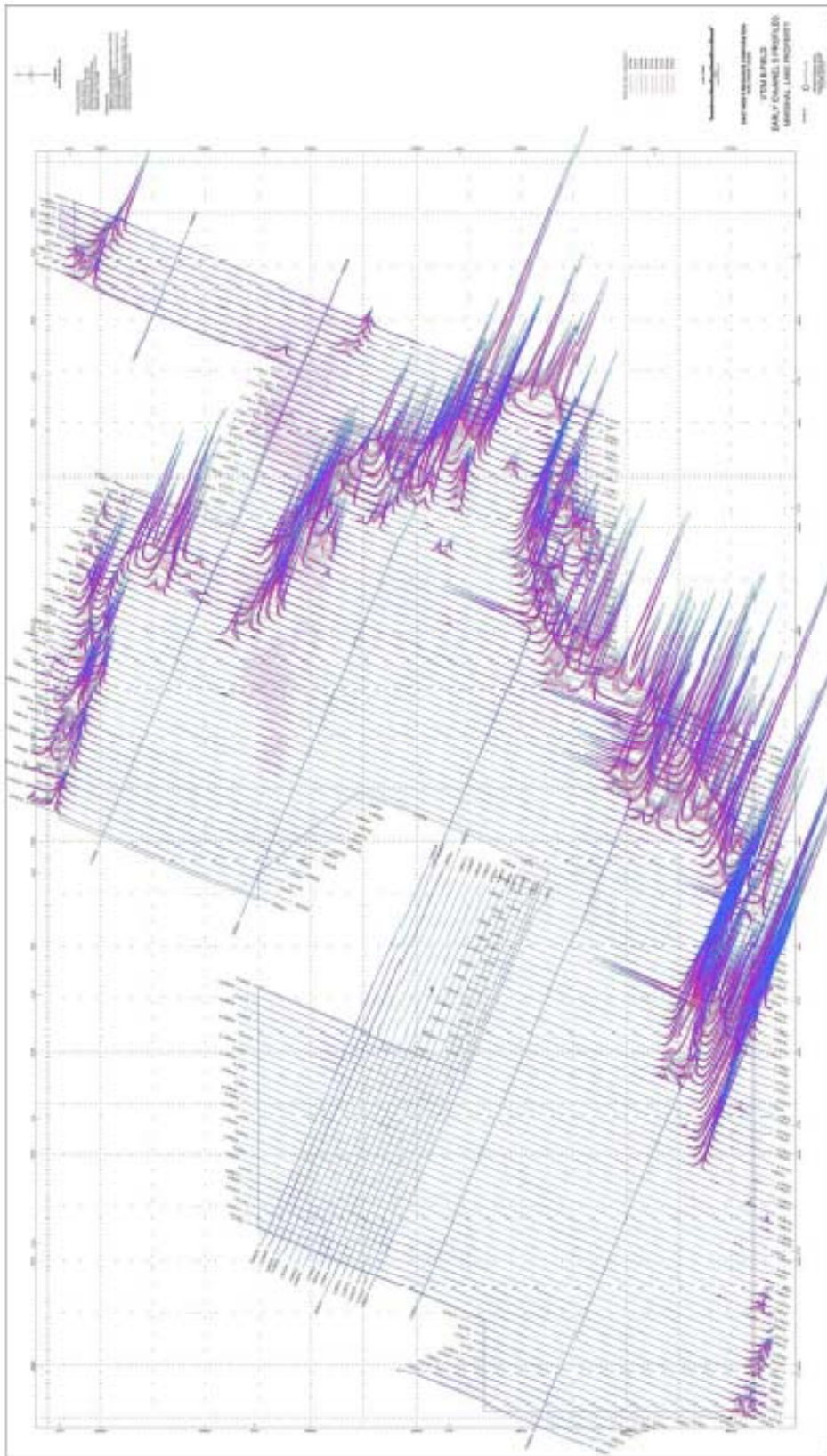
In May-June 2008, 10 drill holes were drilled to test the depth extension of the Gazooma, Teck Hill and North Gazooma areas. 3 holes on Gazooma intersected copper zones 100-150m down dip from the original trench exposure and step-out as well as in-fill holes are recommended.

Three holes drilled in section on Teck Hill, on the IP anomaly trending to Gazooma, intersected copper mineralization thereby further demonstrating continuity between Gazooma to Teck Hill. Follow-up mise-a-la-masse geophysical surveys are recommended to trace these lenses in order to design further follow-up drilling. One hole was also drilled 100 m south of the original Teck Hill discovery made in 1954 and 1m of massive chalcopyrite was intersected at 93 m in the hole followed by another 30 m of stringer and disseminated chalcopyrite. This gives over 140 m of sulphides down dip from the surface showing and confirmation of a wide spread copper zone within the felsic (rhyolite) volcanics. Three holes completed on North Gazooma as follow-up on hole GAZN-07-02 (0.71% Cu over 32m) drilled in March 2007, confirm both lateral and depth continuity of mineralization at Gazooma North to 85 metres.

A ground geophysical program, which commenced on November 2, 2007 and continued through March 18<sup>th</sup> 2008, was completed in various stages on seven different grids. In total 144 line kilometres were completed (figs 12.4, 12.5) of which 118.8 kilometres of Induced Polarization (IP) as well as 84.4 kilometres of a total field magnetic survey was conducted. The IP surveys were successful in locating and outlining all of the suspected conductive zones and defining enough of their strike lengths and directions so they could be properly drill tested. Misse a la Masse was also conducted on the Gazooma area from a surface showing in order to better understand the striking direction. The results were recorded as negatives, which may have been caused, by the strength and closeness of the zone to surface. However, the strike of the showing at line 200m south and 45m west on the Gazooma grid appears to be striking east to slightly northeast and is open to the east. The zone also appears to be dipping slightly south to near vertical. The second area of the Misse a la Masse survey coverage was from drill hole GAZ-06-02 that was collared at line 225m south and 45m west and drilled north at -60 degree angle to intersect the showing first read with Miss a la Masse. The current injection point was 22 meters down hole and lines 175m south, 200m south, 225m south, 250m south, base line 0 west, 50m west and 100m west were read at 25 meter intervals. The results were again negative numbers, which would suggest that the source is too near surface for proper results. However, the shape of the zone was outlined. The strike of the zone appears to be in a east west direction again open to the east. The zone also appears to expand in a northwest direction from the injection point.

Figure 12.2 Airborne MAG survey done for East West Resource Corporation (Geotech Ltd)



[illegible]

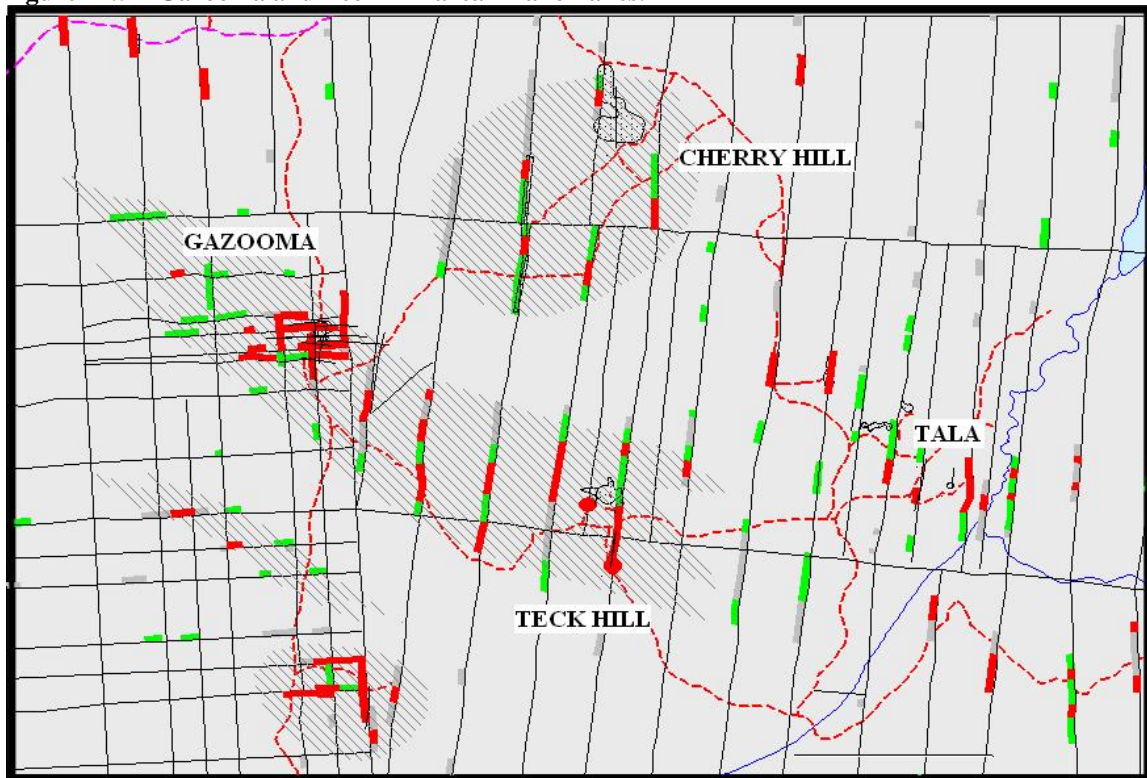


**EAST WEST RESOURCE CORPORATION 50%  
EYECONOMY HOLDINGS PLC 50%**

**GEOPHYSICAL COMPILATION**

**MARSHALL LAKE AREA  
THUNDER BAY, ONTARIO**

**Figure 12.5 – Gazooma and Teck Hill area IP anomalies.**



In total, East West Resource Corporation has excavated 31 trenches on the property; descriptions of these trenches are as follows:

***Trenches: a) Gazooma Grid***

**Cherry Hill Trench**

**Location and work done:** Cherry Hill is located off Line 3+00E/2+25N with a UTM centre of 455625E 5584103N. The trench was excavated, washed, sampled and reconnaissance mapped in 2007.

**Target:** The trench is a historical trench that was re-excavated and extended.

**Rock types:** The dominant rock type is a massively textured siliceous ash tuff felsic volcanics with minor irregular oriented 2-3cm wide selvages of chlorite throughout. Minor pods of quartz truncate the foliation.

**Structure:** Foliation fabrics are most developed in shear zones with orientation of strike varying from 125° in the middle of the trench to 153° with a dip of 72SW at the south end of the trench. In massive felsic volcanics, foliation is wavy at the south end of the trench with the development of Z crenulation patterns in areas toward the north end of the trench.

**Mineralization:** A sericitized shear zone runs to the northwest from the southeast end of the trench and contains samples JL-07-001, -004 to -007. Mineralization is in the form of disseminated to patches of fine grain pyrite sulphides and minor chalcopyrite. A few other locations toward the north end of the trench contain fine grain disseminated pyrite.

Assay results: Within the sericitized shear zone, samples JL-07-005, -006 and -007 contain 5690 ppm Cu, 0.591 ppm Au and 51.7 ppm Ag in -005; 8040 ppm Cu, 0.576 ppm Au and 26.7 ppm Ag in -006 and 4830 ppm Cu and 0.235 ppm Au in -007. Sample JL-07-006 along with mineralization contains 167 ppm As. Sample JL-07-002 at the south part of the zone contains 1850 ppm Cu along with 3050 ppm Zn. Sample JL-07-006 also contains 11.35 % Fe and 9.52 % S. Along with the 4830 ppm Cu, sample JL-007 contains 7240 ppm Zn, 917 ppm Pb and 9.52 % S. Sample JL-07-008 in another zone contains 8520 ppm Cu, 755 ppm Zn, 0.310 ppm Au and 27.5 ppm Ag. In a quartz and carbonate-rich shear zone to the north, sample JL-07-010 contains 6100 ppm Cu and 0.183 ppm Au. Whole rock sample JL-07-011 shows a really silicified rock with 80.23 wt. % SiO<sub>2</sub> and 10.36 wt. % Al<sub>2</sub>O<sub>3</sub> and probable Na-depletion at 0.19 wt. % Na<sub>2</sub>O indicative of the rocks being silica-altered and within mineralized zones. Other samples in sheared volcanics with assays are JL-07-012, -013 and -016 with 2110 ppm Cu in -012; 3740 ppm Cu and 0.139 ppm Au in -013; and 3280 ppm Cu, 0.184 ppm Au and 50.1 ppm Ag in -016. RSM-06-020 is another mineralized sample in the trench with 4.47 % Cu and 92.4 ppm Ag. The same sample was whole rock analyzed to be dacite with 60.78 wt. % SiO<sub>2</sub> and 8.72 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.05 wt. % Na<sub>2</sub>O.

Another mineralized sample in the trench, NP-07-028, taken near JL-07-001; contains 3.61 % Cu, 4810 ppm Zn, 1.31 ppm Au and 123 ppm Ag.

### Teck Trench

Location and work done: Teck is located between Lines 3+00E and 4+00E, between 4+00S and 5+00S. The UTM of the centre is 455607E 5583457N. The trench was excavated in 2006 and extended in 2007. It was washed, sampled and reconnaissance mapped in 2007.

Target: The trench is a historical trench that was reexcavated and extended.

Rock types: The dominant rock type is a garnetiferous felsic tuff volcanics that has been metamorphosed to amphibolite facies. Strings and selvages of chlorite run along foliation. At the southeast corner of the trench, the unit is a quartz-eye rhyolite tuff with 3mm quartz eyes throughout the unit. A minor 10cm wide mafic dike/chlorite selvaging cross-cuts the foliation fabric at waypoint JL-07-030.

Structure: A shear zone occurs near the north end of the trench that runs 125° along strike. A second shear further to the south is a large zone that contains the mineralization. It has a foliation of 120 to 138° strike and steep dip of 87°S. Towards the south end of the trench at waypoints JL-07-029 and JL-07-031, there's a weaker foliation fabric at 105° strike.

Mineralization: In the Teck Trench, a shear zone within garnetiferous felsic tuff volcanics contains samples JL-07-017 to JL-07-020 and the main Teck showing at samples JL-07-025 and JL-07-026 contains malachite staining and stringy to massive chalcopryrite and bornite sulphides. At the southeast end of the trench, a quartz-eye rich unit contains sulphidized quartz veins, malachite staining and fine grain chalcopryrite sulphides in samples JL-07-035 to JL-07-036.

Assay results: In a malachite-stained and chalcopryrite-mineralized gossan shear zone in the north part of the trench, sample JL-07-019 contains 1.13 % Cu. Sample JL-

07-023 to the southwest in the same alteration zone close to the occurrence, the unit is stringy chalcopyrite mineralized with 1.99 % Cu and 0.398 ppm Au. Samples JL-07-025 and -026 from the main Teck occurrence contain massive chalcopyrite-bornite sulphides with 4.04 % Cu, 0.230 ppm Au and 38 ppm Ag in JL-07-025 and 6.07 % Cu, 0.215 ppm Au and 61.4 ppm Ag in JL-07-036. Whole rock sample JL-07-028 shows the rock is rhyolite with 66.54 wt. % SiO<sub>2</sub> and 15.42 wt. % Al<sub>2</sub>O<sub>3</sub>. At the southeast end of the trench on the other side of the water, samples JL-07-032, -035a and -035b contain mineralization with 9320 ppm, 6700 ppm and 7560 ppm Cu. Sample JL-07-034 is mineralized with 5.14 % Cu, 0.549 ppm Au and 53.1 ppm Ag. Sample JL-07-036 was taken proximal to and within the zone of the Teck occurrence and contains 3.13 % Cu, 0.265 ppm Au and 61.4 ppm Ag.

Other mineralized samples in the Teck Trench are the MK-series samples from MK-06-001 to -009 which have anomalous Cu and Ag contents of 11.45 % Cu and 120 ppm Ag in MK-06-001; 7360 ppm Cu in -002; 9.8 % Cu and 96.3 ppm Ag in -003; 4.3 % Cu and 41.2 ppm Ag in -004; 6.94 % Cu and 76.3 ppm Ag in -005; 2.52 % Cu and 26.1 ppm Ag in -006; 2.75 % Cu and 26.5 ppm Ag in -007; 3.22 % Cu and 34.9 ppm Ag in -008; and 3.48 % Cu and 32.9 ppm Ag in -009. Along with anomalous Cu and Ag, samples -001, -003, -005, -008 and -009 contain 11.35 %, 9.56 %, 8.64 %, 7.51 % and 6.82 % Fe respectively. Sample RSM-06-018 is mineralized with 6.69 % Cu and 78.6 ppm Ag and sample RSM-06-024 is mineralized with 2.13 % Cu and 24.5 ppm Ag.

MK-series samples taken east of the Teck trench are found to contain anomalous Cu, Zn and Ag contents of 1425 ppm Cu, 3.57 % Zn, and 37.5 ppm Ag in MK-06-045; 1565 ppm Cu, 4.67 % Zn and 46.3 ppm Ag in -046; 6470 ppm Cu, 12.45 % Zn and 102 ppm Ag in -047; 5270 ppm Cu, 5.67 % Zn and 50 ppm Ag in -048; and 5.01 % Zn in -050. Sample -047 also contains 168 ppm anomalous Bi.

For the NF-series samples in the trench, anomalous Cu and Ag metal contents are 1905 ppm Cu in NF-06-057; 1.69 % Cu and 19.1 ppm Ag in -058; 3.75 % Cu and 35.5 ppm Ag in -059; 5.15 % Cu and 51.9 ppm Ag in -060; 1.11 % Cu in -061; 1970 ppm Cu in -062; 1880 ppm Cu in -063; 2830 ppm Cu in -064; 6610 ppm Cu and 18 ppm Ag in -065; 3500 ppm Cu in -066; 5900 ppm Cu in -067; 3510 ppm Cu in -068; and 2280 ppm Cu in -070. Sample -060 along with anomalous Cu and Ag contains 7.34 % Fe.

Whole rock analysis in the trench shows two samples are dacite with 60.54 wt. % SiO<sub>2</sub> and 6.89 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.03 wt. % Na<sub>2</sub>O for sample RSM-06-018; and 62.28 wt. % SiO<sub>2</sub> and 12.99 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.73 wt. % Na<sub>2</sub>O for sample RSM-06-023. Sample RSM-06-024 is a rhyolite with 69.75 wt. % SiO<sub>2</sub> and 9.07 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.06 wt. % Na<sub>2</sub>O. Two other whole rock samples taken east of the Teck trench are rhyolites with 68.45 wt. % SiO<sub>2</sub> and 14.04 wt. % Al<sub>2</sub>O<sub>3</sub> in sample MK-06-049; and 70.26 wt. % SiO<sub>2</sub> and 14.72 wt. % Al<sub>2</sub>O<sub>3</sub> in sample MK-06-050.





**Figure 12.6. Teck Hill Trench**

#### Line 2E Trench

**Location and work done:** The Line 2E trench is located on Line 2+00E between 1+25N and 1+50S. The UTM coordinates of the centre are 455479E 5583888N. The trench was excavated in 2006 and was washed and reconnaissance mapped in 2007.

**Target:** The trench was designed to test two IP anomalies on Line 2+00E at 1+00N and south of the baseline 0+00.

**Rock types:** The rock type in this trench is a quartz eye rhyolite tuff at the north end of the trench that is either potassic or amphibole-altered on the surface further to the south end of the trench. The unit contains 3mm quartz eyes and chlorite selvaging. South of waypoints JL-07-037 and JL-07-038, there is first amphibole alteration. The unit appears as a gabbroic-textured leucoamphibolite. There is then potassic alteration north of JL-07-040 and then amphibole alteration at that waypoint. At JL-07-042, there is amphibole alteration followed by potassic alteration 2m to south in a more lapilli tuff volcanic unit. Tuff fragments in the lapilli tuff are 2-3cm in size.

**Structure:** At the north end of the trench in the more massive quartz eye tuff rhyolite, the foliation has between 125° and 130° strike and dips 86°NE. At JL-07-039, foliation has strike of 132°. In a sheared amphibole-altered unit at JL-07-040, foliation is 118° strike and dips 72°S. At the south end of the trench in the lapilli tuff volcanics, foliation is 125° with vertical dip.

#### Lease Trench

Location and work done: Lease is located between Lines 4+00W and 5+00W, between 3+00N and 4+00N. The UTM of the centre is 454722E 5584270N. The trench was excavated in 2006 and was washed, sampled and reconnaissance mapped in 2007.

Target: The trench is a historical trench that was reexcavated and extended.

Rock types: The dominant rock type is garnetiferous felsic lapilli tuff to brecciated volcanics with 5X1cm tuff fragments at JL-07-043 to oval shaped to subangular 10X25cm fragments at JL-07-045. Garnets are found in the chloritized groundmass between the fragments and are overprinted on the fragments. At JL-07-047, the unit is a quartz eye rhyolite tuff with 1mm quartz eyes in an overall potassic altered unit. Minor irregular oriented mafic dikes cross-cut the foliation of the units with quartz veins on the sides

Structure: The dominant foliation runs 118° to 123° along strike with a dip of 78° to the SW.

Mineralization: Samples JL-07-050 and JL-07-051 in the Lease trench are rusty spot gossans with stringers of chalcopyrite and malachite staining.

Assay results: Mineralized samples JL-07-050 and -051 contain 1.35 % and 1.70 % Cu.

#### Line 4W 4+75N Trench

Location and work done: The Line 4W trench is located on Line 4+00W at 4+75N. The UTM of the centre is 454777E 5584357N. The trench was excavated, washed, sampled and reconnaissance mapped in 2007.

Target: The trench was designed to test an IP anomaly on Line 4+00W at 4+75N.

Rock types: The rock type is a quartz eye rhyolite tuff at the south end of the trench with quartz eye rhyolite tuff and lapilli tuff at the north end. Cm-wide quartz veinlets cut the quartz eye rhyolite tuff. Waypoints JL-07-053 and JL-07-054 contain potassic alteration on the quartz eye tuff volcanics. In the lapilli tuff volcanics, fragments are up to 20cm long.

Structure: The units contain an overall weak foliation between 112° strike in the foliated quartz eye tuff volcanics at the south end of the trench and 115° strike in the weakly foliated tuff volcanics near the north end of the trench.

Mineralization: A gossan in the Line 4W trench at waypoint JL-07-053 contains very fine grain disseminated pyrite.

