

**Technical Report on the  
Mineral Resource Estimate  
For the  
Lundberg and Engine House Deposits  
Buchans Area  
Newfoundland, Canada**

510,000mE, 5,407,900mN  
(UTM NAD83 Zone 21)

**Prepared for  
Royal Roads Corp.**

by  
Peter C. Webster, B.Sc., P.Geo.,  
P. James F. Barr, B.Sc

**Mercator Geological Services Limited**

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## Summary

The Lundberg and Engine House deposits are held by Royal Roads Corp. within the Buchans area of central Newfoundland, Canada. Mercator Geological Services Limited was retained by Royal Roads and its predecessor company Buchans River Limited in 2007 and 2008 to help plan, manage and carry out a diamond drilling program to outline a mineral resource estimate on their Lundberg and Engine House stockwork type volcanogenic massive sulphide deposits.

Stockwork mineralization is typically associated with in situ ore and the best example is the Lundberg deposit. The Lundberg deposit sits stratigraphically below the historically mined Lucky Strike orebody and consists of quartz-barite-carbonate-sulphide veins and veinlets cutting strongly altered mafic volcanics with disseminated sulphide mineralization. The Lucky Strike orebody consisted of massive high-grade sulphides where Asarco mined 5.6 million tonnes of ore with head grades averaging 18.4% Zn, 8.6% Pb, 1.6% Cu, 112 g/t Ag & 1.7 g/t Au (calculated based on Thurlow and Swanson 1981, pages 122 to 128). The stockwork mineralization comes to surface on the eastern edge of the zone and forms an elongate, wedge shaped body that is 350 m deep on the western end. The highest concentration of sulphide mineralization appears to be proximal to the Lucky Strike orebody and more diffuse away from the historic workings. Mineralization typically occurs as fine to coarse grained euhedral pyrite as the dominant sulphide and occurs with varying amounts of chalcopyrite, sphalerite, galena and barite.

A second zone of stockwork mineralization is associated with the Engine House deposit immediately south of Lucky Strike and typically has a greater proportion of chalcopyrite. The Engine House deposit sits immediately south of the Lundberg deposit and was also investigated as part of the drill program completed earlier this year by Buchans River Limited.

Recent drilling completed by Royal Roads Corp. and Buchans River Limited included 53 drill holes drilled from surface totaling 8,058 metres of drilling. Mercator compiled analytical data for zinc, lead, copper, silver, gold, and barite from this recent drilling in addition to historical assay results from previous drilling on the property. Results of this work resulted in an Inferred Mineral Resource Estimate that is considered compliant with disclosure requirements of NI43-101 as well as the Canadian Institute of Mining and Metallurgy Standards for Mineral Resources and Mineral Reserves: *Definitions and Guidelines*. In addition to the resource estimate, a calculation outlining the percentage of the resource tonnage that lies within 100m from surface was undertaken. These numbers

do not constitute or suggest the amenity of economics or mineability of the resource contained therein, but do offer insight into the spatial distribution of minerals within the current block model.

This estimate updates an earlier released Inferred Resource having an effective date of September 15, 2008 (PR#17-08 Sept 17, 2008) and incorporates more complete historic precious metal assay data compiled from historic drilling and assays, resulting in a nominal increase in the precious metal contents. The results of the resource estimate are as follows:

**Lundberg Inferred Resource Estimate - Zn % Threshold - November 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %	Percentage of Tonnage within 100m of Surface
1.00	15,690,000	1.96	0.83	0.38	3.17	6.57	0.08	2.36	61.79%
1.50	9,300,000	2.46	1.03	0.43	3.92	8.26	0.10	2.84	66.40%
2.00	5,340,000	3.02	1.25	0.49	4.76	10.27	0.12	3.47	70.62%
2.50	3,170,000	3.56	1.46	0.53	5.55	12.28	0.14	4.65	72.83%
3.00	1,880,000	4.13	1.66	0.57	6.36	14.32	0.14	6.20	75.68%
3.50	1,090,000	4.79	1.93	0.62	7.34	16.46	0.15	8.64	81.35%

**Engine House Inferred Resource Estimate - Zn % Threshold - November 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %	Percentage of Tonnage within 100m of Surface
1.00	890,000	2.37	0.95	0.96	4.28	11.29	0.15	4.40	58.73%
1.50	600,000	2.89	1.10	1.05	5.04	12.17	0.16	4.87	60.56%
2.00	370,000	3.62	1.27	0.97	5.86	12.71	0.19	5.51	60.40%
2.50	240,000	4.35	1.41	0.94	6.70	12.34	0.22	5.56	52.04%
3.00	190,000	4.77	1.50	0.93	7.20	12.32	0.23	5.63	56.35%
3.50	140,000	5.28	1.56	0.91	7.75	12.33	0.23	5.60	56.28%

In completion of the Lundberg and Engine House Resource Estimates, Mercator also tabulated an Inferred mineral resource on the Lundberg and Engine House deposits based on a 1% combined base metal grade cut-off (Zn%+Pb%+Cu%). This tabulation is intended to compare the overall volume and grade of Asarco's historic resource calculation with the modeling parameters used in the Lundberg Resource Estimate described above. The results of the Mercator 1% combined base metal resource are as follows:

**Lundberg Inferred Resource Estimate – 1% Zn+Pb+Cu Combined Threshold - November 3 2008**

Threshold (Zn%+Pb%+Cu%)	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %
1.00	20,700,000	1.68	0.72	0.38	2.78	5.92	0.07	2.11

**Engine House Inferred Resource Estimate – 1% Zn+Pb+Cu Combined Threshold - November 3 2008**

Threshold (Zn%+Pb%+Cu %)	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO <sub>4</sub> %
1.00	1,120,000	2.04	0.85	0.82	3.71	9.79	0.12	3.74

These resource estimates reflect a three-dimensional deposit block model developed by Mercator using Surpac© Version 6.0.3 deposit modeling software. Analytical results for 178 diamond drill holes were used to calculate the resource estimate in this model, of which 42 drill holes are from recent Company drilling, and 136 drill holes are from validated historic data. The model utilized 1 metre down-hole assay composites individually calculated for Zn(%), Pb(%), Cu(%), Ag(g/t), Au(g/t), and BaSO<sub>4</sub> assay values.