Assay results: Sample JL-07-053 is mineralized with 8260 ppm Cu.

#### Line 3W 5N Trench

Location and work done: The Line 3W 5N trench is located on Line 3+00W with the north end at 5+25N. The UTM of the centre is 454877E 5584426N. The trench was excavated and reconnaissance mapped in 2007.

Target: The trench was designed to test an IP anomaly on Line 3+00W at 5+00N.

Rock types: Two rock types in the trench are the dominant felsic crystal tuff volcanics with a large mafic dike running through/cross-cutting the unit, and quartz veins. The volcanics are largely crystal tuffaceous on the surface (lumpy with tuff fragments). In foliated areas of the unit, there is chlorite selvaging and quartz

squirts coming up along the foliation. The mafic dike is a 2-3m wide unit that is overall chloritized on the surface and contains brecciated tuff fragments in spots. In turn, quartz veins cross-cut the mafic dike.

Structure: Structures in the trench vary from a weak foliation in the crystal tuff volcanics at the north end of the trench at 125° strike to more moderately foliated zones at 144-145° strike at waypoints JL-07-056 and JL-07-057.

#### Line 3W 3N Trench

Location and work done: The Line 3W 3N trench is located on Line 3+00W at 3+00N. The UTM of the centre is 454889E 5584208N. The trench was excavated, washed and reconnaissance mapped in 2007.

Target: The trench was designed to test an IP anomaly on Line 3+00W at 3+00N.

Rock types: The rock type is cherty-banded foliated felsic tuff volcanics with chlorite selvaging.

Structure: Foliation in the unit runs between 113° and 115° strike.

#### Tala Trench

Location and work done: Tala is located east of Line 8+00E at 4+00S. The UTM of the centre is 456061E 5583602N. The trench was excavated, washed, sampled and reconnaissance mapped in 2007.

Target: The trench was designed to test an IP anomaly on Line 8+00E at 4+00S.

Rock types: The rock type of this trench is a quartz eye felsic crystal tuff volcanic. The unit is massively textured, 1-2mm rounded quartz eye-rich with 1mm tuff fragments. The unit is also fine grain biotite-rich on the fresh surface with porphyritic garnet.

Structure: A shear zone runs through the trench from northwest to southeast with foliation at 115° strike at waypoint JL-07-062.

Mineralization: In the Tala Trench, a quartz-eye rhyolite garnetiferous unit contains fine grain to clumps of pyrite in JL-07-061 and chalcopyrite sulphides and possible tourmaline minerals associated with mineralization in JL-07-062.

Assay results: Whole rock sample JL-07-060 show the rock is rhyolite with 68.55 wt. % SiO<sub>2</sub> and 15.75 wt. % Al<sub>2</sub>O<sub>3</sub>. Sample JL-07-061 taken within a mineralized zone contains 1605 ppm Cu. Sample JL-07-062 within the same zone is anomalous with 4910 ppm Cu, 422 ppm Pb, 0.263 ppm Au, 37 ppm Ag and 210 ppm Bi.

Other mineralized samples in the Tala Trench are the MK-series samples with metal contents of 3.1 % Cu, 3760 ppm Zn and 38.7 ppm Ag in MK-06-035; 7270 ppm Cu and 12.4 ppm Ag in -036; and 1890 ppm Cu in -037. Along with anomalous Cu, Zn and Ag, samples -035 and -036 contain 10.25 % and 6.99 % Fe respectively.

#### Line 7+50E Trench

Location and work done: The Line 7+50E trench is located between 7+50E and Line 8+00E at about 3+00S. The UTM of the centre is 456015E 5583572N. The trench was excavated, washed, sampled and reconnaissance mapped in 2007.

Target: The trench was designed to test positive IP anomalies between lines 7+00E and 8+00E at 3+00S.

**Rock types:** The rock type of this trench is a garnetiferous quartz eye felsic tuff volcanic. At JL-07-066 and JL-07-067, 1-2cm wide chlorite selvaging cross-cut the unit or run along the foliation. At JL-07-067, a 30cm wide quartz veins cross-cuts the foliation.

**Structure:** A large shear zone runs from the east to west end of the trench. Foliation is mainly between 120° and 129° strike and dipping 84°S. At JL-07-071 in a large mineralized zone, foliation is at 110° strike and dipping 82°S.

**Mineralization:** In the Line 7+50E Trench a large pyrite shear zone runs from sample JL-07-063 at the east end of the trench to JL-07-072 at the west end of the trench. Samples JL-07-063 to -065 and JL-07-068 contain fine to medium grained, blebs of pyrite sulphides. At sample JL-07-067, 30cm wide quartz crosscuts the unit non-parallel to the foliation. Sample JL-07-069 is a large limonite gossan with massive fine grain pyrite sulphides. Samples JL-07-070 to -072 contain semi-massive strings of fine grain pyrite sulphides, specular hematite and/or sphalerite.

**Assay results:** A large pyrite shear zone begins at the east end of the trench at sample JL-07-063 which contains 2900 ppm Cu, 5710 ppm Zn, 1680 ppm Pb and 549 ppm Mo. Sample JL-07-065 taken within the zone is also mineralized with 1205 ppm Cu. At the west end of the trench in the massive pyrite mineralized limonite gossan, sample JL-07-069 contains 265 ppm As. Samples JL-07-070 to -072 were taken where there is visible sphalerite in JL-071a. Samples JL-07-070, -071a and -071b contain 5930 ppm Zn, 3390 ppm Pb, 0.262 ppm Au and 31.1 ppm Ag for -070; 4220 ppm Zn, 1385 ppm Pb, 437 ppm Mo for -071a; and 4450 ppm Pb, 1595 ppm Mo, 0.143 ppm Au, 31.6 ppm Ag and 379 ppm As for -071b. Sample JL-07-072 is mineralized with 1.03 % Zn, 2480 ppm Pb, 933 Mo, 0.110 ppm Au, 23.4 ppm Ag and 189 ppm As.

Other mineralized samples in the trench from the RSM-series show anomalous As, Mo and Pb contents of 297 ppm As, 38 ppm Mo and 516 ppm Pb in RSM-06-025b; and 452 ppm As, 644 ppm Mo, and 1125 ppm Pb in -025c.

Whole rock analysis on three samples shows the rocks are rhyolites with 77 wt. % SiO<sub>2</sub> and 13.38 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.59 wt. % Na<sub>2</sub>O in sample RSM-06-025a; 74.17 wt. % SiO<sub>2</sub> and 4.83 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.47 wt. % Na<sub>2</sub>O in sample -025b; and 70.9 wt. % SiO<sub>2</sub> and 6.24 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.93 wt. % Na<sub>2</sub>O in sample -025c.

### Line 6E Trench

**Location and work done:** The Line 6E trench is located on Line 6+00E south of 2+00S. The UTM of the centre is 455862E 5583666N. The trench was excavated, washed and reconnaissance mapped in 2007.

**Target:** The trench was designed to test an IP anomaly on Line 6+00E at 2+00S.

**Rock types:** The rock type of this trench is felsic tuff volcanics that has chlorite-spotted alteration at the south end of the trench and potassic surface alteration with 3-4cm wide chlorite selvaging along foliation at waypoints JL-07-075 and JL-07-076. 5m north of JL-07-074, there is cross-hatching surface texture of felsic veinletting in the unit.

**Structure:** A weak foliation fabric with elongation of chlorite grains occurs with between 124° and 130° strike and dipping at 73°SW.

#### Line 7E Trench

Location and work done: The Line 7E trench is located on Line 7+00E between 2+00S and 2+50S. The UTM of the centre is 455941E 5583656N. The trench was excavated, washed, sampled and reconnaissance mapped in 2007.

Target: The trench was designed to test an IP anomaly on Line 7+00E at 2+00S.

Rock types: The rock type of this trench is a quartz eye felsic tuff volcanic. In the north part of the trench, the unit is potassic altered on the surface and contains 2-3cm wide streamlines of chlorite along the foliation. In the south part of the trench in the large mineralized shear zone, the unit is red-orange sulphidized with 1mm rounded quartz eyes in the unit.

Structure: In the north part of the trench, foliation runs between 139° and 140° strike and dips 81°NE. A large pyrite-chalcopyrite shear zone occurs in the south part of the trench with foliation at 132° strike and dipping 75°SW.

Mineralization: In the Line 7E Trench, samples JL-07-077 to -079 are red gossans in potassic-altered volcanics at the north end of the trench with fine grain pyrite and minor streamers of chalcopyrite. From JL-07-081 to JL-07-085, there's a large orange-altered shear zone. Samples JL-07-081 and -082 contain fine grain pyrite and streamers of chalcopyrite. Samples JL-07-084 and -085 contain dust to spots of chalcopyrite. Sample JL-07-087 is an example of the orange surface alteration in the shear zone. Sample JL-07-088 is a red gossan sample in quartz eye rhyolite with disseminated fine grain chalcopyrite sulphides throughout.

Assay results: A large mineralized chalcopyrite and pyrite shear zone occurs in the south part of the trench beginning with samples JL-07-081 and -082 which contain 1165 ppm Cu and 1955 ppm Zn in -081; and 2990 ppm Cu and 839 ppm Zn in -082. Sample JL-07-083 contains very fine grain sulphides with 1740 ppm Zn. Near the north edge of the red gossan fine grain chalcopyrite mineralized zone, sample JL-07-088 contains 6690 ppm Cu, 0.163 ppm Au and 14.9 ppm Ag. Another mineralized sample in the trench, NP-07-026, contains 3450 ppm Cu.

#### Line 5W Trench

Location and work done: The Line 5W trench is located on Line 5+00W between 4+00N and 5+00N. The UTM of the centre is 454682E 5584330N. The trench was excavated and partially washed in 2007.

Target: The trench was designed to test an IP anomaly on Line 5+00W at 4+00N.

#### Line 4W 3+75N Trench

Location and work done: The Line 4W 3+75N trench is located on Line 4+00W at 3+75N. The UTM of the centre is 454782E 5584267N. The trench was excavated and washed in 2007.

Target: The trench was designed to test an IP anomaly on Line 4+00W at 3+50N.

Rock types: The trench contains mafic dike material.

### Jewel Box Trench

Location and work done: The Jewel Box is located on Line 5+00W at 7+00N. The UTM of the centre is 454644E 5584618N. The trench was excavated, washed and sampled in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Mineralization: The trench contains a historical Cu showing.

Assay results: Mineralized samples are the MK-series samples from MK-06-058 to -070.

The samples have highly anomalous Cu and Ag contents of 1.87 % Cu and 14.8 ppm Ag in -058; 11.9 % Cu and 40.8 ppm Ag in -060; 5000 ppm Cu in -061; 4560 ppm Cu in -062; 6.72 % Cu and 24.2 ppm Ag in -063; 4.89 % Cu and 20.6 ppm Ag in -064; 6530 ppm Cu in -066; 2.87 % Cu and 12.1 ppm Ag in -067; 2.34 % Cu in -068; 2.14 % Cu and 11.2 ppm Ag in -069; and 1.93 % Cu in -070. Samples -060 and -063 also contain anomalous Fe % along with Cu and Ag with values of 13.45 % Fe in -060 and 9.74 % Fe in -063.

### Gazooma Trench

Location and work done: The Gazooma is located between Lines 1+00W and Line 0+00 at 2+00S. The UTM of the centre is 455175E 5583730N. The trench was excavated, washed, sampled and reconnaissance mapped in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Assay results: Mineralized samples are the MK-series samples from MK-06-010 to -011, -024, and -038 to -043. The samples have anomalous Cu, Zn and Ag contents of 4970 ppm Cu in -010; 4.48 % Cu, 2010 ppm Zn and 78.7 ppm Ag in -011; 6.44 % Cu, 1790 ppm Zn and 99.6 ppm Ag in -024; 5.46 % Cu, 2890 ppm Zn and 93.5 ppm Ag in -038; 9370 ppm Cu and 18.4 ppm Ag in -039; 8.74 % Cu, 3020 ppm Zn and 145 ppm Ag in -040; 4.28 % Cu, 8730 ppm Zn and 74.5 ppm Ag in -041; 9.1 % Cu, 4930 ppm Zn and 146 ppm Ag in -042; and 6.28 % Cu, 7510 ppm Zn and 88.6 ppm Ag in -043. Percentage of Fe in the samples are 6.38 % in -011; 8.13 % in -024; 8.67 % in -038; 12.45 % in -040; 9.08 % in -041; 14.5 % in -042; and 9.67 % in -043.

Other mineralized sample from the RSM-series are samples RSM-06-016 to -017 and -019. The samples have anomalous Cu, Zn and Ag contents of 7.26 % Cu, 6480 ppm Zn and 149 ppm Ag in -017; 1.81 % Cu, 1015 ppm Ag and 36.4 ppm Ag in -018; and 4.95 % Cu, 2870 ppm Zn and 96.6 ppm Ag in -019. Anomalous Fe contents are 9.68 %, 4.62 % and 7.66 % Fe in the samples.

Two whole rock samples show the rocks are both dacite at 55.12 wt. % SiO<sub>2</sub> and 6.95 wt. % Al<sub>2</sub>O<sub>3</sub> with Na-depletion at 0.03 wt. % Na<sub>2</sub>O in sample RSM-06-16; and rhyolite at 69.22 wt. % SiO<sub>2</sub> and 10.32 wt. % Al<sub>2</sub>O<sub>3</sub> with Na-depletion at 0.45 wt. % Na<sub>2</sub>O in sample RSM-06-17. Another whole rock sample MK-06-013 taken north of the Gazooma trench is rhyolite with 65.32 wt. % SiO<sub>2</sub> and 11.32 wt. % Al<sub>2</sub>O<sub>3</sub> and Na-depletion at 0.54 wt. % Na<sub>2</sub>O.

### G Zone Trench

Location and work done: The G Zone is located on Line 8+00E between 5+00N and 6+00N. The UTM of the centre is 456103E 5584445N. The trench was excavated and sampled in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Assay results: Mineralized samples are the MK-series samples from MK-06-075 to -084.

The samples have high anomalous Cu, Zn and Ag contents of 20.8 % Cu, 1.84 % Zn and 619 ppm Ag in -075; 8.29 % Cu, 2820 ppm Zn and 459 ppm Ag in -076; 1.11 % Cu, 842 ppm Zn and 38.5 ppm Ag in -077; 4.5 % Cu, 1080 ppm Zn and 192 ppm Ag in -078; 10.9 % Cu, 5400 ppm Zn and 303 ppm Ag in -079; 16.25 % Cu, 8210 ppm Zn and 420 ppm Ag in -080; 12.7 % Cu, 1.26 % Zn and 408 ppm Ag in -081; 4.18 % Cu, 2170 ppm Zn and 134 ppm Ag in -082; 15.8 % Cu, 1.26 % Zn and 418 ppm Ag in -083; and 18.85 % Cu, 1.77 % Zn and 495 ppm Ag in -084. Highly anomalous Fe contents associated with the high base metals are 24.5 %, 19.3 %, 4.39 %, 14.5 %, 18.2 %, 21.2 %, 14.6 %, 7.84 %, 21.5 % and 22.9 % Fe from samples -075 to -084. Bi is highly anomalous in the trench with contents of 1680 ppm, 995 ppm, 163 ppm, 358 ppm, 654 ppm, 345 ppm and 305 ppm in samples -075, -076, -079, -080, -081, -083 and -084.

Other MK-series mineralized samples are from MK-06-085 to MK-06-090. The samples have high anomalous Cu, Zn, Ag and Au contents of 2.63 % Cu, 1550 ppm Zn, 68.4 ppm Ag and 1.255 ppm Au in -085; 2.06 % Cu, 1180 ppm Zn, 62 ppm Ag and 1.025 ppm Au in -086; 11.85 % Cu, 9660 ppm Zn, 324 ppm Ag and 0.625 ppm Au in -087; 1.6 % Cu, 1320 ppm Zn, 44.5 ppm Ag and 0.536 ppm Au in -088; 3.22 % Cu, 1670 ppm Zn, 126 ppm Ag and 0.704 ppm Au in -089; and 3.07 % Cu, 1070 ppm Zn, 99 ppm Ag and 0.588 ppm Au in -090. Anomalous Fe contents associated with the base metals are 5.1 %, 6.19 %, 14.85 %, 6.39 %, 7.89 % and 7.46 % Fe from samples -085 to -090. Highly anomalous Bi is also found with contents of 753 ppm and 233 ppm in samples -087 and -090 respectively.

Other mineralized samples from the trench are the CL-series samples from CL-06-007 to -015 with Cu, Zn and Ag contents of 1.52 % Cu and 46.2 ppm Ag in -007; 3.6 % Cu and 94.5 ppm Ag in -008; 1.41 % Cu and 33.3 ppm Ag in -009; 1.17 % Cu and 81.9 ppm Ag in -010; 9460 ppm Cu and 32.4 ppm Ag in -011; 4.44 % Cu and 107 ppm Ag in -012; 9.39 % Cu and 247 ppm Ag in -013 and 5290 ppm Cu in -015. Anomalous Fe contents are 6.25 %, 8.54 %, 7.49 %, 10.25 %, 8.16 %, 7.86 % and 11.9 % from samples -007 to -013. Sample -008 also contains anomalous Bi at 137 ppm.

#### Line 9E or Enzo Trench

Location and work done: The Line 9E or Enzo trench is located to the west of Line 9E at 4+00S. The UTM of the centre is 456127E 5583472N. The trench was excavated and sampled in 2006.

Target: The trench was designed to test an IP anomaly on Line 9+00E at 4+00S.

Assay results: Mineralized samples are the MK-series samples MK-06-096 and from -098 to -101. The samples have high anomalous Cu, Zn, Ag and Au contents of 16.5 % Cu, 3160 ppm Zn, 381 ppm Ag and 4.12 ppm Au in -096; 8.72 % Cu, 2470 ppm Zn, 229 ppm Ag and 15.35 ppm Au in -098; 18 % Cu, 4560 ppm Zn, 408 ppm Ag and 5.19 ppm Au in -099; 5110 ppm Cu, 86.3 ppm Ag and 1.055 ppm Au in -100; and 4.18 % Cu, 1260 ppm Zn, 173 ppm Ag and 3.21 ppm Au in



-101. The sample have high Fe contents of 20.3 %, 11.85 %, 20.7 %, 24 %, 15.8 % and 10.35 % from -096 to -101.

#### Lin Zn Trench

Location and work done: The Lin Zn is located between Lines 12+00E and 13+00E at 6+00S. The UTM of the centre is 456474E 5583183N. The trench was excavated and sampled in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Assay results:

#### Line 13E Baseline Trench

Location and work done: The Line 13E Baseline trench is located on Line 13+00E and north of the baseline 0+00. The UTM of the centre is 456575E 5583910N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 13+00E at baseline 0+00.

Assay results:

#### Line 13E 2S Trench

Location and work done: The Line 13E 2S trench is located on Line 13+00E at 2+00S. The UTM of the centre is 456555E 5583674N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 13+00E at 2+00S.

Rock types: The rock type of this trench is siliceous felsic volcanics.

Mineralization: Sample NP-07-033 contains disseminated to coarse grained ~7 % pyrite.

Assay results: No anomalous metal contents.

#### Line 13+50E 2+50S Trench

Location and work done: The Line 13+50E 2+50S trench is located on Line 13+50E at 2+50S. The UTM of the centre is 456594E 5583635N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 13+50E at 2+50S.

Rock types: The rock type of this trench is siliceous altered or cherty felsic volcanics.

Mineralization: Sample NP-07-032 contains elevated disseminated to stringer ~10% pyrite.

Assay results: No anomalous metal contents.

#### Line 14E Baseline Trench

Location and work done: The Line 14E Baseline trench is located on Line 14+00E and north of the baseline 0+00. The UTM of the centre is 456676E 5583887N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 14+00E at baseline 0+00.

Rock types: The rock type of this trench is a unaltered to silicified felsic volcanics with blue quartz eyes.

Mineralization: Sample NP-07-030 contains ~2 % disseminated pyrite and NP-07-031 contains 4-5 % disseminated to coarse grained blebs of pyrite.

Assay results: No anomalous metal contents.

#### Line 15E Baseline Trench

Location and work done: The Line 15E Baseline trench is located on Line 15+00E and south of the baseline 0+00. The UTM of the centre is 456764E 5583792N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 15+00E at baseline 0+00.

Rock types: The rock type of this trench is a siliceous altered or cherty felsic volcanic.

Mineralization: Sample NP-07-034 contains elevated disseminated to stringer py ~10%.

Assay results: Sample NP-07-034, is mineralized with 4890 ppm Cu and 0.057 ppm Au.

#### Line 26+50E Trench

Location and work done: The Line 26+50E trench is located between Lines 26+00E and 27+00E at 6+00S. The UTM of the centre is 457782E 5583054N. The trench was excavated in 2006.

Target: The trench was followed up from mapping and prospecting.

#### ***Trenches: b) Main Showing Grid***

#### D Zone Trench

Location and work done: The D Zone is located between Lines 8+00W and 9+00W at 4+50S. The UTM of the centre is 456560E 5585843N. The trench was excavated and sampled in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Assay results: Mineralized samples are the CL-series samples from CL-06-017 to -023. The samples have anomalous Cu and highly anomalous Zn and Pb with anomalous Ag contents of 1950 ppm Cu, 8390 ppm Zn, 8180 ppm Pb and 10.6 ppm Ag in -017; 5430 ppm Cu, 14.75 % Zn, 7.03 % Pb and 68.5 ppm Ag in -018; 1110 ppm Cu, 2.89 % Zn, 2.85 % Pb and 26.3 ppm Ag in -019; 1.99 % Cu, 6.6 % Zn, 1.54 % Pb and 39.2 ppm Ag in -020; 1820 ppm Cu, 3590 ppm Zn and 2330 ppm Pb in -021; 4890 ppm Cu, 6180 ppm Zn, 4210 ppm Pb and 13.7 ppm Ag in -022; and 1010 ppm Cu and 16.15 % Zn in -023. Samples -018, -020 and -023 have anomalous Fe contents of 5.53 %, 10.1 % and 6.56 % respectively.

#### Line 4W Trench

Location and work done: The Line 4W trench is located on Line 4+00W at 17+00S. The UTM of the centre is 456996E 5584603N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 4+00W at 17+00S.

Rock types: The trench contains a couple of metre-wide zones of intense silicified-sericite alteration with mineralization.

Mineralization: Sample NP-07-036 contains disseminated to stringer ~ 10-15 % pyrite.

Assay results: No anomalous metal contents.

### Line 3W Trench

Location and work done: The Line 3W trench is located on Line 3+00W at 20+50S. The UTM of the centre is 457120E 5584262N. The trench was excavated and sampled in 2007.

Target: The trench was designed to test an IP anomaly on Line 3+00W at 20+50S.

Rock types: The trench contains strong chlorite-altered felsic volcanics.

Mineralization: Sample NP-07-037 contains ~10 % pyrite aggregates.

Assay results: No anomalous metal contents.

### North Cu Zone Trench

Location and work done: The North Cu Zone is located between Lines 6+00E and 7+00E at 2+50N. The UTM of the centre is 458048E 5586546N. The trench was excavated in 2007.

Target: The trench is a historical trench that was reexcavated and extended.

Mineralization: The trench is an expanded historical trench.

### Main Zone Trench

Location and work done: The Main Zone is located between Lines 8+00E and 9+00E at 6+25S. The UTM of the centre is 458271E 5585731N. The trench was excavated, washed and sampled in 2006.

Target: The trench is a historical trench that was reexcavated and extended.

Mineralization: The trench is an expanded historical trench.

Assay results: Mineralized samples are the RSM-series samples from RSM-06-011 to -015. The samples have anomalous Cu, Pb and Ag contents and highly anomalous Zn contents of 5450 ppm Cu, 515 ppm Zn and 56.6 ppm Ag in -011; 8890 ppm Cu and 58.5 ppm Ag in -012; 2.71 % Cu, 18.05 % Zn, 7730 ppm Pb and 276 ppm Ag in -013; 2.05 % Cu, 10.2 % Zn, 2470 ppm Pb and 168 ppm Ag in -014; and 6420 ppm Cu, 2630 ppm Zn and 29.4 ppm Ag in -015. Samples -013 and -014 also have anomalous Bi at 552 ppm in -013 and 262 ppm in -014. Anomalous Fe contents in the samples are 10.75 %, 8.89 %, 13 % and 9.78 % from samples -011 to -014.



**Figure 12.7. Main Billiton Zone Trench**

North Diabase Trench

Location and work done: The North Diabase is located on Line 11+00E at Baseline 0+00. The UTM of the centre is 458526E 5586283N. The trench was excavated in 2007.

Target: The trench is a historical trench that was reexcavated and extended.

Mineralization: The trench is an expanded historical trench.

### **13. DRILLING**

#### **MAR-06-01**

This hole was drilled at an azimuth of 150° plunging at -45° with a total depth of 60.0m. This drill hole intersected a number of geological units such as; dark altered rhyodacite ash ± crystal, lapilli tuff, white altered cherty tuff/semi massive sulphides, light rhyodacite ash ± crystal tuff, grey-green rhyodacite ash and crystal tuff and dark altered rhyodacite ash + lapilli tuff. A total of 27 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 24 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-ICP41). Mineralization consisted of pyrite, chalcopyrite and sphalerite and ranged from trace to 10-15%. This drill hole reported copper assays that ranged from 12 ppm to 12100 ppm and zinc assays that ranged from 84 ppm to 180000 ppm (or 18% zinc). Silver assays ranged from 0.2 g/tonne to 195.0 g/tonne and gold assays ranged from 0.01 g/tonne to 0.65 g/tonne. This drill hole also included a 3.10 metre interval from a depth of 21.00m to 24.10m, with a weighted average of 0.59% copper, 6.71% zinc, 99.5 g/tonne silver and 0.15 g/tonne gold.

#### **MAR-06-02**

This hole was drilled at an azimuth of 150° plunging at -60° with a total depth of 81.0m. This drill hole was drilled underneath drill hole MAR-06-01 and intersected sericite, grey felsic tuff, white fragmental tuff, and grey-brown contorted unit with green chlorite zones. A total of 22 samples were sent in for geochemical analysis, 1 sample was analyzed for whole rock (XRF06 and MS-ICP81) and 21 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-IPC41). Mineralization consisted of pyrite and chalcopyrite. This drill hole reported a 20.00 metre zone from a depth of 25.00m to 45.00m, with a weighted average of 1242 ppm copper, 1257 ppm zinc, 13 g/tonne silver and 0.04 g/tonne gold. Within this 20.00 meter zone included an 11.00 meter zone from a depth of 27.00m to 38.00m, with a weighted average of 2198 ppm copper, 2069 ppm zinc, 23 g/tonne silver and 0.06 g/tonne gold.

#### **MAR-06-03**

This hole was drilled at an azimuth of 140° plunging at -45° with a total depth of 72.0m. This drill hole intersected dark ash tuff, a vein/fault zone, light lapilli tuff (dark ash tuff interbeds), medium-brown well-bedded ash tuff, dark massive ash tuff and mottled massive ash-crystal tuff. A total of 51 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 48 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-ICP41). Mineralization consisted of pyrite, sphalerite and chalcopyrite. This drill hole reported a 10.05 meter zone from a depth of 36.80m to 46.85m, with a weighted average of 1.25% copper, 1.10% zinc, 56.1 g/tonne silver and 0.16 g/tonne gold.





**Figure 13.2. Up to: 1.25% Cu, 1.1% Zn 56 g/t Ag and 0.16 g/t Au over 10.05m in drilling (MAR-06-03)**

#### MAR-06-04

This hole was drilled at an azimuth of 140° plunging at -60° with a total depth of 111.0m. This drill hole was drilled underneath drill hole MAR-06-03 and intersected dark rhyodacite ash + crystal tuff, light rhyodacite ash + lapilli tuff, black rhyodacite ash tuff “reverse zebra”, light Rhyodacite ash + lapilli tuff/semi massive sulphides, medium grey green rhyodacite ash tuff, black rhyodacite ash + crystal tuff and mottled ash tuff. A total of 25 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 22 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-ICP41). Mineralization consisted of pyrite, sphalerite and chalcopyrite. This drill hole reported assays that ranged from 0.01% to 4.00% copper, 0.01% to 8.05% zinc, 0.5 g/tonne to 375.0 g/tonne silver and 0.005 g/tonne to 1.41 g/tonne gold. The best assays occurred at a depth of 44.20m to 45.45m.

#### MAR-06-05

This hole was drilled at an azimuth of 160° plunging at -45° with a total depth of 51.0m. This drill hole intersected grey intermediate-felsic fragmental, felsic volcanics, banded tuff sericite, white siliceous rhyolite, massive sphalerite and pyrite, banded felsic volcanics and a spotted fragmental. A total of 14 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 12 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-ICP41). Mineralization consisted of pyrite and chalcopyrite with a zone of massive sphalerite and pyrite from 32.20m to 38.80m. This drill hole reported a 9.71 meter zone from a depth of

28.00m to 37.70m, with a weighted average of 1.19% copper, 3.22% zinc, 79.5 g/tonne silver and 0.20 g/tonne gold.

#### MAR-06-06

This hole was drilled at an azimuth of 160° plunging at -60° with a total depth of 81.0m. This drill hole was drilled underneath drill hole MAR-06-05 and intersected dark massive rhyodacite ash tuff, grey bedded rhyodacite ash-crystal-lapilli tuff, quartz veins, dark altered rhyodacite ash-lapilli tuff, semi-massive and disseminated sulphides and green-grey rhyodacite ash + crystal tuff. A total of 24 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 22 samples were analyzed for gold (Au-AA23) and copper, zinc and silver (MS-ICP41). Mineralization consisted of pyrite, sphalerite and chalcopyrite. This drill hole reported a 2.55 meter zone from a depth of 44.45m to 47.00m, with a weighted average of 0.44% copper, 7.15% zinc, 35 g/tonne silver and 0.79 g/tonne gold.

#### MAR-06-07

The hole first intersected light altered rhyodacite ash and lapilli tuff from 4.2 to 26.2 m with little biotite-quartz alteration, common andalusite and andalusite stringers. Mineralization consists of disseminated pyrite throughout at 1 %, and pyrite-sphalerite (+ chalcopyrite) making the overall sulphide content 1-5 %. From 26.2 to 40.3 m, the hole intersects dark altered rhyodacite ash and lapilli tuff with strong to moderate biotite alteration, garnet and andalusite. Overall sulphide content is 0.5-1 %. From 40.3 to 62.8 m, light rhyolite ash-crystal-lapilli tuff was intersected with moderate sericite alteration and garnets. Trace to 0.5 % disseminated pyrite with a few bands of 15 % pyrite. From 62.8 to 64.3 m, a hornfels was intersected next to a diabase unit intersected from 64.3 to the end of hole at 99 m. A total of 27 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 25 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported an intercept of 2070 ppm copper and 2790 ppm zinc at 5 m, an intercept of 2920 ppm zinc at 12 m and a zone of average 3034 ppm zinc over 5.2 m from 23 to 28.2 m.

#### MAR-06-08

The hole intersected a banded or layered felsic tuff from 1.8 to 29.5 m that is very sericitic and contains interlayers of biotite-chlorite with 1-2 % pyrite throughout. After this unit, the hole intersected intermediate volcanics; grey volcanics with garnet; a shear zone; white rhyolite that is sericitized and contains pyrite, pyrrhotite and sphalerite at certain intervals including a pyrite-sphalerite zone from 59.9 to 60.1 m with 50-70 % sulphides; grey crystal tuff; a grey sericitic zone in volcanics; massive grey porphyry or crystal tuff; grey massive felsic volcanic with silicified albite alteration; and the chill margin of a diabase dike to the end of hole at 87 m. A total of 27 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 21 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported an intercept of 6280 ppm zinc at 44.4 m, an intercept of



3200 ppm zinc at 49 m; an intercept of 4520 ppm copper and 6130 ppm zinc at 57.4 m and an intercept of 5000 ppm copper and 2.85 % zinc at 59.8 m.

#### MAR-06-09

The hole first intersected banded rhyodacite ash to lapilli tuff with 1-3 mm beds to blocks 0.5 m in size, banding of intense sericitic and biotite alteration with scattered garnet and mineralization of stringer or disseminated pyrite throughout and 1-10 % sphalerite  $\pm$  chalcopyrite. From 55.8 to 79.8 m, a light rhyodacite ash and lapilli tuff was intersected with intense sericitic alteration, local biotite stringers, rare garnet and with 0.5-1 % sulphide mineralization in the upper 12 m. From 79.8 to 89.8 m, a zone of silicification and semi-massive sulphide mineralization was intersected with up to 30 % chalcopyrite and/or sphalerite and 10-20 % pyrite. From 89.8 to 129.7 m, medium rhyodacite ash was intersected with sericite alteration, garnets and occasional cordierite; and mineralization of heavily disseminated 5-15 % pyrite and pyrrhotite. From 129.7 to the end of hole at 147 m, there is dark rhyodacitic ash tuff with peppery biotite and feldspar and trace disseminated pyrite mineralization throughout. A total of 93 samples were sent in for geochemical analysis, 4 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 89 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). Anomalous copper and zinc contents were reported with an intercept of 7580 ppm zinc at 9 m, a zone of average 1745 ppm zinc over 6 m from 15 to 31 m, a zone of average 4506 ppm copper and 2.05 % zinc over 9 m from 80 to 89 m including an intercept of 6.17 % zinc at 84 m, and an intercept of 5940 ppm zinc at 105.35 m.

#### MAR-06-10

The hole intersected a felsic tuff with 1-3 % pyrite-chalcopyrite from 1.4 to 3.5 m; followed by grey intermediate volcanics with sericite; a coarse pyrite zone at 6 m and siliceous up to 8.9 m; a siliceous zone with fine grained pyrite from 21.5 to 25.2 m grey felsic volcanics with sericite; a footwall alteration zone from 42.1 to 76 m with pyrite mineralization, quartz veining and sericite; siliceous volcanic at 76 m; siliceous exhalite with sericite and fine grained pyrite at 81.15 m; alternating sericite and volcanics with 8 % pyrite at 94.3 m; grey massive volcanics; rhyolite, sericite tuff; fine grained pyrite in a silicified zone at 141.4 m; rhyolite, sericitization and ending with rhyolite tuff at 162 m. A total of 87 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 84 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous intercepts of 4510 ppm zinc at 7 m, 5350 ppm zinc at 53 m, 3.61 % zinc at 74.5 m; a zone of average 2955 ppm copper, average 3.03 % zinc, average 35.08 g/t silver and average 0.5626 g/t gold over 2.4 m from 83.1 to 85.5 m; an intercept of 1.25 % zinc at 88 m; an intercept of 1.13 % zinc at 100 m; an intercept of 9960 ppm zinc at 142 m; and an intercept of 1.12 % zinc at 161.4 m.

#### MAR-07-11

The hole intersected a felsic fragmental unit, a chlorite alteration zone highly deformed with garnets, a grey massive felsic unit, chlorite zone from 44.5 to 47.45 m with 25 % sulphides of pyrite, chalcopyrite, and sphalerite; fine bedded ash tuff; pyrite and sphalerite with minor chalcopyrite at 61.4 m; massive volcanics; altered felsic tuff; fine galena bands on a schist at 70 m; grey felsic volcanics; magnetite crystals in unit; and a chlorite-sulphide stringer zone with chalcopyrite after 108 m to the end of hole at 140 m. A total of 78 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 75 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported a zone of average 3450 ppm copper, average 1.63 % zinc, average 26.96 g/t silver and average 0.085 ppm gold over 1.4 m from 44 to 47.6 m; an intercept of 2110 ppm copper and 2.12 % zinc at 61 m; and a zone of average 6515 ppm copper, average 6620 ppm zinc and average 35 g/t silver over 25.61 m from 108.2 to 138.1 m including a subzone of average 1.93 % copper, average 1.73 % zinc, average 86.18 g/t silver and average 0.065 g/t gold over 4 m from 124 to 128 m.

#### GAZ-06-01

This drill hole intersected rhyolitic to rhyodacitic tuffs to lapilli tuffs with ghosted fragments up to 10cm in size. The units have pervasive biotite-cordierite (1-2%). Reddish pink garnets (0-10%). The units are cut by thin wispy veins of white coarse sericite as well as 1-2cm anastomosing quartz-chlorite veins. The unit becomes more cherty in localized areas (5.40-32.5m). Mineralization in the hole consists of chalcopyrite (trace to 10%), trace to 0.5% pyrite and trace sphalerite. A total of 33 samples were sent in for geochemical analysis. Two samples were analyzed for whole rock (XRF06 and MS-ICP81) and 31 samples were analyzed for gold (Au-AA23) and copper (Cu-AA46), zinc and silver (MS-ICP41). The drill hole assays reported copper values ranging from 32 ppm to 38000 ppm (3.8%) copper, 60 ppm to 7250 ppm zinc, <1 ppm to 71.7 ppm silver, and 0.005 ppm to 0.581 ppm gold. This drill hole had intervals of 1.18% copper, 0.68 oz/ton silver and 0.18 g/tonne gold over 27.92m, including 1.77% copper, 1.00 oz/ton silver and 0.25 g/tonne gold over 7.00m. 1.94% copper, 1.07 oz/ton silver and 0.32 g/tonne gold over 4.10m. 1.27% copper, 0.73 oz/ton silver and 0.18 g/tonne gold over 10.42m. 1.27% copper, 0.73 oz/ton silver and 0.19 g/tonne gold over 24.92m.

#### GAZ-06-02

This hole intersected rhyolite with cherty areas. Chlorite stringers are present with quartz veins up to 20cm in width associated with chalcopyrite mineralization up to 10%. A fragmental zone with 2-3cm fragments occurs at a depth of 26.9m to 27.9m. A felsic tuff with blue quartz eyes occurs at 38.8m to 39.1m. Folding is present in the core at 41m to 42m. Mineralization consists of chalcopyrite (1%-10%). A total of 34 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 32 samples were analyzed for gold (Au-AA23) and copper (Cu-AA46), zinc (Zn-AA46) and silver (Ag-AA46) (MS-ICP41). This drill hole reported copper assays

that ranged from 110 ppm to 88500 ppm (8.85%), 131 ppm to 11500 ppm (1.15%) zinc, <1 ppm to 155 ppm, and <0.005 ppm to 1.2 ppm gold. The drill hole produced assays of 2.05 % copper, 1.11 oz/ton silver and 0.31 g/tonne gold over 26.90m. This section includes 2.79 % copper, 1.51 oz/ton silver and 0.38 g/tonne gold over 17.90m. Copper mineralization begins in the hole 3 meters beneath the surface of overburden.

#### GAZ-06-03

This hole was drilled at an azimuth of 0° plunging at -45° with a total depth of 134.6m. This hole intersected greyish white felsic crystal tuff, grey to white rhyolite and diabase. Chlorite alteration zones are present as well as quartz-tourmaline veins. Quartz veins are associated with pyrite and chalcopyrite mineralization. Mineralization consists of chalcopyrite, pyrite and minor sphalerite. A total of 24 samples were sent of geochemical analysis, 8 for whole rock (ME-XRF06) and 5 for (ME-MS81), 18 for copper, zinc, silver (ME-ICP41), and 18 for gold (Au-AA23). The drill hole reported copper assays that ranged from 9 ppm to 5160 ppm (0.516%), 5 ppm to 143 ppm zinc, <1 ppm to 6.4 ppm silver, and 0.007 ppm to 0.065 ppm gold.

#### GAZ-07-04

This hole intersected greyish white rhyolite with chlorite patches. The core may be fragmental in sections. A tourmaline vein (1-2cm) was intersected at 30.5m at 90° to the core angle. Mineralization consists of chalcopyrite occurring in clots and bands at 2.0m. Heavy chalcopyrite mineralization occurs at 12.0m to 13.0m. The chalcopyrite mineralization becomes less after 24.5m but still occurs in minor amounts. A total of 27 samples were sent for geochemical analysis, 3 for whole rock (ME-XRF06), 2 for 38 element analysis (ME-MS81), 14 for ore grade copper (Cu-OG46), 1 for ore grade silver (Ag-OG46), 26 samples for 35 element analysis (ME-ICP41), and 26 samples for gold (Au-AA23). The drill hole reported copper values ranging from 44 ppm to 67000 ppm (6.70%), zinc values ranging from 24 ppm to 2430 ppm, silver values ranging from <1 ppm to 125 ppm, and gold values ranging from 0.022 ppm to 3.01 ppm. The drill hole intersected an interval of 1.67 % Copper, 32 g/tonne Silver, 0.37 g/tonne Gold over a 22.50 metre section between 2 metres and 24.5 meters.

#### GAZ-07-05

This hole was drilled at an azimuth of 100° plunging at -45° to a total depth of 66.0m. This hole intersected greyish white rhyolite which is brecciated in areas (9.0m-15.3m, 17m-18m, 53.0m-53.7m) with fragments up to 23.0cm in size. Chlorite-quartz alteration is present. Reddish garnets and brown staurolites are also present in localized sections of the core up to 5%. A silvery sericite mica zone occurs at 13.0m to 14.0m. Blue quartz eyes occur in the core from 2.0m to 5.0m. Banded deformation occurs from 49.7m to 53.5m. Mineralization consists of chalcopyrite, pyrite, pyrrhotite and sphalerite. A total of 41 samples were sent for geochemical analysis. 7 samples were assayed for whole rock analysis (ME-MS81, ME-XRF06). 34 samples were assayed for 35 elements (ME-

ICP41) as well as over limits values for copper (Cu-OG46), zinc (Zn-OG46), and silver (Ag-OG46). The same 34 samples were also assayed for gold (Au-AA23). The drill hole reported copper values that range from 25 ppm to 114000 ppm (11.4%). Zinc values ranged from 18 ppm to 11800 ppm (1.18%). Silver values ranged from <0.2 ppm to 215 ppm. Gold values ranged from <0.005 ppm to 0.463 ppm. The drill hole intersected intervals of 4.47% copper, 86.59g/t silver, 0.629g/t gold over 6.7m, including 6.76% copper, 130.2g/t silver, 0.971g/t gold over 4m. Another interval of 2.45% copper, 47.6g/t silver, 0.34g/t gold over 14.8m was intersected.



**Figure 13.1 - Up to: 4.47% Cu, 0.25 % Zn, 87 g/t Ag, and 0.62 g/t Au over 6.7m (GAZ-07-05).**

#### GAZ-07-06

This drill hole intersected greyish white rhyolite. The rhyolite is brecciated from 31.5m to 28.3m. A 56mm tourmaline vein was intersected at 39.3m to 39.8m. Blue quartz eyes, chlorite alteration, staurolite and garnets also occur in localized sections of the drill core. Mineralization consists of chalcopyrite and pyrite in bands and stringers as well as interstitial (10%) to the breccia units. A total of 45 samples were sent for geochemical analysis. 4 samples were analyzed for whole rock geochemistry (ME-XRF06, ME-MS81). 41 samples were analyzed for 35 elements (ME-ICP41) and gold (Au-AA23). Over limits for copper values (>10000 ppm) were attained by (Cu-OG46). The drill hole reported copper values that range from 20 ppm to 18500 ppm (1.85%). Zinc values ranged from 6 ppm to 929 ppm. Silver values ranged from <0.2 ppm to 37.4 ppm. Gold values ranged from <0.005 ppm to 0.318 ppm.

#### GAZ-07-07

The hole first intersected lapilli tuff to tuff breccia felsic volcanics with deformed veins/stockworks of amphibole-chlorite-quartz-carbonate alteration, pervasive staurolite

and abundant garnet. Mineralization in the form of chalcopyrite and pyrrhotite sulphides occurs as disseminated patches locally throughout the unit with up to 2 % pyrrhotite, chalcopyrite and sphalerite from 13.53 to 13.59 m. From 45.38 to 59.75 m, the hole intersected very intensely altered felsic volcanics with strongly folded amphibole-chlorite-quartz-carbonate, local garnet and sulphide. Mineralization occurs as 6 % stringer chalcopyrite and 2 % stringer pyrrhotite from 57.26 to 58.55 m. From 59.75 to the end of hole at 92 m, the hole intersected similarly altered but not as strongly deformed felsic volcanics. Mineralization occurs as 5 % stringer chalcopyrite and 1 % stringer pyrrhotite from 70.17 to 71 m and 8 % disseminated chalcopyrite and 1 % disseminated pyrrhotite from 71.51 to 72.37 m. A total of 90 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 88 samples were analyzed for gold (Au-AA23) and 35 elements (ME-ICP41). The drill hole assays reported anomalous copper contents from 1170 ppm to 2.08 % copper in 20 samples. Assay results report an intercept of 2200 ppm zinc at 11 m; a zone of average 1063 ppm copper over 6.57 m from 15.93 to 22.5 m; an interval of average 2896 ppm copper over 15.09 m from 57.28 to 72.37 m including a zone of 1.3 % copper over 1.72 m from 57.28 to 59 m which includes the intercepts of 1.37 % copper at 57.28 m and 2.08 % copper at 58.5 m; and intercepts of 1.06 %, 1.15 %, 3960 ppm and 9800 ppm copper at 70.17 m, 71.51 m, 83.95 m and 87.05 m respectively.