Model blocks measured 5 m x 5 m x 5 m with sub-blocking at 2.5 m x 2.5 m x 2.5 m within the Lundberg solid, and 2.5m x 2.5m x 2.5m with sub-blocking at 1.25m x 1.25m x 1.25m for the Engine House solid. The model was constrained by individual wireframed solids representing resource estimates for the Lundberg and Engine House deposits respectively. The wireframes were based on geological sections, that reflect a minimum included grade of approximately 1% combined base metal (Zn% + Pb% + Cu%) with dilution considerations limited to a maximum of 40% of the overall drill hole intersection. No high-grade capping factors were applied to high-grade samples. Historical underground development was reviewed and, where information was available, was modeled into 3-dimension solids. All resource block model volumes that lay within the underground workings solids were removed from the resource estimate after the grade interpolation process was completed, and were not reported as part of the final volume and grade calculations of the resource estimate.

Metal grades were assigned to the block model using inverse distance squared (ID<sup>2</sup>) interpolation methodology with blocks being peripherally constrained by wireframe solids. The Lundberg solid incorporated two interpolation domains which were defined as north and south of gridline 7930N. Two unique interpolation ellipses were determined for these two domains. Major and minor axis parameters were selected based on continuity and distribution of metal grade and reflect geological characteristics of the mineralized zones. The Engine House estimate was based within a single interpolation domain, and used an isotropic model with a 75 metre range. Results of 1,577 separate laboratory determinations of specific gravity (“SG”) were used in the block model. The mean SG value from within the resource solids of 2.88 g/cm<sup>3</sup> was assigned to blocks occurring within the Lundberg and Engine House models.

Potential to expand the deposit volume exists on the property and a Phase 1 drilling program of 2500 metres has been presented. The estimated Phase 1 budget for recommended exploratory core drilling peripheral to the Lundberg and Engine House deposits totals \$630,000 CDN and a Phase 2 program, contingent on positive Phase 1 results has a budget of \$1,207,500 CDN to upgrade Inferred mineral resources to the Indicated category and confirm historic drillhole data that exists underneath the Lucky Strike glory hole.



## 1.0 Introduction and Terms of Reference

This report on the estimation of mineral resources for the Lundberg and Engine House deposits in the Buchans area of central Newfoundland was prepared by Mercator Geological Services Limited (“Mercator”) on behalf of Royal Roads Corp (“RRO”). The mineral resource estimate was prepared in accordance with disclosure requirements set out under National Instrument 43-101 and is considered compliant with Canadian Institute of Mining, Metallurgy and Petroleum Standards for Mineral Resources and Reserves *Definitions and Guidelines (CIMM Standards)*. This estimate updates an earlier released Inferred Resource having an effective date of September 15, 2008 (PR#17-08 Sept 17, 2008) and incorporates more complete historic precious metal assay data compiled from historic drilling and assays, resulting in a nominal increase in the precious metal contents. Terms of reference were established through discussions between RRO and Mercator in 2007 and 2008 at which time it was determined that this resource estimate was to be based upon historical diamond drilling data and detailed infill drilling carried out on the property by RRO. A drilling database was compiled and validated by Mercator prior to use in the estimate.

On July 28<sup>th</sup>, 2008 RRO acquired Buchans River Limited (BUV). All exploration completed by BUV and RRO on the Buchans area properties since January 2007 has been completed with the involvement of Mercator geologists and under the supervision of the author. The principle author of this report is a Qualified Person as defined in National Instrument 43-101 and has been directly involved in recent exploration work on the property in the capacity of consulting geologist to RRO. In this role, he has participated in planning of surveys, field visits to the property, core reviews, consultations with on-site Mercator and RRO technical personnel, and data review and interpretation for the purposes of report writing.

## 2.0 Reliance on Other Experts

There has been no reliance on other experts in the preparation of this report.

This report was prepared by the author and Mercator staff for RRO, and the information and conclusions contained herein are based upon information available to Mercator at the time of report preparation. This includes data made available by both RRO and third party sources. Information contained in this report is believed reliable, but in part the report is based upon information not within Mercator’s control. Mercator has no reason, however, to question the quality or validity of data used in this report. Comments and conclusions presented herein reflect Mercator’s best judgment at the time of report preparation and are based upon information available at that time.

This report also expresses opinions regarding exploration and development potential for the project, and recommendations for further analysis. These opinions and recommendations are intended to serve as guidance for future development of the

property, but should not be construed as a guarantee of success. Mercator is not a Qualified Person with respect to comments on environmental liability, validity of surface rights titles and other issues of land ownership in the province of Newfoundland and Labrador.

### 3.0 Property Description and Location

The Buchans area properties total 26 Mineral Licences and 2 Fee Simple Mining Grants, containing 512 contiguous ground or map-staked claims, or approximately 13,433 hectares. This report focuses on the Lundberg and Engine House deposits and does not discuss other claims within the remainder of the Buchans area properties or other RRO property holdings. The Lundberg and Engine House deposits occur within Licence 10551M, which is located near the community of Buchans, centered at 510,000 mE, 5,407,900 mN (NAD83 Zone 21), along the north shore of Red Indian Lake, in central Newfoundland, Canada (Figure 1). The town of Buchans lies at the end of Route 370, which joins the Trans Canada Highway 100 kilometres west of the town of Grand Falls.