#### GAZ-07-08

The hole first intersected lapilli to cobble-sized fragmented felsic volcanics from 1.27 to 67.75 m with amphibole-chlorite-quartz-carbonate alteration most intense in the lower part with associated significant chalcopyrite mineralization: 3 % at 35.84 m and 5 % at 40.04 m. From 67.75 to 82.02 m, the hole intersected intensely altered amphibole-chlorite and quartz-carbonate banded felsic volcanics with very little sulphide. From 82.02 to 98 m, the felsic volcanics has lack of felsic fragments and phenocrysts with mineralization of 0-1 % finely disseminated pyrrhotite in siliceous sections. From 98 to 143.7 m, a felsic intrusive was intersected, that is moderately magnetic to explain the mag high, with 1-4 mm patches of bright green amphibole and 1 % finely disseminated chalcopyrite occurring throughout the unit. From 143.7 to 157.6 m, felsic volcanics was intersected similar to the intrusive but contains lapilli to cobble-sized fragments. Mineralization is 2 % disseminated to 10 % stringer chalcopyrite from 153.64 to 154.92 m and trace disseminated chalcopyrite and pyrrhotite up to 160.89 m. From 157.6 to the end of hole at 185 m, felsic volcanics was intersected which contains more disseminated pyrrhotite to chalcopyrite, but with a marketable decrease in overall sulphide. A total of 183 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 177 samples were analyzed for gold (Au-AA23) and 35 elements (ME-ICP41). The drill hole assays reported anomalous copper contents from 1030 ppm to 4.05 % copper in 71 samples. Assay results report an intercept of 2.74 % copper, 1.6 % zinc, 48.1 g/t silver and 0.363 g/t gold from 39.96 to 41.46 m; 3150 ppm Cu at 41.46 m; a zone of 4699 ppm copper over 8.57 m from 49.3 to 57.87 m including an intercept of 4.05 % copper, 3850 ppm zinc, 68.7 g/t silver and 0.244 g/t gold at 54.63 m; and a zone of 1666 ppm copper over 85.84 m from 94.01 to 179.85 m including intercepts of 1.5 % copper at 153.8 m and 5960 ppm copper at 176 m.

#### GAZ-07-09

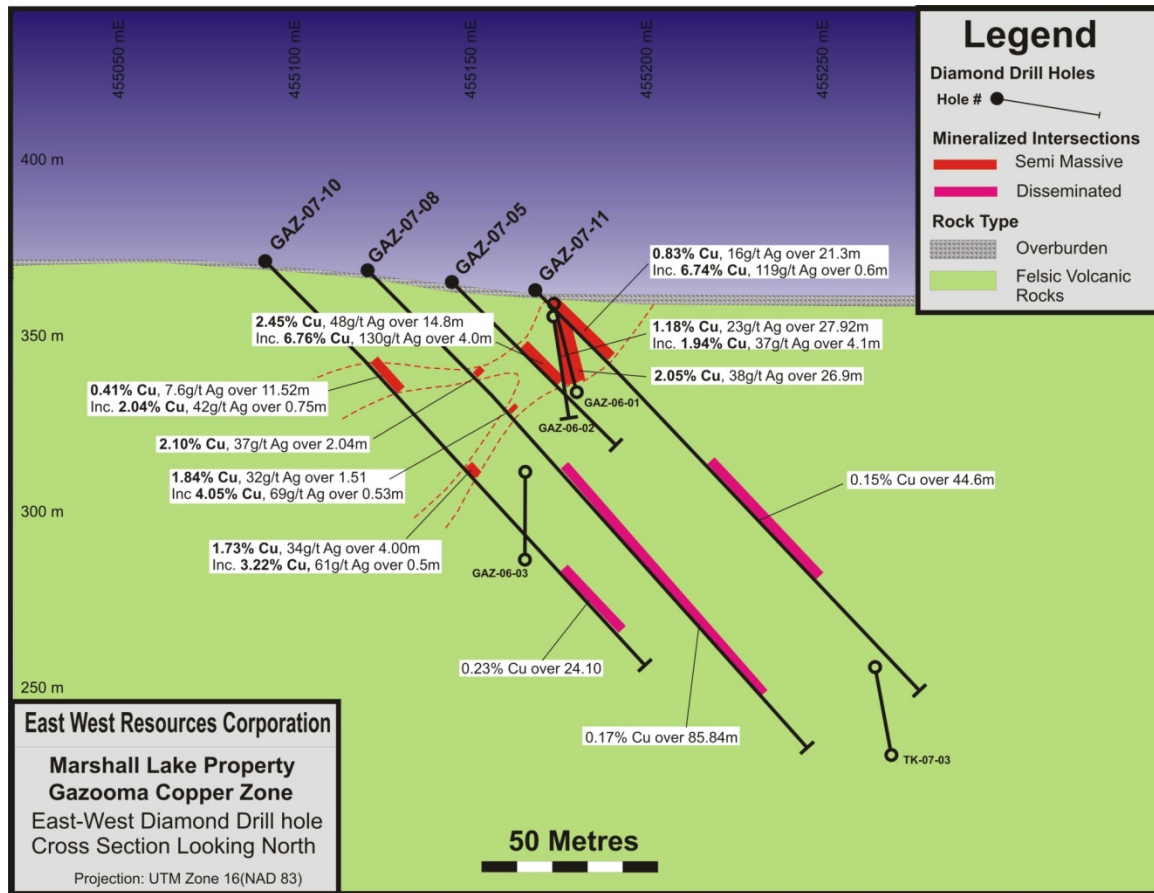
The hole first intersected felsic volcanics with moderate chlorite-amphibole-quartz alteration associated with disseminated pyrite and chalcopyrite mineralization. Locally exotic pyritiferous clasts less than 5 cm in size occurs from 24.1 to 24.6 m. From 34.8 to the end of hole at 86 m, felsic volcanics was intersected that contains less amphibole than the previous unit, but with abundant garnet porphyroblasts and blue-grey quartz eyes and a zone of higher silica-sericite from 43.8 to 45.1 m. Mineralization is weak at 1 % chalcopyrite, pyrite and pyrrhotite in the unit. A total of 74 samples were sent in for geochemical analysis of gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1085 to 8820 ppm copper in 16 samples including an intercept of 5920 ppm copper at 16.3 m; an intercept of 5120 ppm copper at 32 m; a zone of average 2194 ppm copper over 3.5 m from 45.5 to 49 m; a zone of average 5362 ppm copper over 3 m from 59 to 62 m; and a zone of average 2016 ppm copper over 5.4 m from 68.2 to 73.6 m.

#### GAZ-07-10

The hole first intersected fragmental felsic volcanics from 1 to 98 m that contains m-scale zones of strong amphibole-chlorite-quartz-carbonate alteration and staurolite alteration with dominant chalcopyrite mineralization at 0.5 to 5 % in silica-sericite zones after 31.76 m. From 98 to 105.5 m, the hole intersected felsic volcanics beginning with 50 cm quartz and tourmaline veins with 5 % chalcopyrite, later with tiger stripe dark and light colour banded chlorite-amphibole-quartz alteration mineralized with 2 % chalcopyrite and ending with silica-sericite alteration. From 105.5 to 115.1 m, felsic volcanics is heavily altered with silica-sericite alteration with more abundant disseminated to semi-massive chalcopyrite-pyrrhotite-pyrite mineralization from 108.8 to 110.4. The unit contains pervasive disseminated magnetite from 110.7 to 114.4 m. From 115.1 to 141.7 m, felsic volcanics is darker with chlorite-amphibole-quartz alteration and weak chalcopyrite-pyrite mineralization and tourmaline veins with remobilized chalcopyrite-pyrite mineralization. A total of 158 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 155 samples were analyzed for gold (Au-AA23) and 35 elements (MS-ICP41). The drill hole assays reported anomalous copper contents from 1050 ppm to 3.22 % copper in 67 samples. Assays reported include a zone of average 2740 ppm copper over 72.4 m from 38 to 110.4 m including a subzone of average 4097 ppm copper and 1096 ppm zinc over 11.52 m from 39.33 to 50.85 m, an intercept of 4320 ppm copper at 62 m, a subzone of average 5868 ppm copper and average 1662 ppm zinc over 2.6 m from 78 to 80.6 m, a subzone of average 1.73 % copper, average 3225 ppm zinc, average 33.5 g/t silver and average 0.276 g/t gold over 4 m from 89 to 93 m, an intercept of 1.08 % copper at 108.9 m; an intercept of 5160 ppm copper at 117.4 m; and a zone of average 2334 ppm copper over 24.1 m from 131.1 to 155.2 m.



This hole intersected felsic volcanics with brecciation and areas of garnet-silica, silica-staurolite, and amphibole-chlorite alteration. Mineralization contains areas of 5 % disseminated chalcopyrite from 1.5 to 2.2 m, 2 % disseminated chalcopyrite with pyrite from 2.2 to 10.4 m and 25 % chalcopyrite from 17.6 to 18.2 m. A total of 159 samples were sent in for geochemical analysis and were analyzed for gold (Au-AA23) and 35 elements (MS-ICP41). The drill hole assays reported anomalous copper contents from 1030 ppm to 6.74 % copper in 63 samples. Assays reported include a zone of average 8273 ppm copper, 15.7 g/t silver and 0.121 g/t gold over 21.3 m from 1.5 to 22.8 m including an intercept of 3.02 % copper, 1910 ppm zinc, 56.9 g/t silver and 0.471 g/t gold at 1.5 m, a subzone of average 9795 ppm copper, 18.1 g/t silver and 0.146 g/t gold over 13.6 m from 9.2 to 22.8 m including an intercept of 1.25 % copper at 9.2 m, a subzone of average 1.04 % copper over 10 m from 9.2 to 19.2 m, a subzone of average 2.71 % copper, 1514 ppm zinc, 49.7 g/t silver and 0.462 g/t gold including an intercept of 6.74 % copper, 3140 ppm zinc, 119 g/t silver and 1.025 g/t gold at 17.6 m and an intercept of 1.88 % copper and 33.4 g/t silver at 22 m; a zone of average 1182 ppm copper over 83 m from 73.4 to 156.8 m including a subzone of average 1511 ppm copper over 44.6 m from 73.4 to 118 m including a subzone of average 2922 ppm copper over 7 m from 84.8 to 91.8 m, a subzone of 3533 ppm copper over 4 m from 86.8 to 90.8 m, an intercept of 7360 ppm copper at 89.8 m, a subzone of average 2393 ppm copper over 9 m from 104 to 113 m, a subzone of 3102 ppm copper over 5 m from 108 to 113 m, a subzone of average 1964 ppm copper over 7.8 m from 148 to 155.8 m and an intercept of 6570 ppm copper at 149.8 m, a subzone of average 5868 ppm copper and average 1662 ppm zinc over 2.6 m from 78 to 80.6 m, a subzone of average 1.73 % copper, average 3225 ppm zinc, average 33.5 g/t silver and average 276 g/t gold over 4 m from 89 to 93 m, an intercept of 1.08 % copper at 108.9 m; an intercept of 5160 ppm copper at 117.4 m; and a zone of average 2334 ppm copper over 24.1 m from 131.1 to 155.2 m.



**Figure 13.2 Gazooma Copper Zone**

### GAZ-08-12

This hole was designed to test the down dip of the Gazooma zone and deep IP anomalies. From 111.0m to 111.2m 3-5% finely disseminated cpy. From 117.7m to 118.2m 5-7% cpy. From 127.5m to 128.5m there exists bands of 40% cpy,py,po. From 129.0m to 130.0m there is overall 5% cpy and py and within this interval from 129.3 to 129.5m there is a semi-massive 20% cpy, py occurrence. Another band of semi-massive cpy,py occurs from 131.5m to 132.0m. Assays returned values averaging 1.01% Cu and 24.27ppm Ag over 12 meters from 127.0m to 139.0m.

### GAZ-08-13

This hole was designed to test the down dip of the Gazooma zone and deep IP anomalies. From 116.87m to 143.11m fracture controlled cpy, mineralization exists at 1% abundance with smaller sections reaching 3% abundance. From 258.68m to 310.95m fracture controlled cpy (1-2%), py (1-2%), po (trace). Within this interval from 278.44m to 278.74m the cpy reaches 12% abundance. Also from 310.08m to 310.95m cpy reaches 20% abundance. The hole could not be drilled deeper due to the hole becoming too tight.

#### GAZ-08-14

This hole was designed to test the down dip of the Gazooma zone and depp IP anomalies. Zones were intersected from 2.8m to 2.85m containing 5% cpy, 3% py. From 4.2m to 10.96m containing 1-3% cpy and 1-5% py. From 101.36m to 101.53m Zinc is present at 10% abundance associated with minor py. From 106.47m to 106.55m 40% cpy and 5% py present. From 106.64 to 106.74 6% cpy, 3% py. From 107.5m to 107.55m 30% cpy, 15% py. From 107.75m to 108.05m 30% cpy and 10% py. From 109.62m to 110.92m 5% cpy and 2% py. From 248.6m to 257.2m 1-2% cpy. From 277.37m to 279.50m 2-5% and 1-3% py. From 111.33m to 111.77m 30% cpy, 7% po and 4% py. From 120.45m to 123.2m cpy 7-15% and 2-5% py. From 128.31m to 130.94m cpy 3%. From 136.27m to 139.91m cpy 5%. From 146.53m to 146.57m cpy 8%. Assays returned values averaging 0.63% Cu and 15.23g/t Ag and 890g/t Zn and 0.209 Au g/t over 5.8m from 106m to 111.8m. Another significant interval over 4m from 136.27m to 140.31m averaged values of 0.39% Cu, 10.09 g/t Ag, 119.0 g/t Zn, 0.047 Au g/t.

#### TH-07-01

The drill hole intersected greyish white felsic units as well as chert (2.0m-5.2m). A mafic dike was intersected at 3.4-3.6m. Quartz-chlorite veins were also intersected throughout the hole. Grey felsic fragments (7cm) were intersected from 14.1m to 29.2m. Mineralization consisted of chalcopyrite, pyrite and sphalerite. A total of 30 samples were sent for geochemical analysis. One sample was assayed for whole rock analysis (ME-XRF06 and ME-MS81) and one sample was analyzed for 38 elements using ME-MS81. 29 samples were analyzed for 35 elements (ME-ICP41). Over limits for copper (Cu-OG46), zinc (Zn-OG46). 30 samples were analyzed for gold (Au-AA23). The drill hole reported copper values that range from 16 ppm to 11520 ppm (1.52%). Zinc values range from 19 ppm to 64200 ppm (6.42%). Silver values range from 2 ppm to 39 ppm. Gold values range from <0.005 ppm to 2.92 ppm.

#### TH-07-02

This hole was drilled at an azimuth of 6° plunging at -45° to a total depth of 45.0m. The drill hole intersected greyish white rhyolite, sericite (14.4m and 37.1m to 39.5m). Fragmentals occur at 18.5 in a thin band about 1cm thick. Chlorite banding and alteration, staurolite, blue quartz eyes, and garnets up to 2-3mm. Mineralization consists of chalcopyrite, pyrite and pyrrhotite. A total of 63 samples were sent for geochemical analysis. Three samples were sent for whole rock analysis (ME-XRF06, ME-ICP41). Thirty five samples were analyzed for 35 elements (ME-ICP41). The same 35 samples were analyzed for gold (Au-AA23). The drill hole reported copper values that range from 13 ppm to 11540 ppm (1.54%). Zinc values ranged from 7 ppm to 177 ppm. Silver values ranged from <0.2 ppm to 9.3 ppm. Gold values ranged from <0.005 ppm to 2.79 ppm.

### TH-07-03

This hole intersected felsic volcanics from 5.76 to 42.85 m that is very strongly foliated and pervasive mineralized 1-2 % with finely disseminated to small cubic pyrite throughout with local increased pyrite with silica-sericite alteration and weak to moderate staurolite alteration. Mafic dikes were intersected from 20.73 to 20.89 m and from 24.05 to 24.18 m. From 42.85 to 80.22 m, felsic volcanics is more siliceous with fewer quartz phenocrysts and fairly abundant disseminated pyrite throughout. Diabase was intersected from 50.14 to 50.2 m; and mafic dikes from 56.3 to 56.5 m, from 57.2 to 57.55m, from 57.78 to 57.86 m, from 58.03 to 58.08 m and from 58.43 to 58.52. A felsic intrusive occurs from 60.08 to 60.3 m and chert occurs from 77.25 to 77.72 m. From 80.22 to 105.39 m, felsic volcanics is more homogenous with lots of blue quartz eyes, is fairly magnetic with local zones of amphibole-sericite-chlorite alteration. A mafic intrusive dike occurs from 105.39 to 106.35 m. From 106.35 to the end of hole at 128 m, felsic volcanics is quartz phyric again and with more alteration. A total of 108 samples were sent in for geochemical analysis, 4 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 108 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). Copper assays are from 1050 to 1620 ppm copper in 16 samples.

### NWT-07-01

This hole intersected felsic volcanics with trace disseminated pyrite from 1.81 to 4.9 m; felsic volcanics to 14.05 m with quartz eyes and disseminated pyrite from trace to 4 % in chlorite-amphibole-quartz alteration; felsic volcanics to 33.05 m with disseminated chalcopyrite and at intersections with pyrite up to 15 % and associated with quartz-chlorite-amphibole and staurolite alteration; altered felsic volcanics from 33.5 to 52.6 m with heavy silica alteration cross cut by chlorite-amphibole and sericite-epidote with up to 40 % pyrite mineralization and trace chalcopyrite; dark grey felsic volcanics to 65.4 m with staurolite, quartz eyes, garnets and with pyrite and chalcopyrite at trace amounts and up to 10 % in chlorite-amphibole alteration zones; light grey felsic volcanics to 70.4 m with high staurolite and minor chalcopyrite and pyrite in chlorite-amphibole bands; medium grey felsic volcanics to 91.7 m with staurolite and chlorite-amphibole-epidote alteration associated with pyrite and chalcopyrite, semi-massive (30%) chalcopyrite from 83.7 to 84 m and a zone of chalcopyrite-pyrite in chlorite-amphibole-epidote alteration from 82 to 88.5 m; medium grey felsic volcanics to 102.2 m with blue quartz eyes, garnets, and chlorite-amphibole-epidote alteration associated with sphalerite and pyrite mineralization; grey-green felsic volcanics to 119.5 m with pervasive chlorite at the top and pyrite and trace chalcopyrite associated with chlorite-amphibole alteration, pyrite disseminated throughout and disseminated pyrite-chalcopyrite in darker unit after 107.3 m; intensely silicified and pyrite-chalcopyrite mineralized felsic volcanics to 123.6 m; a porphyritic felsic intrusive to 140.66 m; a lamprophyre to 144.47 m; and a felsic intrusive to the end of hole at 148 m. A total of 133 samples were sent in for geochemical analysis, 7 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 126 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1005 ppm to 1.56 % copper in 41 samples. Assays reported include a zone of average 2527 ppm copper over 28.7 m from

20 to 48.7 m including an intercept of 1.08 % copper at 26 m and an intercept of 1.21 % copper at 47.1 m; a zone of average 4133 ppm copper over 8.5 m from 79.5 to 88 m; and an intercept of 1.56 % copper and 35.4 g/t silver at 121.2 m.

#### GAZN-07-01

This hole intersected felsic volcanics with irregular chlorite zones from 6.6 to 37.3 m. Chalcopyrite mineralization is associated with chlorite in fractures at various metreages in this interval. Massive grey intermediate volcanics was intersected from 37.3 to 41.7 m with 2mm pyrrhotite at 39.9 m. From 41.7 to 46.2 m, siliceous grey massive volcanics was intersected with chalcopyrite in a chlorite altered fragmental zone from 45.8 to 46.2 m. From 46.2 to the end of hole at 53 m, the massive grey volcanics contain 5 % garnet throughout and sericite alteration. A total of 19 samples were sent in for geochemical analysis, 1 sample was analyzed for whole rock (XRF06 and MS-ICP81) and 18 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1020 to 8480 ppm copper in 13 samples.

#### GAZN-07-02

This hole intersected mottled felsic volcanics from 2 to the end of hole at 79.7 m. The unit contains chlorite alteration to 10.5 m with successive zones and garnets up to 0.5 cm in size with garnets or andalusite after 10.5 m. Chalcopyrite mineralization is 1-3 % after 40.7 m, 3-6 % from 41.5 to 43 m, with fine disseminated chalcopyrite in various spots thereafter. From 62.10 to 63.50 m, a mafic gabbro dike was intersected. A total of 40 samples were sent in for geochemical analysis, 5 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 37 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1135 ppm to 3.51 % copper in 35 samples. Intercepts include 3.15 % copper at 42.3 m, 1.67 % copper at 46.95 m, 8030 ppm at 37 m, 3.51 % copper at 64.6 m and 8850 ppm copper at 67.6 m.

#### GAZN-07-03

The hole first intersected massive felsic volcanics from 2 to 31.2 m with occasional chlorite alteration, silicification and pink garnets. Stringer chalcopyrite mineralization occurs from 16 m to 5 % at 17.5 m, 2mm chalcopyrite at 19 m, and stringers from 29 to 31 m. From 31.2 to 58 m, felsic volcanics has lapilli tuff fragments and from 58 to 80 m, a crystal tuff occurs with blue quartz phenocrysts. A total of 12 samples were sent in for geochemical analysis, 1 sample was analyzed for whole rock (XRF06 and MS-ICP81) and 11 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 2020 ppm to 3.32 % copper in 10 samples. Intercepts include 1.64 % copper at 14.2 m, 3.32 % copper at 17 m, 5800 ppm at 26 m and 7700 ppm at 72 m.

#### GAZN-07-04

The hole first intersected grey felsic volcanics with spotted clusters of chlorite alteration from 2 to 28.76 m. Occasional chalcopyrite occurs from 2.5 to 3 m and fine grained disseminated chalcopyrite from 20.2 to 20.3 m. From 28.76 to 54.10 m, grey siliceous rhyolite was intersected with disseminated chalcopyrite from 34.5 to 49 m. From 54.1 to the end of hole at 92 m, grey-green recrystallized rhyolite was intersected with minor chlorite and pink alteration from 59 to 59.5 m. Disseminated chalcopyrite occurs at 64.5 m and up to 75.5 m and in other areas up to 90.5 m. A total of 21 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 19 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1405 ppm to 1.25 % copper in 12 samples. Intercepts include 5910 ppm copper at 40 m, 7460 ppm copper at 46.5 m and 1.25 % copper at 73 m.

#### GAZN-07-05

The hole first intersected felsic fragmental with 1-2 cm fragments with garnets and fine grained sulphide at 6.5 m. From 19.5 to 34 m, rhyolite was intersected with quartz eyes and pink alteration at 17.5 m. From 34 to 42 m, rhyolite is massive with occasional garnets and chalcopyrite clot mineralization starting at 35.9 m. From 48.1 to 50.5 m, rhyolite has sulphide veinlets and is highly silicified. Up to the end of hole at 66 m, there are quartz eyes, chlorite spots, garnets and potassic alteration in areas. A total of 29 samples were sent in for geochemical analysis, 2 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 27 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1060 to 5200 ppm copper in 18 samples. Intercepts include 4940 ppm copper and 2.05 % zinc at 6.4 m, 5200 ppm copper at 27 m and 4620 ppm copper at 38 m.

#### GAZN-08-06

This hole is designed to determine the dip of the zone intersected in previously drilled hole GAZN-07-02 (45 degree dip). Therefore, the hole was drilled 1.5m south of the GAZN-07-02 collar at a dip of 60 degrees. Cpy mineralization was intersected from 68.9m to 69.15m containing 5% cpy. From 70.1m to 76.1m 4% cpy. From 76.1m to 83.4m 5-10% cpy; within this interval from 80.75m to 80.9m a semi-massive 20% cpy vein exists. From 83.4m to 83.51m a semi-massive vein of cpy 20% exists. From 83.54m to 85.5m contains 5% cpy. Semi-massive veins occur with chl-amph-qtz alteration and occur in roughly 10cm intervals from 85.5m to 88.0m with 5% disseminated cpy zones between the semi-massive veins. From 88.0m to 89.7m 5% cpy. From 89.7m to EOH mineralization is about 1%. This hole averaged 1.74% Cu, 0.32 g/t Au and 8.89 g/t Ag over 24 meters from 70m to 94m; within this interval a higher grade intercept over 5 meters from 85m to 90m averaged 3.36% Cu, 0.68 g/t Au and 17.14 g/t Ag.



#### GAZN-08-07

This hole was drilled 25m west of holes GAZN-08-6 and GAZN-07-02 and drilled north at a 45 degree dip. Mineralization was intersected from 12.2m to 12.45m in 7% abundance as disseminated cpy, py. From 15.2m to 15.3m 15% cpy. From 15.5m to 15.6m 20-25% cpy. From 21.0m to 21.1m 10-15% cpy. From 71.5m to 71.8m 7% cpy, py. From 88.8m to 89.4m 4-5% cpy. From 99.4m to 100.4m 1-3% cpy. From 100.4m to 100.7m 15% cpy. From 100.6m to 101.5m 3% cpy. Over 15m from 87m to 102m assays averaged 0.52% Cu, 0.12 g/t Au and 3.36 g/t Ag.

#### GAZN-08-08

This hole was drilled 25m east of holes GAZN-08-06 and GAZN-07-02 and was drilled north at a 45 degree dip. Mineralization was intersected from 70.1m to 70.3m 3-4% cpy, from 88.5m to 89.0m 3% cpy and from 96.0m to 97.7m 3-5% cpy.

#### G-07-01

The hole intersected grey felsic fragmental from 2 to the end of hole at 95 m with shear banding, chlorite zones with disseminated pyrite, disseminated pyrite in a silica zone at 16.1 m, quartz veins and a quartz + silica zone with pyrite at 59.1 m. Basalt dikes were intersected at 44.85 m, 45 m and 62.9 m. A total of 76 samples were sent in for geochemical analysis for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays reported anomalous copper contents from 1080 to 2400 ppm copper in 4 samples and anomalous zinc from 1040 to 1850 ppm in 6 samples. Intercepts include 2400 ppm copper at 13 m, 1550 ppm copper at 50 m and 3300 ppm copper at 68 m.

#### DZ-07-01

The hole intersected grey felsic volcanics with chlorite; felsic volcanics with andalusite; massive felsic volcanics with andalusite, chlorite, and chalcopryite at 12.4 m, from 38.5 to 39 m, from 39.9 to 40.2 m and at 47.1 m; fragmental from 49 to 60 m with chalcopryite at 53.9 m and 57 m; fine grained volcanics; and felsic fragmental-tuff with albitization, silicified zones with chalcopryite at 62.4 m, garnets and black chlorite to the end of hole at 74 m. A total of 13 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 10 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole reported intercepts of 4220 ppm copper and 1.52 % zinc at 38 m, 1.18 % copper at 56.9 m and 8830 ppm copper at 62.3 m.

#### TK-07-01

The hole intersected massive rhyolite tuff with occasional 1-2 cm tuff fragments. The unit has yellow sericite/quartz alteration and fine disseminated tourmaline alteration from 1.5 to 17.2 m and silicification with occasional garnets from 17.2 to 26.2 m. A fine

grained potassic altered gabbro was intersected from 26.2 to 33.5 m. Following the gabbro, rhyolite was intersected that is bleached from 40.5 to 41.7 m, contains blue quartz eyes and staurolite from 58.3 to 60.1 m, and chlorite alteration with garnet from 60.1 to 63.5 m. From 64.8 to 77.3 m, rhyolite is massive with a garnet-chlorite alteration zone from 69.5 to 77.3 m. A felsic fragmental occurs from 77.3 to the end of hole at 90 m with blue quartz eyes at 77.4 m and chlorite-garnet alteration from 81.5 to 88.9 m. Mineralization in the hole consists of scattered chalcopyrite + pyrite <1 % from 1.5 to 17.2 m with disseminated chalcopyrite from 12.7 to 13.0 m, 10 cm bands of 2-3 % wispy chalcopyrite from 17.2 to 26.2 m, chalcopyrite from 27 to 33 m, 1-2 % chalcopyrite + pyrite associated with chlorite bands from 60.1 to 63.5 m and pyrrhotite + chalcopyrite + quartz from 88.85 to 88.9 m associated with chlorite-garnet alteration. A total of 54 samples were sent in for geochemical analysis, 4 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 50 samples were analyzed for gold (Au-AA23) and 35 elements (ME-ICP41). The drill hole assays reported anomalous metal contents ranging from 1100 to 7790 ppm copper in 33 samples with an interval intersected of average 3272 ppm copper over 39.25 m from 17.2 to 90 m.

#### TK-07-02

The hole intersected massive grey-white rhyolite with yellow sericite and tourmaline alteration from 2 to 7 m and potassic alteration from 7 to 10 m. From 10.5 to 16.5 m, rhyolite is fragmented with clasts up to 3 cm in size. From 19.4 to 19.65 m and 20.5 to 20.9 m, the hole intersects mafic basalt dikes. A gabbro/pyroxenite is intersected from 22.75 to 28.9 m. From 29.45 to 41 m, rhyolite is charcoal coloured and laminated with associated pyrite mineralization. From 42 to 57 m, rhyolite is massive with garnet, tourmaline, chlorite and sericite alteration zones associated with chalcopyrite mineralization. Disseminated and stringer chalcopyrite mineralization occurs in a massive to fragmented, garnet-altered rhyolite from 57 to the end of hole at 84 m. A total of 57 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 54 samples were analyzed for gold (Au-AA23) and 35 elements (ME-ICP41). The hole intersected an interval of 0.52 % copper, 4.7 g/t silver and 0.06 g/t gold over a 27.75 m section from 56.25 to 84 m. Included in this interval is 3.23 % copper, 31.9 g/t silver, 0.58 g/t gold over 1.75m and 1.54 % copper, 15 g/t silver, 0.23 g/t gold over 4.75m.

#### TK-07-03

The hole intersected medium grey felsic volcanics from 1.4 to 7.7 m with nil to trace pyrite; and possible felsic intrusive breccia from 7.7 to 23.5 m. Alteration is weak chlorite-amphibole-quartz and garnets from 1.4 to 23 m, and there is 2 % chalcopyrite from 10.6 to 11 m. From 23 to 25 m, the unit is bleached with silica-sericite alteration and contains garnets. From 23.5 to 38.05, there is felsic fragmental that contains highly siliceous fragments elongate along foliation, blue quartz eyes, and with local bands of chalcopyrite-pyrite associated with chlorite-amphibole-quartz alteration from 27.1 to 28.2 m. At 38.05 m, felsic volcanics is medium grey, contains an abundance of garnet and blue quartz eyes, and a more intensely altered zone from 42.8 to 50.4 m of heavy silica-

sericite. A lamprophyre occurs from 46.7 to 47.1 m. A total of 154 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 155 samples were analyzed for gold (Au-AA23) and 35 elements (ME-ICP41). The drill hole assays reported anomalous metal contents ranging from 1020 to 3850 ppm copper in 47 samples. Assays reported include a zone of average 977 ppm copper over 20.2 m from 8 to 28.2 m including an intercept of 2420 ppm copper at 19.6 m; an intercept of 3160 ppm copper at 98.5 m; an intercept of 2740 ppm copper at 111 m; an intercept of 3050 ppm copper at 129 m; and a zone of average 1580 ppm copper over 35.5 m from 148 to 183.5 m including a subzone of 2126 ppm copper over 18 m from 148 to 166 m.

#### TK-07-04

The hole was drilled to test a deep strong IP anomaly. The hole first intersected a strongly foliated and altered felsic tuff breccia with clast sizes from lapilli to boulder from 1.77 to 50.07 m. The unit contains amphibole and chlorite alteration; halos of sericite; and staurolite and garnet alteration in bands along foliation. Mineralization consists of disseminations and local blebs of chalcopyrite with less pyrrhotite and trace pyrite with total sulphide content from trace to 0.5 % and locally up to 5 % in the amphibole-chlorite veins. From 50.07 to 61.44 m, the unit contains fewer quartz phenocrysts and is less foliated. Mineralization in this zone consists of the best chalcopyrite, at 3 % sulphide content, in the holes. From 61.44 to 110.74 m, the tuff breccia is foliated and altered like before, but with less zones of amphibole-chlorite-quartz-carbonate stockwork alteration. The altered zone contains local zones of stringer and disseminated chalcopyrite-pyrrhotite mineralization. From 110.74 to the end of hole at 125 m, the tuff breccia contains lapilli size fragments and blue quartz eyes. A total of 106 samples were sent in for geochemical analysis, 3 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 103 samples were analyzed for gold (Au-AA23) and 35 elements (MS-ICP41). The drill hole assays reported anomalous copper contents from 1020 to 5290 ppm copper in 16 samples. Assays reported include an intercept of 1020 ppm copper and 9550 ppm zinc from 17.66 to 18.16 m; a zone of average 2034 ppm copper and average 1054 ppm zinc over 7.17 m from 48.83 to 56 m with an intercept of 3140 ppm copper and 2910 ppm zinc at 48.83 m and an intercept of 3850 ppm copper at 50.93 m; and an intercept of 5290 ppm copper at 95.44 m.

#### TK-07-05

The hole first intersected a moderately to strongly magnetic felsic intrusive or flow dome from 1.60 to 24.53 that contains <0.5 % significant disseminated chalcopyrite and stringers/fractures of chalcopyrite, including 10 % chalcopyrite stringers from 10.69 to 10.77 m in a silica and quartz flooded zone. From 24.53 to the end of hole at 100 m, the hole intersected magnetic felsic volcanics with abundant quartz phenocrysts. There is very little sulphide mineralization in the unit with disseminated stringers of chalcopyrite from 46.63 to 47.77 m. A total of 149 samples were sent in for geochemical analysis, 6 samples were analyzed for whole rock (XRF06 and MS-ICP81) and 143 samples were analyzed for gold (Au-AA23) and 35 elements (MS-IPC41). The drill hole assays

reported anomalous copper contents from 1095 ppm to 1.08 % copper in 49 samples. Assay results report a zone of average 3069 ppm copper over 4.87 m from 5.97 to 10.84 m including an intercept of 1.08 % copper from 10.34 to 10.84 m; an intercept of 9600 ppm copper from 77 to 77.8 m; and a zone of average 2202 ppm copper over 23.50 m from 150 to 173.5 m including an intercept of 8410 ppm copper from 161.1 to 161.85 m, a subzone of average 4218 ppm copper over 3m from 170.5 to 173.5 m which includes an intercept of 5670 ppm copper from 171.5 to 172.5 m.

#### TK-08-06

This drill hole targeted the northern most IP chargeability anomaly along line 200E drilling at 6 degree azimuth and dip of 45 degrees. Cpy mineralization was intersected from 38.0m to 44.0m and occurs in trace to 2% abundance. From 52.0m to 78.0m the cpy is overall about 4-5%; the cpy mineralization in this interval is generally clumped into small isolated sections of semi-massive veins. Within this mineralized interval from 56.4m to 56.95m mineralization reaches 15-18% abundance. Over 11 meters from 52.0m to 63.0m assays averaged 0.43% Cu and 2.82ppm Ag.

#### TK-08-07

This drill hole targeted the middle of the high IP chargeability anomaly along line 200E drilling at 6 degree azimuth and dip of 45 degrees. Mineralization was intersected from 83.34m to 92.30m and overall contains 2-3% cpy; this interval contains isolated blebs up to 15%. From 96.30m to 103.63m the mineralization is overall about 2-4% cpy + py which contains spots with mineralization up to 20% in more concentrated blebs. Over 31 meters from 89.0m to 120.0m assays averaged 0.29% Cu and 2.18ppm Ag.

#### TK-08-08

This drill hole targeted the southern most high IP chargeability anomaly along line 200E drilling at 6 degree azimuth and dip of 45 degrees. Cpy mineralization was intersected from 40.1m to 40.2m at 7% abundance. Trace to 1% mineralization occurs from 40.2m to 45.8m; the mineralization generally occurs in small blebs of cpy. From 49.8m to 49.87m there is 7% cpy. Trace to 1% mineralization occurs from 49.87m to 79.0m. From 79.0m to 79.25m there is a semi-massive (20%) cpy occurring in a chlorite amphibole alteration zone. Assays from this hole reached values of up to 0.51% Cu and 8.4 Ag ppm over 1 meter sample lengths.

#### TK-08-09

This vertically drilled hole targeted an airborne anomaly as well as the TK-07-01 and TK-07-02 mineralization. Mineralization was intersected from 90.19m to 90.72m and contains 85% cpy,py,po. From 90.72m to 91.5m contains cpy in 7% abundance. From 91.5m to 92.0m 60% cpy. 92.0m to 92.2m 5% cpy. From 92.2m to 92.46m 40% cpy. From 92.46m to 105.53m 3-7% cpy. From 105.53m to 107.09m 10% cpy. From 108.95m to 109.8m 10-15% cpy. From 109.0m to 110.8m 5% cpy. From 110.8m to

111.2m 85% cpy. From 111.2m to 116.32m 1-3% cpy. From 116.32m to 117.07m 5-7% cpy. From 117.07m 124.44m 1-4% cpy. From 124.44m to 124.56m 20-25% cpy.

#### Significant Intersections in Hole TK-08-09

From 93.25 to 97.5 (4.25m) = 3.80% Cu, 0.267 g/t Au, 38.26 g/t Ag
From 105.5 to 111.2 (5.7m) = 2.07% Cu, 0.096 g/t Au, 22.06 g/t Ag
From 106.5 to 111.2 (4.7m) = 2.34% Cu, 0.109 g/t Au, 24.95 g/t Ag
From 92 to 142.5 (50.5m) = 0.84% Cu, 0.044 g/t Au, 9.13 g/t Ag
From 92 to 136.5 (44.5m) = 0.93% Cu, 0.049 g/t Au, 10.06 g/t Ag

#### SA-08-01

This hole was designed to test an airborne target. Bands of semi-massive po, py, mg, with calcite, actinolite and chloritoid exist throughout the hole varying in size from 1cm to 2m. The bands are generally lined with garnets at the margins. From 24.6m to 37.0m 3-10% po, 3-6% py. From 41.17m to 69.25m mineralized bands range from 5-35% po and 5-35% py. The airborne anomaly was explained by the chemical metasedimentary oxide facies iron formation, which was intersected containing pyrite, pyrrhotite, graphite and magnetite. No significant intervals or economic mineralization was intersected.

#### SA-08-02

This hole was designed to test an airborne target. The main mineralization is from 70.30m to 70.44m with 20% veined network of po; from 77.18m to 77.24m exists a 40% network of veins containing semi-massive po; from 84.57m to 85.53m with veins of 5% po and 5% py. From 87.0m to 95.32m is a large zone of 40% banded to massive po veins. The airborne anomaly was explained by the chemical metasedimentary oxide facies iron formation, which was intersected containing pyrite, pyrrhotite, graphite and magnetite. No significant intervals or economic mineralization was intersected.

#### SA-08-03

This hole was designed to test an airborne target. No sulphide zone was intersected to explain the airborne anomaly and therefore no significant intersections were intersected.

#### SA-08-04

This hole was designed to test an airborne target. The main mineralization is from 54.0m to 55.0m with 30% finely disseminated stringer py; from 58.33m to 61.84m abundant (up to 40%) stringers of po. From 84.0m to 84.86m a semi-massive to massive section with up to 70% po and 20% py occurs in siliceous bands interbanded with garnet. The airborne anomaly was explained by the chemical metasedimentary oxide facies iron

formation which was intersected containing pyrite, pyrrhotite, graphite and magnetite. No significant intervals or economic mineralization was intersected.

#### SA-08-05

This hole was designed to test an airborne target. Mineralization is from 10.11m to 10.87m as 2cm wide veins of 15% po; semi-massive po also occurs from 19.16m to 19.26m, 20.21m to 20.39m and 21.57m to 21.76m. From 22.21 to 23.01m there is a section of abundant po, py, mg veins with 20% sulphides. Semi-massive (60%) po occurs from 25.87m to 26.12m. Veins of 20% po and 3% py occur in calcite alteration from 30.14m to 32.04m; thin veins of 10% po in calcite-chlorite bands occur from 38.93m to 39.76m; a section of thin 5% po veins occurs from 53.24m to 54.27m. A section of (40%) semi-massive po occurs from 58.5m to 59.5m and from 60.09m to 62.16m. Po also occurs as discontinuous lensey mineralization in parallel with foliation from 81.88m to 82.59m. The airborne anomaly was explained by the chemical metasedimentary oxide facies iron formation which was intersected containing pyrite, pyrrhotite, graphite and magnetite. No significant intervals or economic mineralization was intersected.

#### MG-08-01

This hole was designed to intercept an airborne target within a gabbro body occurring to the north of Marshall Lake. The anomaly was explained by semi-massive zones of po, py occurring (8.05m to 12.1m, 20.86m to 21.45m, 22.44m to 22.80m, 51.32m to 57.71m, 60.96m to 63.5m). No significant intervals or economic mineralization was intersected.

#### MG-08-02

This hole was designed to intercept an airborne target within a gabbro body occurring to the north of Marshall Lake. The anomaly was explained by semi-massive zone of po, py occurring from 8m to 10.95m. No significant intervals or economic mineralization was intersected.

#### MG-08-03

This hole was designed to intercept an airborne target within a gabbro body occurring to the north of Marshall Lake. The anomaly was explained by semi-massive zones: po and minor py 8.54m-9.34m and graphite with semi-massive po 23.08m-25.4m. No significant intervals or economic mineralization was intersected.

#### MG-08-04

This hole was designed to intercept an airborne target within a gabbro body occurring to the north of Marshall Lake. No significant mineralization was intercepted and the anomaly was not explained by this drill hole.



SC-08-01

This hole was designed to drill into a dike which intersects an iron formation to the north. An airborne anomaly was picked up by a previously flown survey by East West Resource Corporation. The hole was planned to intersect this anomaly and did as the anomaly was explained by 2 major zones of semi-massive to massive po, py, and graphite from 29.97m to 31.49m and another larger zone from 174.27m to the end of the hole at 213.36m. The bands of sulphide at the bottom of the hole began to run near parallel to the core axis. The results from the assays returned do not show any significant values; the only elevated value occurs in the sample taken from 59.13m to 60.13m and returned a value of 7060ppm copper.