As a licence holder, the company has the exclusive right to explore for minerals within the boundaries of the mineral claim licences but does not own the surface rights. However, the company has secured land access with surface right holders for the purpose of mineral exploration.

Data relevant to Licenses held by RRO in the Buchans area are listed below in Table 1.

**Table 1: Pertaining to Mineral Licenses, Buchans Properties**

Date Issued	Licence No.	Registered Owner	No. of Claims	No. of Hectares	NTS
31-May-96	05668M	Buchans River Ltd.	12	300	12A/15
28-Jun-96	08295M	Buchans River Ltd.	66	1650	12A/15
9-Nov-04	10452M	Buchans River Ltd.	6	150	12A/15
9-Nov-04	10453M	Buchans River Ltd.	5	125	12A/15
6-Jan-05	10524M	Buchans River Ltd.	5	125	12A/15
6-Jan-05	10525M	Buchans River Ltd.	16	400	12A/15
6-Jan-05	10526M	Buchans River Ltd.	5	125	12A/15
17-Jan-05	10546M	Buchans River Ltd.	28	700	12A/15
17-Jan-05	10547M	Buchans River Ltd.	2	50	12A/15
17-Jan-05	10548M	Buchans River Ltd.	4	100	12A/15
1-Feb-93	10551M	Buchans River Ltd.	215	5375	12A/15
1-Dec-05	11431M	Buchans River Ltd.	3	75	12A/15
1-Dec-05	11432M	Buchans River Ltd.	1	25	12A/15
1-Dec-05	11433M	Buchans River Ltd.	2	50	12A/15
9-Mar-06	11793M	Buchans River Ltd.	26	650	12A/15
9-Mar-06	11794M	Buchans River Ltd.	20	500	12A/15
9-Mar-06	11795M	Buchans River Ltd.	25	625	12A/15
9-Mar-06	11796M	Buchans River Ltd.	17	425	12A/15

Date Issued	Licence No.	Registered Owner	No. of	No. of	NTS
9-Mar-06	11797M	Buchans River Ltd.	5	125	12A/15
9-Mar-06	11798M	Buchans River Ltd.	5	125	12A/15
9-Mar-06	11799M	Buchans River Ltd.	10	250	12A/15
9-Mar-06	11801M	Buchans River Ltd.	16	400	12A/15
9-Mar-06	11808M	Buchans River Ltd.	1	25	12A/15
9-Apr-07	13320M	Buchans River Ltd.	13	325	12A/15
30-Apr-07	13423M	Buchans River Ltd.	1	25	12A/15
25-May-07	13539M	Buchans River Ltd.	3	75	12A/15
n/a	Terra Nova Properties Fee Simple Mining Grant Vol. 1, Folio 61	Buchans River Ltd.	n/a	265.51	12A/15
n/a	Terra Nova Properties Fee Simple Mining Grant Vol. 1, Folio 62	Buchans River Ltd.	n/a	367.3	12A/15

The Buchans area properties have been the subject of extensive historical underground mining and development completed by ASARCO Inc. between 1928 and 1984. The history and extent of this work is discussed in more detail later in this report.

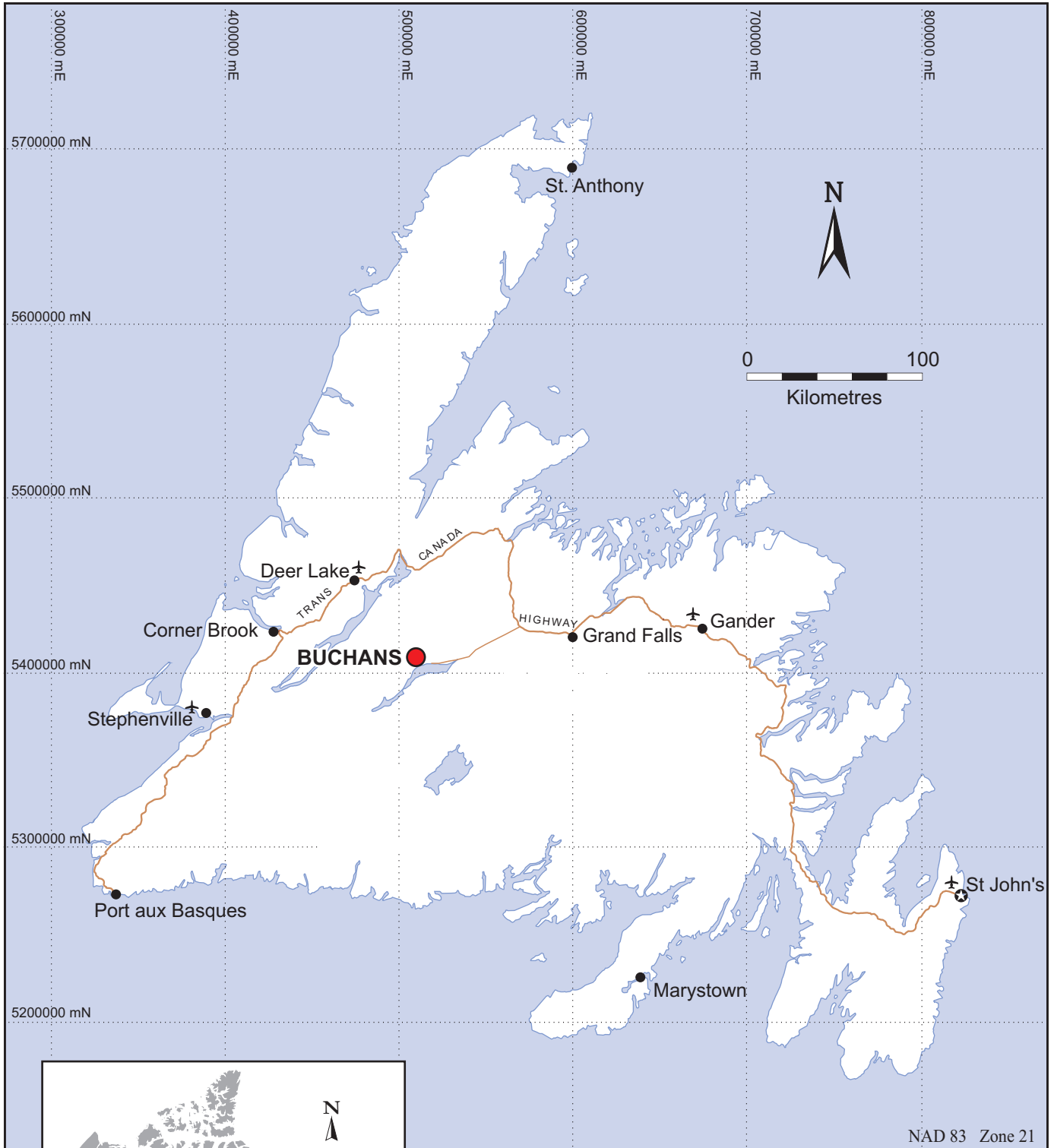
Work requirements of the Newfoundland government include an annual expenditure of \$200.00 per claim in the first year, rising by \$50.00 per claim until year 5; then the cost is \$600.00 per claim per year from year 6 to year 10, 900.00 per claim per year for years 11 to 15, and \$1,200.00 per claim per year for years 16 to 20. The type of acceptable work for assessment purposes is defined in The Mineral Regulations 1983 of the Province of Newfoundland, and includes most conventional exploration survey methods.