Table 13-1 – Marshall Lake Drill Hole Information for 2006 and 2007

<b>Marshall Lake 2006 &amp; 2007 Drill Holes</b>					
<b>Drill Hole</b>	<b>Easting</b>	<b>Northing</b>	<b>Azimuth</b>	<b>Dip</b>	<b>Depth</b>
DZ-07-01	456388	5585152	0	-50	73.6
G-07-01	456113	5584450	0	-50	95
GAZ-06-01	455170	5583699	15	-45	57
GAZ-06-02	455170	5583698	15	-60	42.4
GAZ-06-03	455163	5583648	0	-45	134.6
GAZ-06-04	455169	5583695	180	-50	32
GAZ-07-05	455143	5583712	99	-45	66
GAZ-07-06	455142	5583684	98	-45	75
GAZ-07-07	455165	5583738	88	-45	92
GAZ-07-08	455118	5583720	88	-45	185
GAZ-07-09	455122	5583740	83	-45	86
GAZ-07-10	455089	5583717	88	-45	158
GAZ-07-11	455166	5583712	90	-45	158
GAZN-07-01	455075	5584766	0	-50	53
GAZN-07-02	454967	5584496	0	-50	79.7
GAZN-07-03	454758	5584637	0	-50	80
GAZN-07-04	454663	5584585	0	-50	92
GAZN-07-05	454984	5584119	0	-45	66
MAR-06-01	458188	5585753	150	-45	60
MAR-06-02	458188	5585753	150	-60	81
MAR-06-03	458234	5585769	140	-45	51
MAR-06-04	458234	5585769	140	-60	81
MAR-06-05	458262	5585784	160	-45	51
MAR-06-06	458262	5585784	160	-60	81
MAR-06-07	458395	5585869	160	-45	99
MAR-06-08	458395	5585869	160	-60	87
MAR-06-09	458459	5585888	160	-45	147
MAR-06-10	458459	5585888	160	-60	162
MAR-06-11	458395	5585327	320	-50	140
NWT-07-01	455619	5584036	0	-45	148
TH-07-01	456130	5583468	6	-45	49
TH-07-02	455588	5583439	6	-45	45
TH-07-03	456091	5583516	188	-45	128
TK-07-01	455613	5583336		-45	90
TK-07-02	455613	5583336	6	-90	84
TK-07-03	455247	5583593	6	-45	194
TK-07-04	455244	5583137	180	-55	125
TK-07-05	455250	5583595	45	-45	176

Table 13.2 – Marshall Lake Drill Information for 2008

Marshall Lake 2008 Drill Holes									
Hole Name	Claim #	Casing (m)	Line		Easting (NAD83)	Northing (NAD83)	Azimuth	Dip	Depth (m)
SA-08-01	4207411	3.05	N/A	N/A	465040	5582200	30	45	88.39
SA-08-02	4207411	3.05	N/A	N/A	464650	5583180	30	45	104.19
SA-08-03	4207410	7.62	N/A	N/A	463580	5583350	30	45	106.68
SA-08-04	4207410	3.66	N/A	N/A	463500	5583540	40	45	97.54
SA-08-05	1234629	1.52	N/A	N/A	459232	5580279	200	50	92
MG-08-02	3014193	4.57	N/A	N/A	461890	5587560	40	45	149.36
MG-08-01	3014193	1.52	N/A	N/A	462200	5587100	40	45	140
MG-08-03	1234636	7.62	N/A	N/A	462650	5587975	30	45	118.87
MG-08-04	1234636	13.72	N/A	N/A	462900	5588850	30	45	140.21
SC-08-01	3014194	4.57	N/A	N/A	469700	5589600	40	50	213.36
GAZ-08-13	4204441	1.52	250W	200S	454956	5583719	90	50	305
GAZ-08-14	4204441	2.13	200W	225S	455013	5583701	90	60	316
GAZ-08-12	4204441	1.52	200W	250S	455021	5583675	90	60	198.12
TK-08-06	KK22684	1.52	200E	400S	455435	5583508	6	45	128.52
TK-08-08	KK22684	1.52	200E	550S	455418	5583364	6	45	131.06
TK-08-07	KK22697	3.05	200E	465S	455429	5583448	6	45	126
TK-08-09	KK22697	1.52	350E	550S	455565	5583349	90	90	143
GAZN-08-06	TB359983	1.52	200W	573.5 N	454966	5584494	0	60	103
GAZN-08-07	TB359983	1.52	225W	573.5 N	454941	5584495	0	45	112
GAZN-08-08	TB359983	1.52	175W	573.5 N	454991	5584495	0	45	100.58

## **14. SAMPLING METHOD AND APPROACH**

All drill core was transported to the Marshall Lake Camps from the drill site. The core was taken to the core shack and logged by one of the project geologists. Sample intervals were chosen based on the presence of sulphides. Sampled sections of core were from sulphide zones and other disseminated sulphide occurrences. Drill core barren of sulphides was also sampled for whole rock analysis as representative samples of various rock units in order to define the lithologies present on the Marshall Lake property. Typical sample intervals ranged from 0.3 to 1.5 metres but may have varied slightly at the geologist's discretion. Each sample interval has a unique sample tag. Core both logged onsite and in the core shack in Thunder Bay. Core that was marked out for sampling was cut in town. The cut core was split in half with one-half of the core placed in plastic sample bags, sealed with tape and placed inside a plastic bucket or rice bag. The core shack of East West Resource Corporation is located at 1158 Russell St. Thunder Bay, Ontario. An employee of the company drove any core transported there. All of the sample numbers are recorded on a sample shipment form, which is inserted into each white rice bag. Once the bag was full, it was taped shut and then taken to the ALS laboratory in Thunder Bay.

All field samples were also sent to ALS Chemex in Thunder Bay, Ontario for primary crushing, and then forwarded onto ALS Chemex in North Vancouver, British Columbia by ALS Chemex in Thunder Bay. A total of 15 field samples were sent for assay and multi-element. The analyses were carried out by the ALS Chemex code ME-ICP41, ME-MS81, ME-XRF06 and Au-AA23. Staff of East West Resource Corporation using a rock hammer took field samples. The samples were bagged immediately, GPS coordinates were taken using a handheld GPS (+/- 10m accuracy) and a piece of orange flagging tape was tied to a nearby tree to mark the sample location. In the 2007 and 2008 drill programs blanks and standards were inserted every 20-25 samples and sent for assay to ensure quality control of lab results. There are no obvious drilling, sampling or recovery factors that would impact the reliability of the core or field samples. The samples are of high quality and representative of the material or mineralization being sampled.

## **15. SAMPLE PREPARATION, ANALYSES AND SECURITY**

Samples awaiting shipment to Thunder Bay were stored on the property in the project geologist's quarters and then were directly loaded onto the outgoing vehicles and taken directly to the storage facility of East West Resource Corporation located at 1158 Russell St. Thunder Bay, Ontario. No aspect of the sample preparation was conducted by an employee, officer, director or associate of East West Resource Corporation. There are no obvious drilling, sampling or recovery factors that would impact the reliability of the core or field samples. The samples are of high quality and representative of the material or mineralization being sampled.

## 15.1 ALS Chemex Analytical Protocol

The split drill core samples were crushed in their entirety to 90% passing 2 millimetres and the crusher was cleaned with barren rock between samples. From the coarse rejects a sub-sample of one kilogram was split and pulverized to 85% passing 75 microns. The pulverizer was cleaned with silica sand between samples. From each pulp, a 100-gram sub-sample was split and shipped to the ALS Chemex laboratory in Vancouver, British Columbia for assay. The remainder of the pulp and the rejects are held at the preparation laboratory in Thunder Bay for future reference. The ALS Chemex quality system complies with the requirements of the international standards ISO 9001:2000 and ISO 17025:2005 and operates at all laboratory sites. The base metals of economic interest (nickel and copper), were determined using a 0.2-gram aliquot that was subjected to Geochemical Procedure MS61, (ALS Chemex internal code). This method uses a four-acid solution to digest the sample, followed by ICP-AES or ICP-AAS finish. Silver was digested using aqua regia (3-acid) followed by AAS. The precious metals gold, platinum and palladium, were determined using Procedure PGMICP27 (ALS Chemex internal code) on a thirty-gram fire assay, followed by ICP-AES ([www.alsglobal.com/Mineral/DivisionProfile.aspx](http://www.alsglobal.com/Mineral/DivisionProfile.aspx)).

For all samples sent for “whole rock” analysis, which consists of X-ray fluorescence (XRF) and mass spectrometry (MS). Other samples were sent to be analyzed for metals using inductively coupled plasma atomic emission spectrometry (ICP-AES). Table 15.1 summarizes the elements that are analyzed in each of these processes. Measures were taken in the field to ensure as clean a sample as possible. If weathering could not be removed in the field, then the samples were taken back to the workshop, where any remaining weathering was cut off with a diamond blade rock saw. The clean samples were then taken to the ALS Chemex laboratory where they underwent further preparation. If the sample size needed to be reduced before being pulverized, they used jaw and rolls crushers, or split off a representative portion of the sample. Once reduced to an appropriate size (usually 2-6mm grains), the pulverization process can begin. This procedure made use of a “flying disc” or “ring and puck” type mill and reduced size to 75 microns or less. The pulp was then screened to remove any remaining coarse material.

**Table 15.1 – The precision of analyses done for a whole rock analysis (a. and b.), and for a metal analysis (c.), from the ALS Chemex website, <http://www.alsglobal.com/Mineral>.**

**a.) ME-XRF06:**

Analyte	Range (%)	Analyte	Range (%)	Analyte	Range (%)	Analyte	Range (%)
SiO <sub>2</sub>	0.01-100	MgO	0.01-100	TiO <sub>2</sub>	0.01-100	BaO	0.01-100
Al <sub>2</sub> O <sub>3</sub>	0.01-100	Na <sub>2</sub> O	0.01-100	MnO	0.01-100	LOI	0.01-100
Fe <sub>2</sub> O <sub>3</sub>	0.01-100	K <sub>2</sub> O	0.01-100	P <sub>2</sub> O <sub>5</sub>	0.001-100		
CaO	0.01-100	Cr <sub>2</sub> O <sub>3</sub>	0.01-100	SrO	0.01-100		

**b.) ME-MS81:**

Analyte	Range (ppm)	Analyte	Range (ppm)	Analyte	Range (ppm)	Analyte	Range (ppm)
Ag	1-1,000	Ga	0.1-1,000	Pb	5-10,000	Tm	0.01-1,000
Ba	0.5-10,000	Gd	0.05-1,000	Pr	0.03-10,000	U	0.05-1,000
Ce	0.5-10,000	Hf	0.2-10,000	Rb	0.2-10,000	V	5-10,000
Co	0.5-10,000	Ho	0.01-1,000	Sm	0.03-1,000	W	1-10,000
Cr	10-10,000	La	0.5-10,000	Sn	1-10,000	Y	0.5-10,000
Cs	0.01-10,000	Lu	0.01-1,000	Sr	0.1-10,000	Yb	0.03-1,000
Cu	5-10,000	Mo	2-10,000	Ta	0.1-10,000	Zn	5-10,000
Dy	0.05-1,000	Nb	0.2-10,000	Tb	0.01-1,000	Zr	2-10,000
Er	0.03-1,000	Nd	0.1-10,000	Th	0.05-1,000		
Eu	0.03-1,000	Ni	5-10,000	Tl	0.5-1,000		

**c.) ME-ICP41:**

Analyte	Range (ppm)	Analyte	Range (ppm)	Analyte	Range (ppm)	Analyte	Range (ppm)
Ag	0.2-100	Co	1-10,000	Mo	1-10,000	Th	20-10,000
Al	0.01%-25%	Cr	1-10,000	Na	0.01%-10%	Ti	0.01%-10%
As	2-10,000	Cu	1-10,000	Ni	1-10,000	U	10-10,000
Ba	10-10,000	Fe	0.01%-10%	P	10-10,000	V	1-10,000
Be	0.5-1,000	Hg	1-10,000	Pb	2-10,000	Zn	2-10,000
Bi	2-10,000	K	0.01%-10%	S	0.01%-10%		
Ca	0.01%-25%	Mg	0.01%-25%	Sb	2-10,000		
Cd	0.5-1,000	Mn	5-50,000	Sr	1-10,000		

## 16. DATA VERIFICATION

R.S. Middleton, P.Eng and P. Nielsen, P.Geo conducted site visits to the Marshall Lake Property throughout all drilling programs conducted on the property. The core was examined and sampling procedure was also supervised. Employees of East West Resource Corporation personally delivered the samples to ALS Chemex in Thunder Bay. Standards and blanks have been used on some of the dill programs. However, ALS Chemex quality control procedures were deemed sufficient at the initial stage of exploration and thus were not in use in earlier 2006 drill programs. It is the authors opinion that the sample preparation, security and analytical procedures were satisfactory.



## 17. ADJACENT PROPERTIES

The Junior Lake property is located adjacent to the west of the Marshall Lake property in the province of Ontario, Canada, approximately 235 kilometres north-northeast of Thunder Bay and is situated within the Caribou-O-Sullivan Greenstone Belt in the Wabigoon Subprovince. The VW Nickel Deposit is located at Ketchikan Lake toward the south eastern end of the Junior Lake property and the B4-7 Deposit is located approximately 3 kilometres to the north-west of the VW Deposit.

### 17.1 The VW Nickel Deposit

In summary the global resource base is 22,407 tonnes Nickel equivalent (NiEq) at 0.2 per cent. Nickel cut-off grade. 91 per cent. of the new resource is now in the 'Indicated' category and the average grade has improved by 25 per cent. to 0.45 per cent. NiEq. Significantly the VW deposit remains open along strike in both directions to the east and west as well as at depth. This gives scope for expansion of the Resource base and confirms the strong economic potential of the VW Nickel Deposit (www.landore.com).

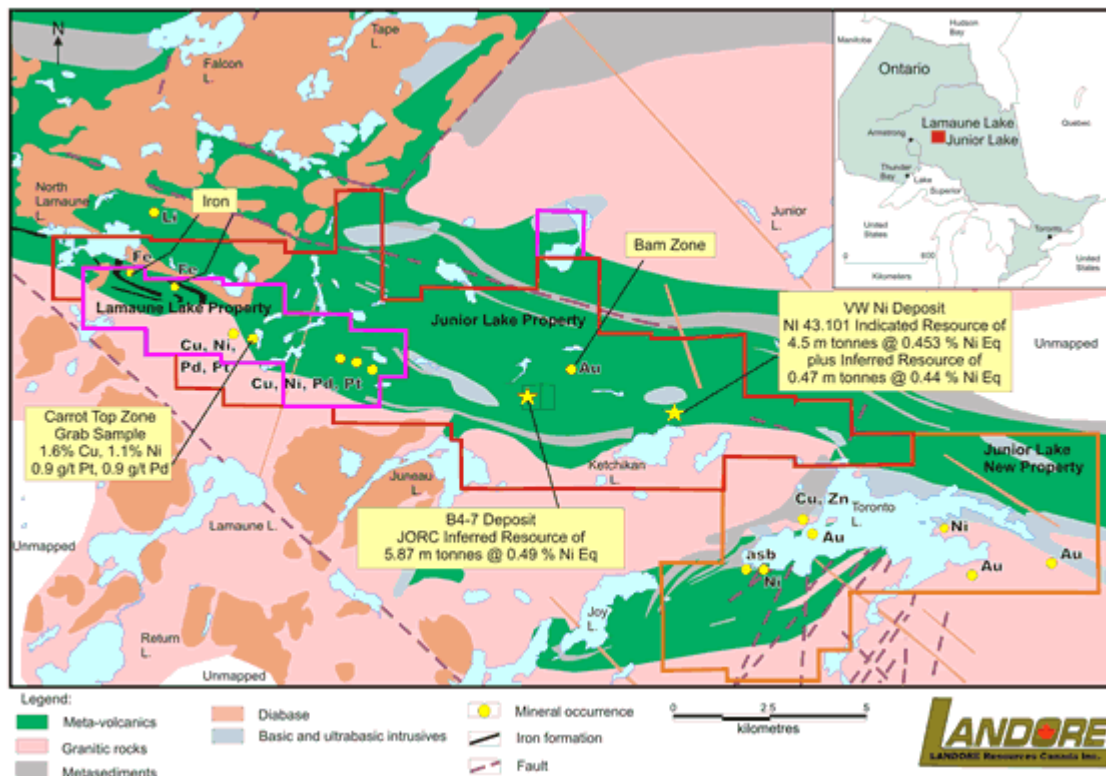
<b>Indicated Resource</b>								
Cut-Off Grade Ni%	Tonnes (000's)	Ni%	Cu%	Co ppm	Pt ppb	Pd ppb	Au ppb	NiEq%
<b>0.2%</b>	<b>4,490</b>	<b>0.393</b>	<b>0.054</b>	<b>155</b>	<b>28</b>	<b>36</b>	<b>11</b>	<b>0.453</b>

<b>Inferred Resource</b>								
Cut-Off Grade Ni%	Tonnes (000's)	Ni%	Cu%	Co ppm	Pt ppb	Pd ppb	Au ppb	NiEq%
<b>0.2%</b>	<b>473</b>	<b>0.380</b>	<b>0.050</b>	<b>147</b>	<b>30</b>	<b>35</b>	<b>11</b>	<b>0.437</b>

<b>Contained Metal</b>							
	Ni Tonnes	Cu Tonnes	Co Tonnes	Pt Ounces	Pd Ounces	Au Ounces	NiEq Tonnes
<b>Total Contained Metal</b>	<b>19,443</b>	<b>2,661</b>	<b>765</b>	<b>4,498</b>	<b>5,729</b>	<b>1,755</b>	<b>22,407</b>

### 17.2 B4-7 Nickel-Copper Deposit

During the second half of 2007 an infill drill programme, consisting of 16 NQ size holes for a total of 3,580 metres, was completed on the historic B4-7 nickel-copper-cobalt-platinum group elements (Ni-Cu-Co-PGE) deposit, located just 3 kilometres from the VW Nickel Deposit. Drilling intersected wide zones (up to 10 metres true width) of nickel mineralization, with assay results frequently returning grades in excess of 1 per cent. nickel together with substantial credits of copper, assaying up to 1.65 per cent. and cobalt assaying up to 0.33 per cent. The programme successfully filled the remaining gaps in the deposit and has confirmed the continuity of the mineralization. The deposit remains open down plunge to the West (www.landore.com).



**Figure 17.1. Landore VW and B4-7 Deposits – Junior Lake Property NW, Ontario, Canada**  
([www.landore.com](http://www.landore.com))

## 18. MINERAL PROCESSING AND METALLURGICAL TESTING

There has been no mineral processing or metallurgical testing analyses carried out on the Marshall Lake Property.

## 19. MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The work by A. S. Bayne (1970) resulted in a calculation of a 1,174,810 ton resource on the Main Billiton zone grading 0.82% copper, 2.71 % zinc, 1.77 ounces silver and 0.006 oz. gold based on 58 holes which was completed prior to NI43-101. All of the exploration results disclosed herein are historic in nature and do not presently conform to National Instrument 43-101 Standards of Disclosure for Mineral Projects. They have been reviewed, but not verified, by Robert S. Middleton, PEng., who is the company's designated qualified person and responsible for the verification and quality assurance of its exploration data and analytical results. In the opinion of the qualified person, based on the information available, the mineralization on the Main Billiton or "K" Zone would be classified as an Inferred Mineral Resource based on the definition by

the CIMM, since it will be required to do further infill drilling to establish grades. Therefore, the historic figures should not be relied on.

The Teck Hill showing on the East West claims (Teck North) was once part of a larger claim group held by Teck Cominco and is the site of the original copper discovery made in 1954 by Teck Hughes Gold Mines Ltd. (now Teck Cominco). A team of prospectors made this discovery from Kirkland Lake, Ontario, lead by Walter Baker ("Baker"). Baker returned to work in the area in 1976-1977 and subsequently made a number of additional copper finds, including the Gazooma, on the East West claims, and the Cherry Hill, G1 and G2, Lease and Jewel Box on the N.W.T. Copper claims (see East West Resource Corporation, News Release dated October 25, 2006). The Teck Hill showing was previously broken into the north and south showings. The North resource calculation (non 43-101 compliant) is 132,342 tons of 1.10% Cu. The South resource calculation (non 43-101 compliant) was 346,921 tons of 1.01% Cu (Teck-Cominco archives).

## **20. OTHER RELEVANT DATA AND INFORMATION**

It is the opinion of the author that there is no other relevant data and information or explanations necessary to make this technical report understandable and not misleading.

## **21. INTERPRETATION AND CONCLUSIONS**

### **21.1 Volcanogenic-Hosted Massive Sulphide Deposits and their relation to the Marshall Lake Base-Metal Occurrence**

#### **21.1.1 Characteristics of VMS and VHMS genetic and descriptive models**

Volcanogenic Massive Sulphide (VMS) deposits are defined as (*Franklin, et al, 2005*) “stratabound mineralized accumulates of precipitation at or near the seafloor in spatial, contemporal and genetic association with contemporaneous volcanism, occurring in two parts; a concordant massive sulphide lens (>60% sulphides) and a discordant vein-type, stringer stockwork footwall”. Volcanogenically-Hosted Massive Sulphide (VHMS) deposits are defined as (*Barrett and MacLean, 1994*) “mineralization and hydrothermal alteration created as a paleo-seafloor process that affects pristine volcanic products, producing major changes in mobile elemental mass, net volume and mineralogy”.

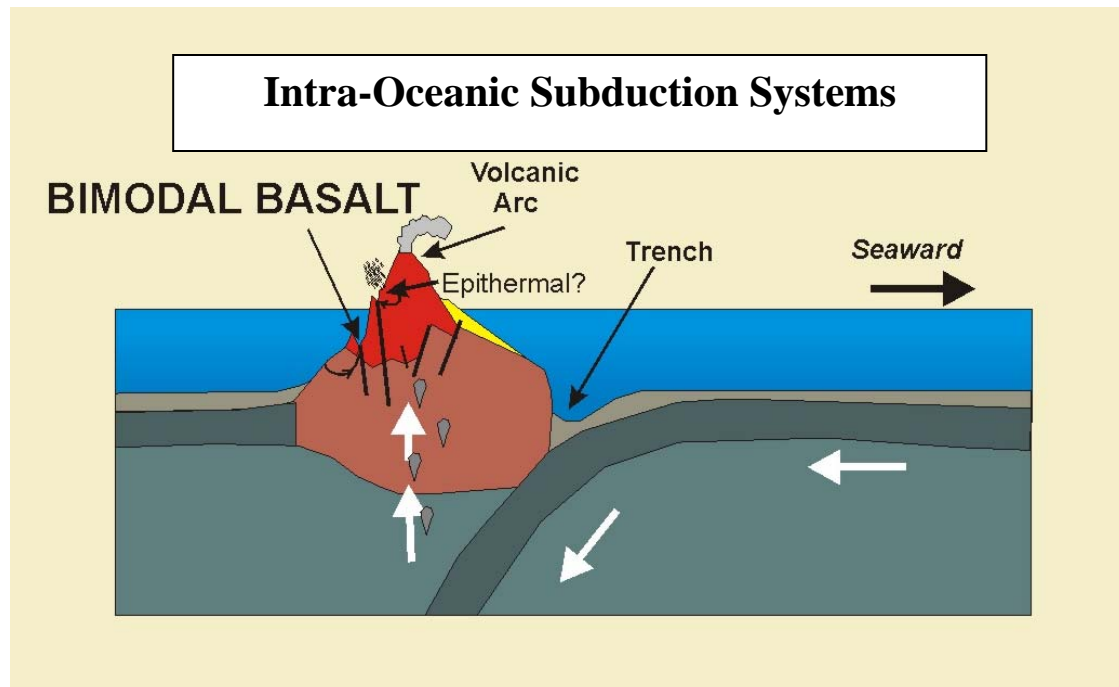
VMS models have been classified into specific types dependant on many descriptive and genetic features to formation. The widely used Barrie and Hannington (1999) classification of VMS deposits focuses upon a five-fold grouping defining the deposit upon the basis of host rock lithology, alteration and mineral assemblages, designed to include strata up to 3km beneath and 5km along strike from an inferred

deposit. However, it is thwarted in its design to include sub-divisions, and therefore, for the purpose of this study, the classification proposed by Franklin et al (2005) is more suited to the volcanic domain that the Marshall Lake property is situated in.

Nevertheless, using Barrie and Hannington's (1999) classification of the Marshall Lake base-metal Cu-Zn-(Ag)-(Au) deposit situated in a Neo-Archean greenstone-granite (Greenstone Belt) (*Card and Poulsen, 1999*) in the Onaman-Tashota mineral belt, the VHMS deposit would be classified as being a Primitive Type VMS deposit. Primitive type VMS deposits in the Wabigoon sub-province, including Marshall Lake and Sturgeon Lake deposits (*Franklin, 2008*) are volcanoclastic dominated Mattabi type primitive VMS deposits. This is opposed to the flow dominated Noranda type primitive VMS deposit, and the difference is primarily in the depth of deposition in the water column (*Barrie and Hannington, 1999*). However, the classification developed by Franklin, et al (2005) (revised from *Franklin et al, 1981*) included a definition based upon five lithostratigraphic types using sequences of five time-stratigraphic breaks, faults and major sub-volcanic intrusions. The five types are; bimodal-mafic settings; pelite-mafic settings; bimodal-felsic settings; siliclastic felsic settings (*Franklin, et al, 2005*). Each focuses attention upon the dominant lithostratigraphy of the deposit, the tectonic setting of formation and the metallogenic characteristics.

The Marshall Lake assemblage consists of a bimodal mafic setting (*Franklin, et al, 2005; Franklin, 2008*), although it may appear to conform more to the bimodal felsic setting, due to the volcanic stratigraphy containing more than 30-75% felsic volcanoclastic strata (*Amukun, 1989*). However, more emphasis on the tectonic environment of formation is emplaced onto the classification scheme in regards to the formation of the Onaman-Tashota mineral belt in the east Wabigoon sub-province. The environment of formation occurred in an incipient-rifted suprasubduction oceanic environment (*Franklin, et al, 2005; Franklin, 2008*) as opposed to a bimodal felsic setting within an incipient-rifted suprasubduction epicontinental arc. Additionally, bimodal felsic types contain more Pb, and at Marshall Lake, the base-metal content contains approximately <0.5%, conforming to the model proposed by Franklin, et al (2005) for bimodal mafic type VMS deposits (*Nason, 2008*).

Bimodal mafic type VMS deposits formed in intervals at 2000Ma, 2700-3000Ma and 0-1000Ma during extensional rifting tectonic regimes with the thinning and subsidence of crust accompanied by hot asthenospheric mantle rising into the crust causing bimodal derived mafic volcanism (*Franklin, et al, 2005*). These occurred above intra-oceanic subduction zones as bimodal volcanic arcs (Figure 2.8). Common stratigraphy includes basalt dominated volcanic strata (>75%), with Na-felsic flows (<25%) with felsic domes and pillow lava (*Franklin, et al, 2005*). Magmatism associated with rifting caused the emplacement of cogenetic intrusions at shallow depth causing heating and modification of trapped seawater within adjacent volcanic/sedimentary strata (*Franklin, et al, 2005*). These environments spawned primitive arc basalt with high silica-rhyolite, trondjemite intrusions and an overlying MORB succession (*Franklin, et al, 2005*), all of which are witnessed in the Marshall Lake stratigraphy (*Nason, 2008*).



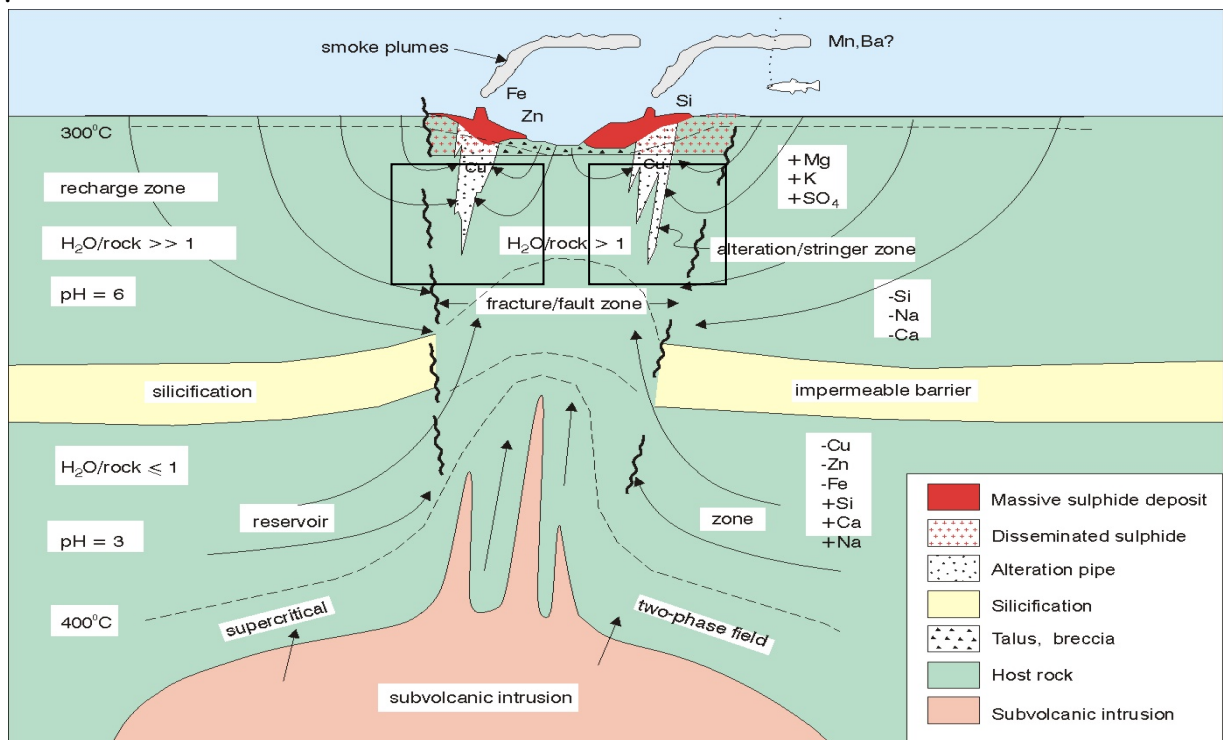
**Figure 21.1. Bimodal Mafic Tectonic Setting**

General characteristics of these primitive Mattabi type bimodal mafic VMS deposits include averages of 10Mt ore reserves grading at 1.5% Cu, 3.5% Zn, <0.5% Pb and 5 g/t Ag, Au (Wheeler, 2008). These are commonly more copper and gold rich than bimodal felsic VMS types, yet possess lower zinc contents. A general descriptive model of this type of deposit is a massive sulphide horizon comprising of (in order of abundance), pyrite-chalcopyrite-sphalerite-galena-pyrrotite-Ag-Au, overlying an extensive alteration and copper stringer zone of disseminated pyrite-chalcopyrite <sup>±</sup>/sphalerite (Wheeler, 2008). Gangue mineralogy associated with synvolcanic alteration processes associated with hydrothermal fluids is classically sericite-chlorite-silica. Capping rocks in these environments tend to be regional extent iron oxide formations, chert and chemical sedimentary exhalatives (Wheeler, 2008).

In bimodal mafic systems, heat induced water-rock reactions resulted in metal leaching and the formation of convection systems within a lower semi-conformable alteration zone (Franklin, et al, 2005) with a high temperature reaction zone (380-401°C) up to 1-3km below the deposit. This has a distinguishable mineral assemblage of quartz-epidote-albite-actinolite with no metals and a host rock of basalt (Franklin, 2008). Here metals are scavenged within low water/rock ratios and ascend through a silicified cap rock to an upper semi-conformable alteration zone (Franklin, et al, 2005) through deep penetrating synvolcanic faults up onto the seafloor or into sub-seafloor permeable strata. The metal content is controlled by the temperature, pressure and pH of the fluids in the reaction zone and adiabatic cooling during ascent and the amount of fluid mixing (Franklin, et al, 2005). In bimodal mafic type systems, this type of interaction forms Zn-Cu deposits with low Pb (Franklin, et al, 2005). Sub-seafloor replacement provides a more efficient mechanism to trap a higher portion of metal, forming a larger, tabular VMS massive sulphide (Franklin, et al, 2005).

The descriptive model below is that proposed by Franklin, et al, (2005) and is pictured in Figure 21.2:

- 1) Subvolcanic Intrusion: Provides heat source to drive hydrothermal convention cell and some contribution to metal source. Must be 15-30km across.
- 2) Lower Semi-conformable alteration Zone: A high temperature reaction zone acts as a reservoir, leaching metals from basaltic rocks by interaction with evolved/modified seawater. Includes and impermeable barrier/cap rock of silicified rock that restricts and insulates the hydrothermal system to temperatures of 380-401°C at pH3 and water/rock ratios of <1. Additions here of Na-Ca-Si-Mg-CO<sub>2</sub>, losses of Fe-Zn-Cu.
- 3) Discharge Zone: Synvolcanic faults/fissures focus the discharge of fluids from the lower semi-conformable zone to the upper semi-conformable alteration zone through the Si-Rich cap rock.
- 4) Alteration-stringer Zone: Situated in the footwall of the deposit and produced by high temperature fluid-rock reactions, involving the mixtures of ascending hydrothermal fluid and locally heated seawater to create an alteration +/- copper enriched stringer zone. Occurs at pH6, including losses of Si-Na-Ca and gains of Fe-Mg-Cu.
- 5) Massive Sulphide Horizon: Formed at or near the palaeo-seafloor, underlain by a disseminated sulphide and breccia pile. Includes additions of Si-Fe-Zn-Pb and Mg-K-SO<sub>4</sub> at the recharge zone.

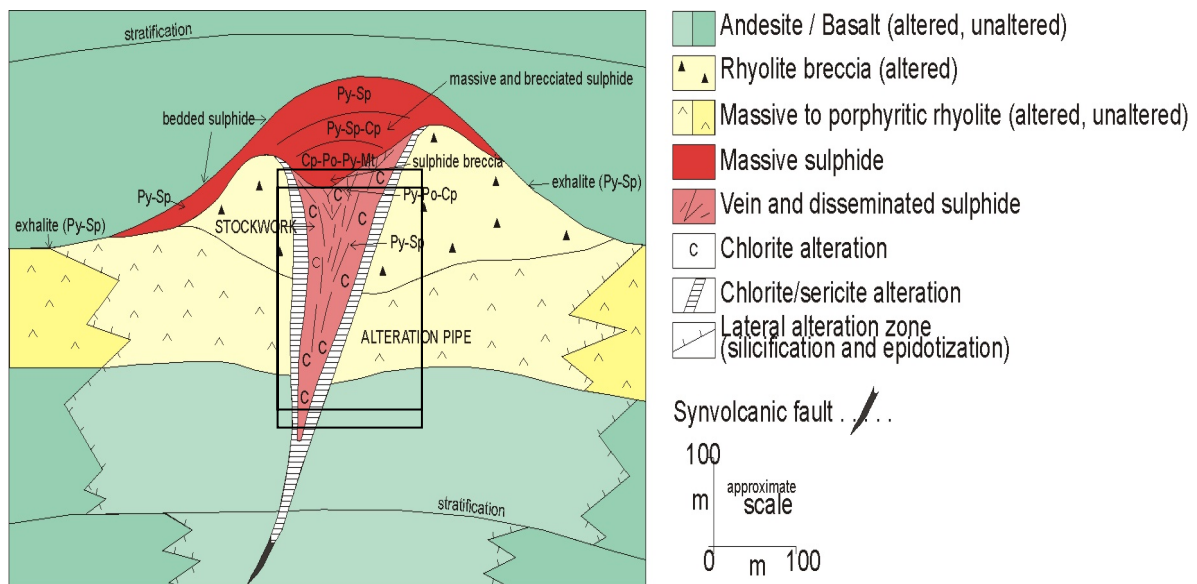


**Figure 21.2: Cross-section of regional scale Descriptive Model for a bimodal mafic VMS deposit with the perceived copper-rich stringer zone study area at Marshall Lake highlighted (modified after Franklin, 2007).**



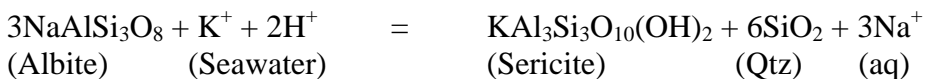
### 22.1.2 VHMS Alteration-Stringer Zone Models and the relation to Marshall Lake

When examining the alteration at the copper-enriched stringer zone at the Marshall Lake VHMS deposit. Several alteration models are proposed for this section of the deposit. Primarily this part of the deposit is characterized by additions and losses of the precursor constituents of the original host rock by synvolcanic alteration processes such as ascending hydrothermal fluids. The stringer zone is normally characterized by a copper rich disseminated to veinlet chalcopyrite-pyrite occurrence (*Franklin, et al, 2005*) that is very vertically extensive with a prevalent alteration zone called an alteration pipe (*Franklin, 2007*). A visual model is proposed by Franklin (2007) in Figure 21.3. It consists of chlorite-quartz core mineralogy with pronounced zoned Fe-Mg chlorite within the core. It has a sericitic rim and quartz-sulphide veins surrounding the core.



**Figure 21.3. Typical bimodal mafic alteration-stringer zone and massive sulphide model with reference to the perceived copper-rich stringer zone at Marshall Lake highlighted (modified after Franklin, 2007)**

Significant depletion of the sodium rich albite feldspar in the felsic host rocks at Marshall Lake is expected, as the reaction with modified seawater creates sericite and aqueous  $\text{Na}^+$  ions (*Barrett and MacLean, 1994*):



Potassium additions are sourced from the enrichment factor within the conversion of albite to sericite, yet it is also sourced from the modified seawater passing through the system containing 390ppm K (*Barrett and MacLean, 1994*). Very high Zn/Pb ratios accompany these zones (>20) (*Franklin, 2008*). The high temperature fluid-rock reactions

occur at pH6 conditions (*Franklin, et al, 2005*) including a net loss of Ca-Si and gains in Fe-Mg-Cu-Mn (*Franklin, et al, 2005; Franklin, 2008*). Though Si is lost in the system, it will appear in actual fact enriched in the visible mineralogy, due to the relative removal of other constituencies from the rock, leaving largely quartz behind from the original rhyolites/rhyodacites. However, mass balance equations will rectify the mass changes of silica (*Nason, 2008*).

Magnesium is introduced into the rock from both modified hydrothermal seawater and ambient infiltrated seawater into the surrounding lithology, driven by draw pressures created from hydrothermal convection (*Franklin, et al, 2005*). The magnesium concentration was believed to be 400ppm in Neo-Archean seawater (*Franklin, 2008*). This reacted with the immobile alumino-silicates left in the rock from products of reactions such as albite and seawater, and combining with iron, created chlorite ((Fe, Mg, Al)<sub>6</sub>(Si, Al)<sub>4</sub>O<sub>10</sub>(OH)<sub>8</sub>), the iron aluminium magnesium silicate hydroxide. The remaining aluminium derived often from the seritisation reaction that is often immobile in a VMS system (*Barrett and MacLean, 1994*) will form pyrophyllite (AlSi<sub>2</sub>O<sub>5</sub>OH) within the pH conditions of this system. Other immobile constituents include titanium, which is normally converted from ilmenite (FeTiO<sub>3</sub>) to rutile (TiO<sub>2</sub>) during hydrothermal alteration in the VMS alteration pipe (*Barrett and MacLean, 1994*). Other immobile constituents in the system include Zr and Y.

Carbonate is generally removed from the system, though may be initially introduced before hydrothermal fluids react with the host rock, by infiltration of seawater through the stratigraphy. However, fluid-water reactions by ascending hydrothermal solutions provide removal of calcium and may produce the insoluble siderite (FeCO<sub>3</sub>) (*Franklin, et al, 2005*). Any unusual additions of carbonate may indicate that the ascending hydrothermal fluids contained CO<sub>2</sub>. This is important when concerning additions in manganese into the system. Manganese conserved in the hydrothermal fluid, derived from modified seawater sources, may substitute with iron in siderite to form localized manganese anomalies. Barite will not precipitate in this system unless it is within an oxidized environment, that in the Neo-Archean reduced environments, was only found at or near volcanic vents at the palaeo-seafloor creating photolytic (organic) oxygising environments (*Franklin, 2008*). Barite may substitute with potassium sourced from sericite (*Barrett and MacLean, 1994*).

Metal distribution in the stringer zone is dependant on many variables, yet primarily, Fe-Cu will precipitate out of solution at 280°C either as chalcopyrite or pyrite (*Franklin, et al, 2005*). This contrasts greatly from Zn-Pb, which will differ and precipitate on the palaeo-seafloor or sub-sea floor surface due to a combination of rapid temperature cooling and reduction in hydrostatic pressure. Therefore, copper should precipitate at a much lower stratigraphic level than zinc and lead, in the deeper, hotter stringer zone in the footwall of the deposit (*Franklin, et al, 2005; Franklin, 2008*).

At the Marshall Lake copper enriched stringer zone, a specific distribution of metals is witnessed at varied stratigraphic depths in comparison with the zinc anomalies in the Marshall Mineralized Band in the centre of the property. This is largely dependant on the hydrostatic pressure witnessed at the time of deposition (*Franklin, 2008*). Independent studies on the regional banded iron formation (*Forslund, 2008*), suggest that the iron formation acted as a paleo-seafloor during VMS formation and that subsequent massive sulphide horizons may be located at or immediately below this horizon, and have

been masked by geophysical surveys by the high conductivity and magnetic anomaly the iron formation possesses. If this is so, the stringer deposit may be located as up to 1-5km below this horizon. This may have been due to regional tectonic regimes acting on the area (*Amukun, 1989; Straub, 1999*), yet the metal distribution was most likely governed by the following theories devised by Franklin (2008):

Due to adiabatic cooling restraints due to lithostatic and hydrostatic pressures, the zinc and lead in the system, combined with cooling from mixing with seawater fluid at sub-seafloor horizons, would have had an approximate deposition depth of <1900m depth, but >500m of the proposed massive sulphide horizon. This exhibits a very shallow system, and therefore, copper would have precipitated at a much deeper stratigraphic level due to lithostatic load combined with hydrostatic pressure and higher temperature sites at deposition, including fluid pH's formed under bimodal-mafic buffering conditions. This may explain the larger stratigraphic gap between the stringer zone and the proposed massive sulphide horizon (Nason, 2008).

As the system was believed to be cooling, copper horizons may have precipitated, but zinc-lead rich parts of the system fractionated separately and therefore may not have formed a precise massive sulphide horizon, and so the metallic evidence of a VHMS system at the Marshall Lake property can only be identified by the copper-rich stringer zone. Defining this would mean identifying Zn/Pb ratios of 10-15, as opposed to the >20 ratios encountered at the stringer zone on the property (Nason, 2008).

The majority of work conducted on the Marshall Lake property has focused on drilling geophysical anomalies identified in the Marshall Mineralized Band in the central and eastern regions of the Marshall Lake property. Reports such as those by Challenger Minerals Ltd in the mid-1990 are focused upon diamond drilling on geophysical targets in the Main Zone and peripheral deposit anomalies. Most of the recommendations were to advance drilling associated with pre-existing drill holes (*Campbell, 1996*) and advance structural and geological mapping in the area combined with lithogeochemical sampling (*Campbell, 1994*). This report by Challenger Minerals in 1994 combined all pre-existing lithogeochemical data on the property into an archive to produce a lithogeochemical summary of the entire property around the Main Zone. However, prior to this report and including it, no lithogeochemical study had focused sole attention towards the copper rich stringer zone in the southwest portion of the property, as at this point it was not believed to be joined at depth or herald any significant total base-metal deposits in comparison to the Main Zone.

Since acquirement of the property in 2006, East West Resources Corporation has expanded existing knowledge upon the incidence and occurrences of the IP anomalies in the disseminated stringer deposit located in the Gripp Lake sequence (Gazooma, Teck Hill, Cherry Hill, Gazooma North, Lease, Jewel Box), and delineated several diamond drilling programmes to define the inferred resource of the area. A complete lithogeochemical study has of yet to be compiled for the south-western portion of the property including the copper-rich stringer occurrence at Marshall Lake VHMS deposit. Therefore, though previous recommendations have focused at the more attractive Main Zone in the Marshall Mineralized Band, emphasis has to now be directed at focusing upon defining the stringer zone deposit via lithogeochemical means. This is due to the continued frustration from all previous exploration attempts at not discovering a lenticular massive sulphide horizon in the Main Zone. As this Main Zone area has been

the dominant focus for most exploration attempts until recently, establishing a lithogeochemical framework on the stringer deposit in the south-west portions of the property may help to delineate areas of further exploration potential, especially at depth. To define the alteration assemblage of the inferred footwall stringer deposit, may in fact aid exploration for the massive sulphide horizon by distinguishing alteration model zones within a classic VHMS model, and thus calculating peripheral zones of alteration and therefore the possibility of economic mineral potential.