### 3.1 Encumbrances and Agreements

Many of the RRO mineral licence holdings in the Buchans area are held under option agreement through a number of previous licence holders. These properties are subject to Net Smelter Return (NSR) royalties, and these agreements are summarized in Table 2. For details on option agreements for the Buchans area properties the reader is referred to Webster et al (2008b).

**Table 2: Summary of Option Agreements – Buchans Area**

Current Licence	Licence at time of Agreement	Agreement	Company	BUV Obligations
010551M	4272, 4273	100% interest in property	CBM	3% NSR to CBM
	4875, 4317	100% interest in property	NME	2% NSR to NME
	4974M, 6973M, 4805, 4865, 4867-4869	100% transfer to BUV	GT	2% NSR to GT
	4823	100% interest to BUV	PD	2% NSR to PD
	4547, 4293, 4294, 4470, 4744, 4603	100% interest in property	NME	1% NSR to NME



NAD 83 Zone 21

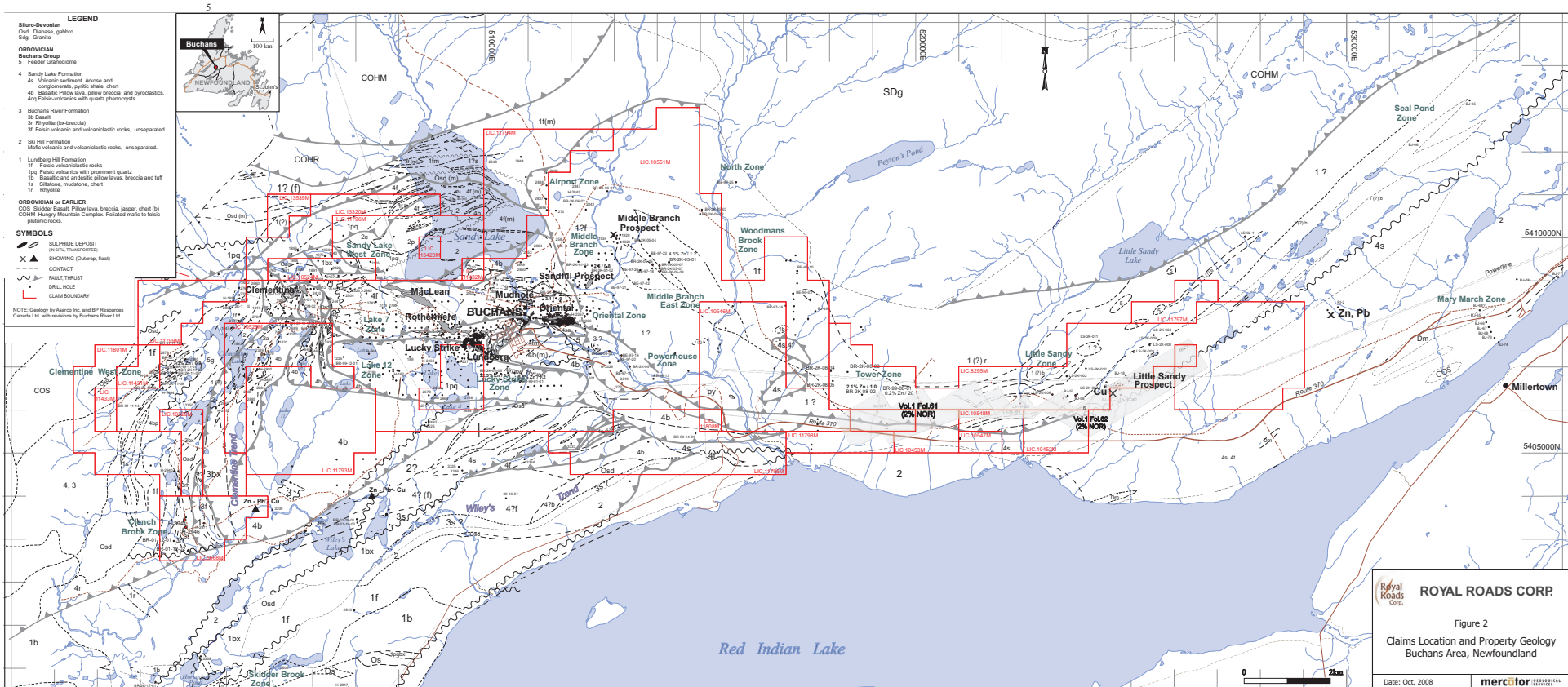


	<p><b>ROYAL ROADS CORP.</b></p>
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Figure 1  