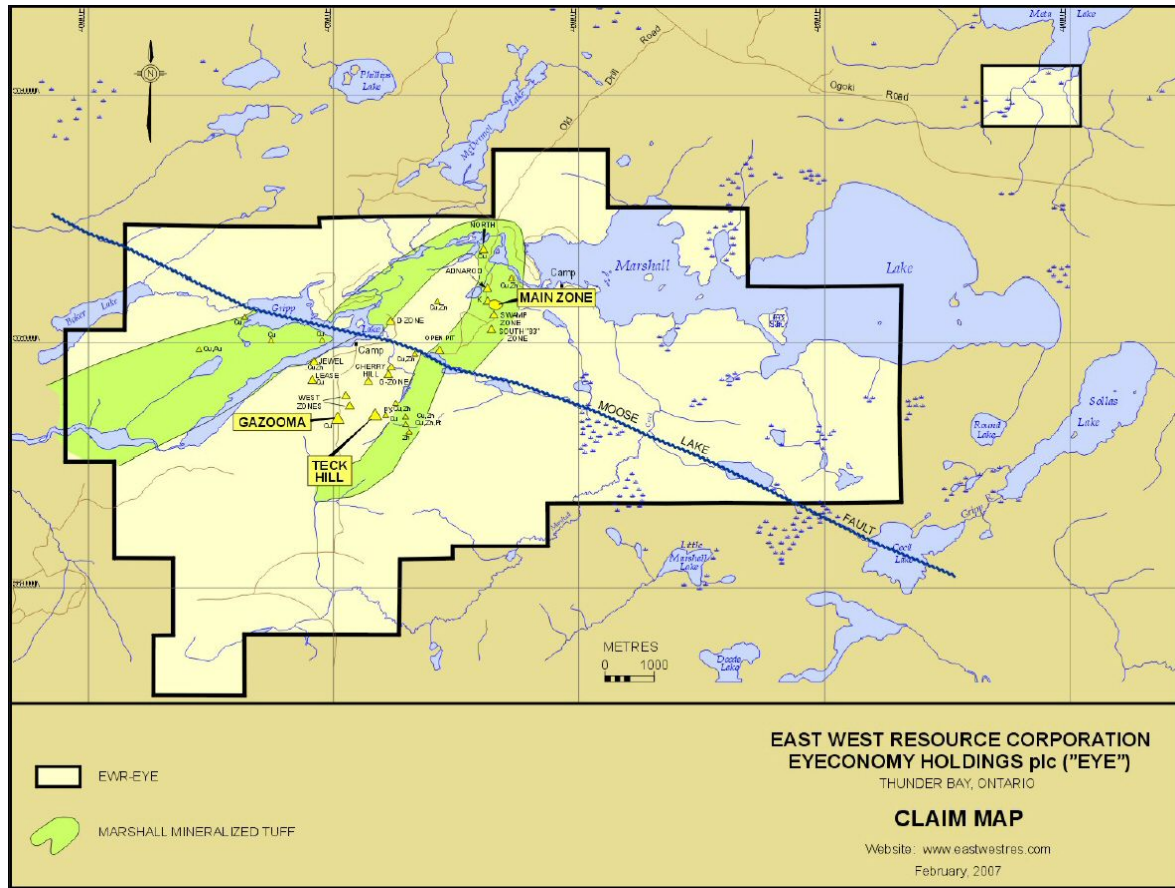


Figure 21.4 – Marshall Lake property claims with mineralized zones shown.

## 22. RECOMMENDATIONS

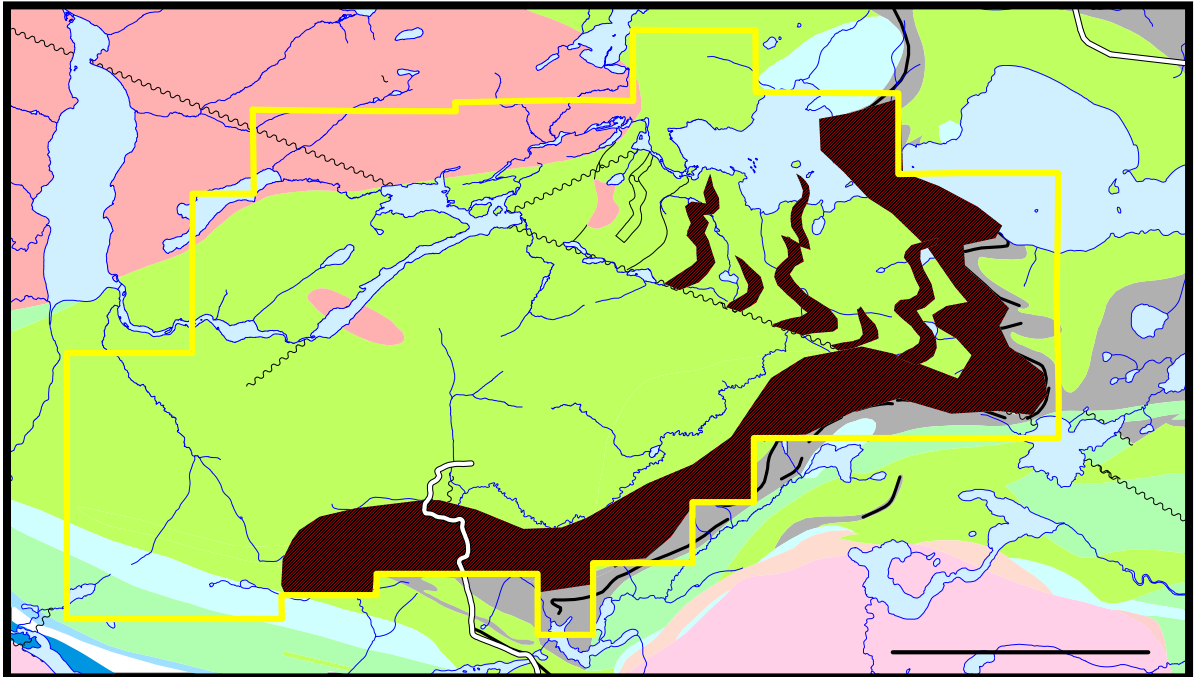
**Phase 1** – A total proposed budget of \$1,000,000 is recommended to follow up on the Marshall Lake Property with \$200,000 allocated to drill holes at 25m step outs from GAZN-02-07 and GAZN-06-08, as well as 25m step outs both east and west from GAZN-07-08 and GAZN-08-08. These holes will test for copper mineralization in order to find another Gazooma type system within the VHMS setting. These holes are estimated to be about 150 meters in length. Drilling along the IP trend and existing grid at 50m intervals moving eastward from Gazooma to Teck Hill zones is recommended. Further drilling is warranted below the main zone and the hole to the south of the main zone that intersected 30m of copper mineralization. Extensive mapping should also be conducted in the vicinity of the iron formation in order to discover the potential lead-zinc rich horizon of the deposit.

**Phase 2** – A total of \$300,000 to follow up on results contingent on phase 1 to further explore areas of interest on the Marshall Lake Property as well as definition drilling of the Gazooma and Teck Hill zones.

**Phase 3** – A total of \$500,000 to follow up on results and definition drilling contingent on previous phases of exploration results.

The alteration and subsequent metamorphism at Marshall Lake are typical for a bimodal mafic VHMS type deposit. The metamorphic assemblages present in the southern felsic volcanics represent depletion in sodium and silica and enrichment in magnesium and potassium. Most of the mapped area, especially along the contact between the metavolcanics and metasedimentary rocks, are dominated by the metamorphic assemblage garnet-amphibole. The intensity of this alteration decreases with distance from this contact. In the genesis of a VHMS deposit two types of fluids can contribute to the alteration geochemistry: the ore-bearing fluids that penetrate the siliceous cap rock underneath the precipitation site, and the convecting seawater that enters through fractures in the seafloor. The latter fluid type would result in the enrichment in potassium and magnesium that is seen. The evidence seen in the field, through petrography and in the geochemistry is suggestive that seawater had more effect on the alteration of the southern volcanics than the ore-bearing fluids, however a background signature from the ore-bearing fluids is still present as can be seen with the depletion of sodium and silica. If this is indeed the case then it would indicate that the sedimentary units on the south side of the contact, consisting of banded iron formation within clastic sediments, may have been the paleo-seafloor during the genesis of the deposit, and the volcanics to the north would have underlain these sediments. The sequence would then be regionally topping to the northeast, which agrees with the few structural measurements that are available. This would have economic significance as well since it may warrant exploration for the presence of a lead-zinc rich horizon within (or in close proximity to) the banded iron formation, since lead and zinc would precipitate out at the top of the stratigraphic pile. The geophysical methods used in the past would have difficulty identifying such an anomaly, since the iron formation itself is

such a strong conductor and has such a high magnetic susceptibility. Further mapping and exploration is necessary to verify this.



**Figure 22.1 – Lead-zinc massive sulphide potential in red parallel lines**



## 23. REFERENCES

- Amukun, S.E., 1989. Precambrian geology, Little Marshall Lake area. Ontario Geological Survey, Report 267, 70p.
- Barrett, T. J. and MacLean, W.H., 1994. Chemostratigraphy and hydrothermal alteration in exploration for VHMS deposits in Greenstone and younger volcanic rocks, *in* Lentz, D.R., eds., Alteration and Alteration processes associated with ore-forming systems: Geological association of Canada, Short Course Notes, v. 11, p. 433-467.
- Barrie, C.T., Gorton, M.P., Naldrett, A.J. and Hart, T.R., 1991. Geochemical constraints on the petrogenesis of the Kamishotia gabbroic complex and related basalts, western Abitibi Subprovince, Ontario, Canada. *Precambrian Research*, v. 50, p. 173-199.
- Barrie, C.T. and Hannington, M.D., 1999. Introduction: Classification of VMS deposits based on host rock composition, *in* Barrie, C.T., and Hannington, M.D., eds., Volcanic-Associated Massive Sulfide deposits: Processes and examples in modern and ancient settings: *Reviews in Economic Geology*, v. 8, p. 2-10.
- Bayne, A.S., 1970. Report on examination and feasibility study, NWT Copper Mines Ltd; Marshall Lake area, district of Thunder Bay, Ontario, Canada; an unpublished report to the president and directors, dated October 23, 1970, 27p., Assessment Files Research Office, Ontario Geological Survey, Toronto.
- Bernier, L.R., Pouliot, G. and MacLean, H.H., 1987. Geology and metamorphism of the Montauban North Gold Zone: A metamorphosed polymetallic exhalative deposit, Grenville Province. *Economic Geology*, v. 82, p. 2076-2090
- Campbell, I., 1994. Report on the 1994 exploration program of the Marshall Lake property by Challenger Minerals Ltd. Unpublished Report.
- Campbell, I., 1996. Report on the 1995 Exploration Program. Marshall Lake Property. Nakina, Ontario, NTS 42L/5. Consolidated Abitibi Resources Ltd. Unpublished Report.

- Card, K.D., 1990. A review of the Superior Province of the Canadian Shield; A product of Archean accretion. *Precambrian Research*, v. 48, p. 99-156.
- Card, K.D. and Ciesielski, A., 1986. Subdivisions of the Superior Province of the Canadian Shield. *Geoscience Canada*, v. 13, p. 5-15.
- Card, K.D. and Poulsen, K., 1998. Archean and Paleoproterozoic Geology and Metallogeny of the Southern Canadian Shield. *Exploration and Mining Geology*, v. 7, No. 3, p. 181-215, 1998, CIM.
- Clark, A.M., 1975. Hey's Mineral Index. Mineral Species, varieties and synonyms. Natural History Museum Publications. Chapman and Hall.
- Connelly, J.N., 1983. Alteration and mineralization in the Gripp Lake area, northwestern Ontario. B.Sc. Thesis, Department of Geology, Carleton University.
- Deer, W.A., Howie, R.A. and Zussman, J., 1965a. Rock Forming Minerals. Volume 1: Ortho and ring silicates. Longmans, Green and Co, Ltd.
- Deer, W.A., Howie, R.A. and Zussman, J., 1965a. Rock Forming Minerals. Volume 1: Chain Silicates. Longmans, Green and Co, Ltd.
- Forslund, N.R., 2008. Hydrothermal Alteration in the southern felsic volcanics at Marshall Lake, Northwestern Ontario. B.Sc. Thesis, Department of Geology, Lakehead University.
- Franklin, J.M., 2007. Volcanogenic massive sulphide deposits, Part 1: Classification. Franklin Geosciences Ltd. Unpublished Report.
- Franklin, J.M., 2008. Personal Communication. Thunder Bay
- Franklin, J.M., Gibson, H.L., Jonasson, I.R. and Galley, A.G., 2005. Volcanogenic Massive Sulfides. *Economic Geology*. 100<sup>th</sup> Anniversary Volume, p. 523-560.
- Franklin, J.M., Sangster, D. M. and Lydon, J.W., 1981. Volcanic associated massive sulphide

- deposits. *In* 75<sup>th</sup> Anniversary Volume, B.J. Shinner., eds., *Economic Geology*, p. 485-627.
- Gibson, H.L. and Watkinson, D.H., 1990. Volcanogenic massive sulfides of the Noranda cauldron and shield volcano. *In* *The Northwestern Quebec Polymetallic Belt: A summary of 60 years of Mining Exploration.*, eds., Pive, M., Verpaelt, P., Gagnon, Y., Lulin, J-M., Riverin, G., and Simard, A. Canadian Institute of Mining and Metallurgy and Petroleum, Special Volume 43, p. 119-232.
- Hall, D.H. and Brisbin, W.C., 1982. Overview of regional geophysical studies in Manitoba and northwestern Ontario. *Canadian Journal of Earth Sciences*, v. 19, p. 2049-2059.
- James, R.S., Grieve, R.A.F. and Park, L., 1978. The petrology of cordierite-anthophyllite gneisses and associated mafic and pelitic gneisses at Manitouwadge, Ontario. *American Journal of Science*, v. 278, p. 41-63.
- Lockwood, M.B. and Franklin, J.M., 1986. Implications of chemical trends within the chloritoid-altered volcanic rocks of the Wawa Belt. Ontario Geological Survey Geoscience Grant Research program, Annual Report. 1985-86, 28p.
- Middleton, R.S. and Rajnovich, L., 2007. East West Resource Corporation and Eyeconomy Holdings plc. Thunder Bay, Ontario. Marshall Lake claim map. Unpublished Report.
- Middleton, R.S. and Laarman, J., 2008. Report on the Diamond Drilling: Marshall Lake Property Drill Holes: GAZ-07-07 through to GAZ-07-11, NWT-07-01, TH-07-01, GAZN-07-01 through to GAZN-07-05, G-07-01, DZ-07-01, MAR-06-01 through to MAR-07-11. Thunder Bay Mining Division. East West Resource Corporation. Unpublished Report.
- Moon, C.J., Whately, M.K.G. and Evans, A.M., eds., 2006. *Introduction to Mineral Exploration*. 2<sup>nd</sup> Edition. Blackwell Publishing.
- Morton, R.L., 1983. Marshall Lake Report. Corporation Falconbridge Copper. Unpublished Report

- Moser, D., 1994. The geology and structure of the mid-crustal Wawa gneiss domain – A key to understanding tectonic variation with depth and time in the Late Archean Abitibi-Wawa Orogen. *Canadian Journal of Earth Sciences*, v. 31, p. 1064-1080.
- Nason, P., 2008. Characterisation of an Archean VHMS Alteration System with specific reference to the Copper-Rich Stringer Zone at the Marshall Lake Property, Northwestern Ontario. University of Exeter as a dissertation towards a degree of Masters of Science in Mining Geology.
- Poulsen, K.H., Borradaile, G.J. and Kehlenback, M.M., 1980. An inverted Archean succession at Rainy Lake, Ontario. *Canadian Journal of Earth Sciences*, v. 17, p. 1358-1369.
- Roscoe, S.M. and Card, K.D., 1993. The reappearance of the Huronian in Wyoming: Rifting and drifting of ancient continents. *Canadian Journal of earth Sciences*, v. 30, p. 2475-2480.
- Shirey, S.B. and Hanson, G.N., 1986. Mantle heterogeneity and crustal recycling in Archean granite-greenstone belts: Evidence from Nd isotopes and trace elements in the Rainy Lake area, Superior Province, Ontario, Canada. *Geochimica Cosmochimica Acta*, v. 50, p. 2631-2651.
- Stockwell, C.H., 1982. Proposals for time classification and correlation of Precambrian rocks and events in Canada and adjacent areas of the Canadian Shield, Part 1: A time classification of Precambrian rocks and events. Geological Survey of Canada, Paper 80-19, 135p.
- Stott, G.M. and Corfu, F., 1991. Uchi Subprovince. *In* *Geology of Ontario*. Ontario Geological Survey, Special Volume 4, p. 135-246.
- Stott, G.M., Davis, D.W. and Parker, J.R., 1998. Observations of the Tectonic framework of the eastern Wabigoon Subprovince; *in* Harrap, R.M., and Helmstaedt, H.H., eds., *Western Superior Lithoprobe Transect, Fourth Annual Workshop, March 23-24, 1998*. Lithoprobe Report #65, Lithoprobe Secretariat, University of British Columbia, p. 74-76

- Stott, G.M. and Straub, K.H., 1999. The Marshall Lake Volcano on the northern margin of eastern Wabigoon Subprovince, Northwestern Ontario; *in* Summary of Field work and other activities 1999, Ontario Geological Survey, Open File Report 6000, p. 23-1 to 23-13.
- Straub, K.H., 1999. Mineralization and alteration within the Marshall Lake intermediate to felsic volcanic centre, east Wabigoon Subprovince; *in* Summary of Field work and other activities 1999, Ontario Geological Survey, Open File Report 6000, p. 24-1 to 24-10.
- Straub, K.H., 2000. Geochemistry of hydrothermal alteration and its relation to Base Metal mineralization in the Marshall Lake area, Northern margin of the Onaman-Tashota Greenstone Belt; *in* Summary of Field work and other activities 2000, Ontario Geological Survey, Open File Report 6032, p. 26-1 to 26-14.
- Teck-Cominco. Archives of Marshall Lake Area Exploration Programs, Vancouver B.C.
- Wells, G.S., 1982. Summary Report, 1981. Marshall Lake Projects PN038, 039, 040, 045, NTS-42-L-5. Corporation Falconbridge Copper. Unpublished Report.

## 24. DATE AND SIGNATURE PAGES

### Statement of Qualifications

I, Robert S. Middleton, P.Eng, am a graduate of the Provincial Institute of Mining (Haileybury, Ontario), 1965, Mining Diploma; Michigan Technological University 1968, B.Sc. Applied Geophysics, 1969, M.Sc. Applied Geophysics, and attended University of Toronto 1970, Ph.D. Geological Program.

1. I am a professional Engineer (APEO) # 31595010 and have been a member of the Association of Professional Engineers of Ontario since 1969.
2. I am a fellow of the Geological Association of Canada (GAC).
3. I am a member of the Canadian Institute of Mining and Metallurgy (CIM) since 1970.
4. I am a member of the Prospectors and Developers Association of Canada (PDAC).
5. I am a member of the Ontario Prospectors Association (OPA).
6. I am a member of the Society of Economic Geologists (SEG).
7. I am a past member of the Society of Exploration Geophysicists, European Association of Exploration Geophysicists, Society of Exploration Geochemists, Institute of Mining and Metallurgy (IMM-UK), Society of Geology Applied to Ore Deposits (Europe).
8. I was employed as the Geophysicist for the Ontario Department of Mines in 1968-1971 at Queens Park and in that capacity I reviewed all exploration work reports done in Ontario and amended and reviewed the Mining Act.
9. I was Manager of Ground and Airborne Geophysics for Barringer Research from 1971-1974.
10. From 1974-1980, I was geophysicist, Vice President and Director of Rosario Resources and worked in Central America on scarn deposits and vein deposits. In addition, I carried out numerous mine evaluations in North America and feasibility studies.
11. From 1981-1983, I was Exploration Manager for Newmont Exploration (Eastern Canada) and carried out numerous property evaluations.
12. I have been consulting for various junior and major mining companies worldwide since 1983 to present.
13. I have worked on the Marshall Lake property since August 2006 and supervised the drilling programs, trenching and geological mapping.
14. I am not a director or officer of East West Resource Corporation, Eyeconomy plc or Marshall Lake Mining plc.



R.S. Middleton, P.Eng.

January 27, 2010



## Statement of Qualifications

I, Neal A. Bennett, of 320 Fitzgerald St., Thunder Bay, Ontario, Canada, hereby certify that:

I graduated from Lakehead University with a HB.Sc. in Geology in 2007.

### **Employed during:**

2005 – North American Palladium, Thunder Bay, ON, geological assistant.

2006 – 2009 - East West Resource Corporation, Thunder Bay, ON, Project Geologist.

I am a geologist presently employed by the Ontario Ministry of Northern Development, Mines and Forestry and am currently applying to become a member of the Association of Professional Geoscientists of Ontario as a Professional Geoscientist (P.Geo).

I co-wrote this report and completed it on January 26<sup>th</sup>, 2010.

I am not aware of any material fact or material changes with respect to the subject matter of this report, the omission of which would make this report misleading.

Dated at Thunder Bay, Ontario on: \_\_\_\_\_January 27, 2010\_\_\_\_\_

A handwritten signature in black ink, appearing to read 'N. A. Bennett', is written over a light gray rectangular background.

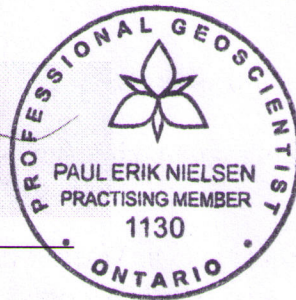
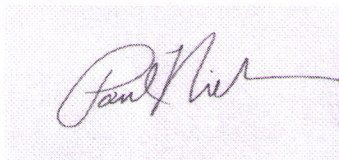
---

Neal A. Bennett H.BSc.  
Project Geologist  
East West Resource Corporation.

### Statement of Qualifications

I, Paul E. Nielsen am a graduate of Lakehead University with a HBSc in Geology 1974.

1. I am a member in good standing of the Association of Professional Geoscientists of Ontario since 2004 (#1130)
2. I am a member of the Northwestern Ontario Prospectors Association (NWOPA) and the Ontario Prospectors Association (OPA).
3. I have been engaged in mineral exploration for gold and VMS deposits with junior and major mining companies throughout Canada for the past 36 years. Active projects were located in Northern Ontario, New Brunswick, Manitoba, Saskatchewan, British Columbia and the Northwest Territories.
4. I have conducted a site visit to the Marshall Lake Property in June of 2008.



---

Paul E. Nielsen, P.Ge.

January 27, 2010

## **25. ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES**

The Marshall Lake property is currently not a development or production property.