Property Location Map  
Newfoundland

Date: Oct. 2008





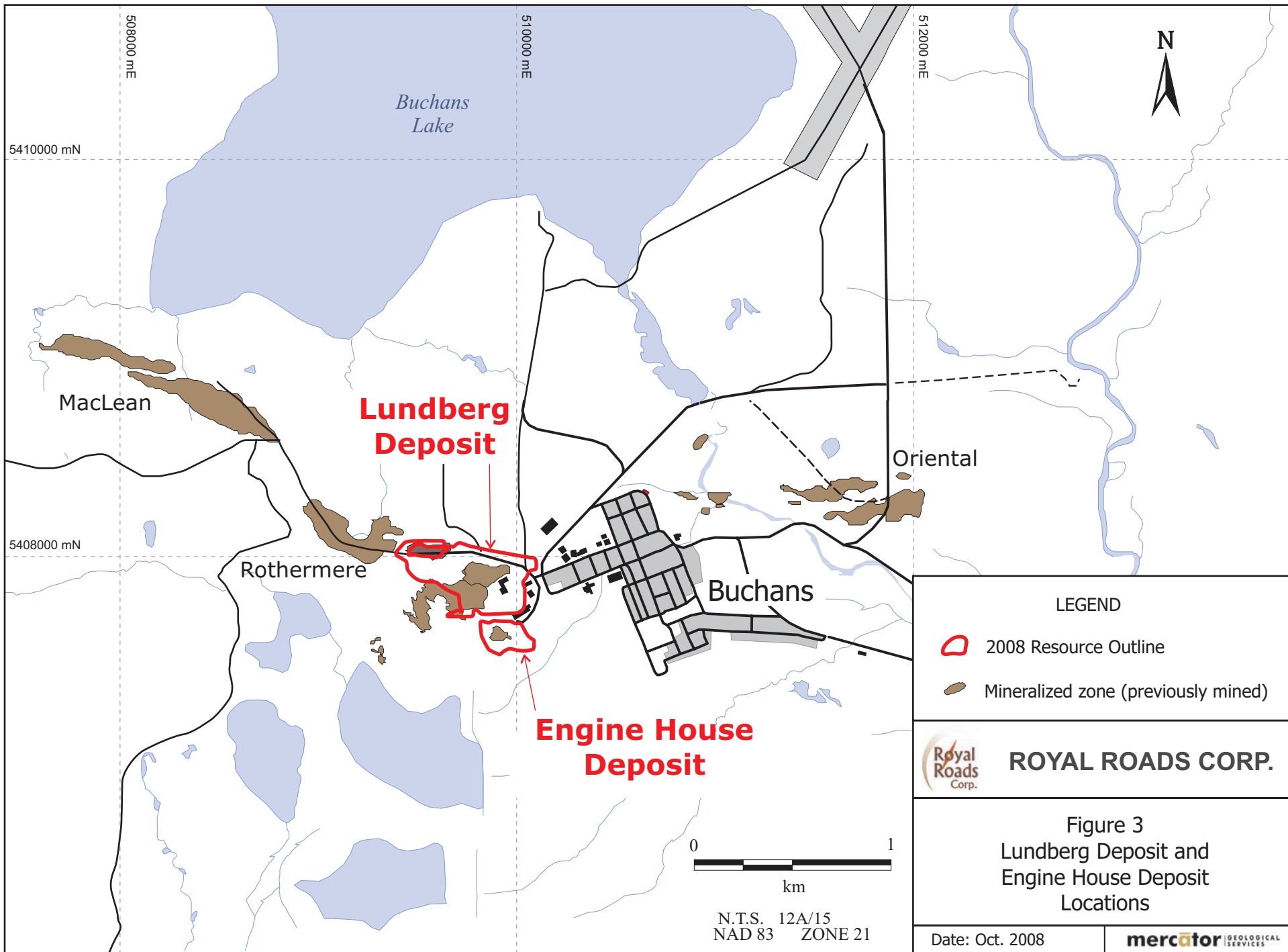
## 4.0 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The town of Buchans lies at the end of Route 370 which joins the Trans Canada Highway 100 kilometres west of the town of Grand Falls and has a population of approximately 800. The town is supported by services such as a medical clinic, a hotel, a small gravel air strip, and grocery, hardware, and service facilities are readily available (Figure 1). The town has power and phone and is serviced by a municipal water supply. The nearest major airports are at Gander 175 km to the east and Deer Lake 250km to the northwest, by road. The property area also includes the Town of Buchans. RRO currently has permission from the town and Abitibi Bowater (surface rights) to conduct exploration activities within and adjacent to the town and surrounding areas. The town is immediately adjacent to the Mineral Resources outlined in this report.

Much of the property has been clearcut by Abitibi-Price and this activity has led to the construction and refurbishment of a number of new and existing forestry roads in the area, permitting ready access to most of the property.

Field supplies, fuel and logistical support are available in Millertown or Buchans and contract geotechnical personnel including drill companies and analytical laboratories are available in either Grand Falls or Springdale. The closest deep-water ports are located 125 km northeast in Botwood (Figure 1) and 160 km west in St. Georges (Figure 1), formally used as the loading terminus for the past-producing Buchans Mine, while St. Georges is currently used as the loading terminus for Teck's currently operating Duck Pond mine. The main power line from Grand Falls to Corner Brook passes through Buchans 15 km to the north of the property's northeast corner. A core storage facility operated by the Newfoundland Government is available for use in Buchans. This facility is used by private exploration companies, and much of the core from historic drilling on the Buchans area properties and surrounding region is stored at this location. Viewing and re-sampling of core can be arranged under government supervision. Historic mine buildings and a large tailing pond remain on the property from past mining by Asarco. The tailings pond is not permitted for use.

The Lundberg and Engine House deposits are located on the western edge of the town of Buchans, underlies the Luck Strike glory hole, and is easily accessed by paved and dirt roads (Figure 3). The area is generally flat to gently rolling with elevation ranging from 155 m to 165 m at Red Indian Lake to approximately 130m to 280m inland. There are numerous small brooks which drain into Red Indian Lake with spruce and fir growing on the slopes. The northern portion of the property is poorly drained and covered by areas of shallow bogs and extensive muskeg in the flat areas. The depth of till is approximately 2 metres with less than 5% outcrop exposure. To the south of the property Red Indian Lake occupies a large northeast trending valley. The climate of central Newfoundland is characterized as northern maritime, with relatively cool summers and winters with an overall annual average temperature of 3.5°C. The area receives an average annual precipitation of 873.3 mm of rain and 331 mm of



snow, for a combined total average annual precipitation of 1,204.3 mm (data from Environment Canada, received at the Badger meteorological station).

#### **4.1 Other Properties**

RRO holds a total of 26 Mineral Licences and 2 Fee Simple Mining Grants, containing 512 contiguous ground or map-staked claims, or approximately 13,433 hectares in the Buchans area. The reader is referred to Webster et al (2008b) for a complete description of these properties.

### **5.0 History**

The earliest report of lead-zinc mineralization in the Buchans area was in 1905 when Matty Mitchell a local Mi'kmaq Indian discovered a boulder with high-grade base metal mineralization just east of the current Buchans Mine site along the Buchans River shoreline. Anglo-Newfoundland Development Company (AND Company), who owned mineral rights in central Newfoundland including the Buchans area, formed a joint venture with Asarco in 1926, which resulted in the Buchans Mine operating continuously from 1928 until the ore reserves were considered to be depleted in 1984 (Neary, 1981). In total, the Buchans orebodies have produced 16,196,876 tonnes of ore from the five known major orebodies. The average grades are reported to be 14.51% zinc, 7.65% lead, 1.33% copper, 126 grams per tonne silver, and 1.37 grams per tonne gold (Thurlow, 1991).

The history of exploration is summarized as follows.

#### **5.1 Early Work (1911-1926)**

In 1911 a report was commissioned by the New York firm Weed and Probert to assess the economic value of the Main (known) sulphide deposit, and to make recommendations for further exploration. In 1925 a geological examination was conducted simultaneously with an economic feasibility assessment by J.G Baragwanath, a consulting engineer (Thurlow, 1991). It was stated that the area held great potential for finding further ore. In 1926 further exploration was conducted under the Swedish American Prospecting Company while the main orebody was being prepared for mining. Mr. Hans Lundberg perfected an exploration technique using an electrical survey called the equipotential line method and two anomalies were detected over the known deposits. Trenching and a small amount of diamond drilling were conducted over these areas. Dr W.H. Newhouse was commissioned to create a geological map of the area surrounding the mine in 1927. The expectation was that this map would help determine the source of the Pb-Zn boulders in Wileys River (Thurlow, 1991). Fieldwork, examination of the mine workings, and drill core logging was conducted over the next few years to facilitate the report. The result was a focus chiefly on the presence of quartz porphyry as an indicator of proximity of an orebody. Further exploration was recommended to the north of Wiley's River and in the



Clementine Lake area. The manager of the mine changed these parameters in 1934, instead focusing on tracing mineralization, structural formations and hydrothermal alteration away from the known orebodies at Lucky Strike and Oriental. These tracings were conducted from surface and underground workings, and resulted in the discovery of the south west extensions of the Lucky Strike deposit. Small scale spot drilling programs were also carried out in the region to the south and southwest of the Lucky Strike orebody.

## **5.2 1928 – 1985 Asarco**

Asarco commenced exploration of the Buchans Mine property in 1928. Between 1930 and 1984 extensive drilling programs produced more than 400 local surface and underground holes, leading to the discovery of most of the known mineralized zones and orebodies. Despite the scale of exploration, it was widely recognised that substantial gaps in the drill pattern could have overlooked additional targets. It was also recommended that shallow historic drill holes be extended; surface and underground holes during this period were drilled to varying depths, with many measuring only 200 metres or less, and the deepest reaching about 1,100 metres. All surface diamond drilling was vertical, with core sizes varying from 22mm (EX core) to 47.6mm (NQ core). Because much of the mineralization was previously defined as subeconomic, it was not sampled from drillcore, and limited assay data is available from this period. The earlier Asarco drilling program was closely spaced and concentrated primarily on the near surface equipotential anomalies outlined by Hans Lundberg resulting in the discovery of the Lucky Strike and Oriental orebodies. Later expansion of the program, by way of systematic outward extension of the drill sites, lead to the discovery of the Rothemere, Maclean and Maclean Extension orebodies in the mid 1940s (Swanson, 1981).

Gravity and IP surveys were conducted primarily on the adjoining properties in the 1940s, and these yielded no new targets. In the 1960s, soil and till sampling southwest of the main Buchans property detected an anomalous trend believed to be derived from the Lucky Strike area, but at the time was not considered to be a significant enough indication to warrant further exploration

## **5.3 1992- 2001 GT/Newminex/Buchans River Joint Venture**

In 1992 GT/Newminex/BRJV staked much of the former Buchans Mining Properties and through options and joint ventures assembled the current property holdings. Their exploration work began in 1997 with a re-logging program dedicated to re-interpreting the results of past drilling programs. The relogging was initiated by GT when it was realised that the effect of thrusting on the stratigraphy was not fully understood at the time of Asarco's early diamond drilling. The majority of the surface drill holes in the Buchans Mine Property were relogged during the time period of 1997 to 2000. This program identified several potential targets not tested by the drilling, and several drilled mineralized and altered zones were identified as new potential targets for further drilling.

Finally, an updated geological database was compiled for use in conjunction with lithochemical and structural/stratigraphic studies.

Billiton Resources Canada Inc. (Billiton), Buchans River Ltd., Newfoundland Mining & Exploration Ltd., and GT Exploration Ltd. formed the Buchans River Joint Venture in September of 1998. The agreement stipulated that Billiton would spend \$3,500,000 on exploration, and earn 51% interest in all the claims held by other partners in the Buchans area. When the joint venture was terminated, in September 2001, Billiton did not retain or earn any interest in the property (Halpin, 2001).

The Buchans River Joint Venture conducted an airborne EM survey in 1998, which indicated a faint anomaly in conductivity in the Clementine West region. The two holes drilled by Asarco (2811 and 2813, which were flagged for the presence of possible ore horizon indicators) lie within the anomaly. To test this relationship hole BR-11-01 was drilled and promising results from its core lead to further IP, soil surveys and more local diamond drilling.

A notable turning point in the exploration of this property occurred between 1997 and 2001 when lithochemical sampling allowed for the differentiation between footwall and hanging wall signatures in the ore horizon sequence. This development resulted in the modification of the previously interpreted stratigraphy, and allowed for prioritization of targets. Further, the new structural interpretation also suggested several new areas which may contain untested ore horizon sequences. Based on this work and the relogging of the Asarco/BP Drilling, new targets were finalized and drilling began in 1999. Over the next two years significant new intersections of alteration and mineralization were discovered including Clementine West, the HAG zone, Middle Branch, and the Airport zone. Of particular interest was the area to the southeast of the Lucky Strike Mine known as the HAG zone, which has a characteristic style of mineralization and many holes drilled intersected high-grade sulphide clasts hosted in shear zones, the source of which is still unknown. The presence of these zones appeared to confirm the idea of a new structural model, and further testing was recommended.

In 2000-2001 ERA-Maptec Ltd, a company based in Dublin, Ireland, conducted a structural reinterpretation of the Buchans mine site with on-site geologists working for Billiton. The study utilized the results of 3D modeling, with the goal of validating or developing the location of the ore horizon sequence on the existing structural model. The refining of the model saw the modification of the originally proposed antiformal stack structure into a nappe-like structure overturned to the south (Millar, 2001). This new model indicates the possibility of significant regions which have been untested for ore horizons that may be present at exploitable depths on the overturned limb of the fold.

The structural reinterpretation of the region also entailed the re-examination of the relationships between the local major faults and their control on the area's mineralization. The study proposes that synvolcanic faults trending northeast are major feeders for the in situ Buchans deposits. This idea implies that the intersections of these faults with the ore horizon are potentially valuable target areas.

Recent developments in the structural and stratigraphic interpretations of the area lead drilling by the Buchans River Joint Venture to be conducted in several stages. Six new holes were drilled on the Buchans Mine property between 1999 and 2000. Two of these holes intersected what is now known as HAG-type mineralization, or shear zone hosted massive sulphide clasts. The best results from these holes yielded a 40 cm clast assaying 14.4% zinc, 7.6% lead, 0.4% copper and 5.6 grams per tonne gold, 253 grams per tonne silver. In the Middle Branch trend and the Airport zone, the four holes in this area all encountered low grade mineralization.

The Newminex Buchans project initiated a lithogeochemical sampling program in 1997 which continued through until 2001. D. Wilton, L. Winter and G. Jenner of Memorial University of Newfoundland conducted the work over various intervals. 83 samples in total were collected and analyzed by XRF or ICP/MS at the university. These studies indicated that hanging wall and footwall rocks from the Lucky Strike area can be differentiated from one another through major and trace element signatures. The transition between tholeiitic rocks and calc-alkaline marks the change from footwall to hanging wall, and also the location of the occurrence of the ore horizon sequence. A model of the chemical stratigraphy for the Buchans area has been composed based on major, trace, and rare earth element geochemistry. The purpose of this model was to potentially aid in identification of areas where unexplored ore horizon stratigraphy could be found under hanging wall rocks which have been previously misidentified as footwall (Jenner, 2001).

Billiton spent \$2.4 million exploring the property before selecting targets as part of a detailed compilation and re-interpretation of the geology hosting the former Buchans mines. Billiton authored a report in May 2001 and presented a list of 126 high priority targets totaling 46,020 metres of drilling. Billiton selected the targets based on their potential to host high-grade massive sulphide deposits similar in size and grade to the former Lucky Strike mine. When the joint venture was terminated, in September 2001, Billiton did not retain or earn any interest in the property (Halpin, 2001). Little or no new work has been completed on the property since that time.

#### **5.4 2002 – 2008, Buchans River Limited**

From 2002 to 2006, some investigation into regional lithogeochemistry and a reinterpretation of the structural elements to the Buchans camp were completed. The new interpretation posed new outlook into exploration strategies for the Buchans camp held under notion of a wide ranging co-relation between the host felsic volcanics of the historic high-grade Buchans orebodies, and the potential that these units may be repeated within imbricated nappe structures not previously thought to exist.

In December 2006 new management assumed control of the Buchans property. Numerous diamond drill programs were initiated included 6 drill holes (848 metre) at the Little Sandy Property, 4 drill holes (1,160m) on the Clementine West property, 53 drill holes (8,058 metres) on the Lundberg and Engine House deposit, and 8 drill holes for

stratigraphic targeting within the proposed nappe structures for favourable Buchans River Formation rocks near the former Lucky Strike and Oriental mines (4,001 metres).

Buchans River also implemented a 3.6 x 5.1 km TITAN DCIP-MT deep crustal penetrating geophysical survey to the west of the town of Buchans.

Mercator was contracted to complete a mineral resource estimate for the Lundberg deposit, and to initiate a property database for the Buchans holdings.

## 5.5 Other Properties

The reader is referred to Webster et al. (2008b) for a complete historical description of all the Buchans area properties.

## 6.0 Geological Settings

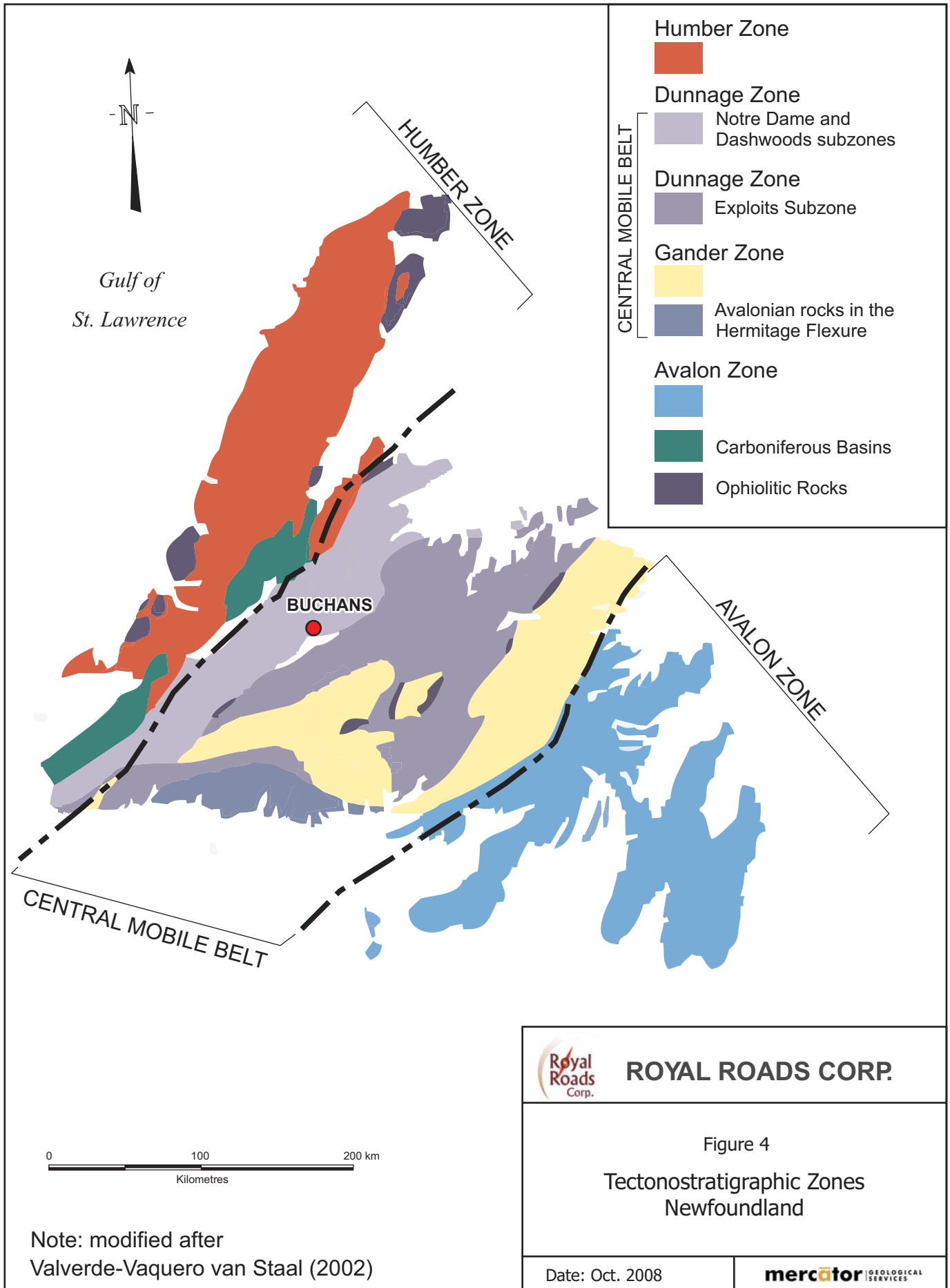
### 6.1 Regional Geology

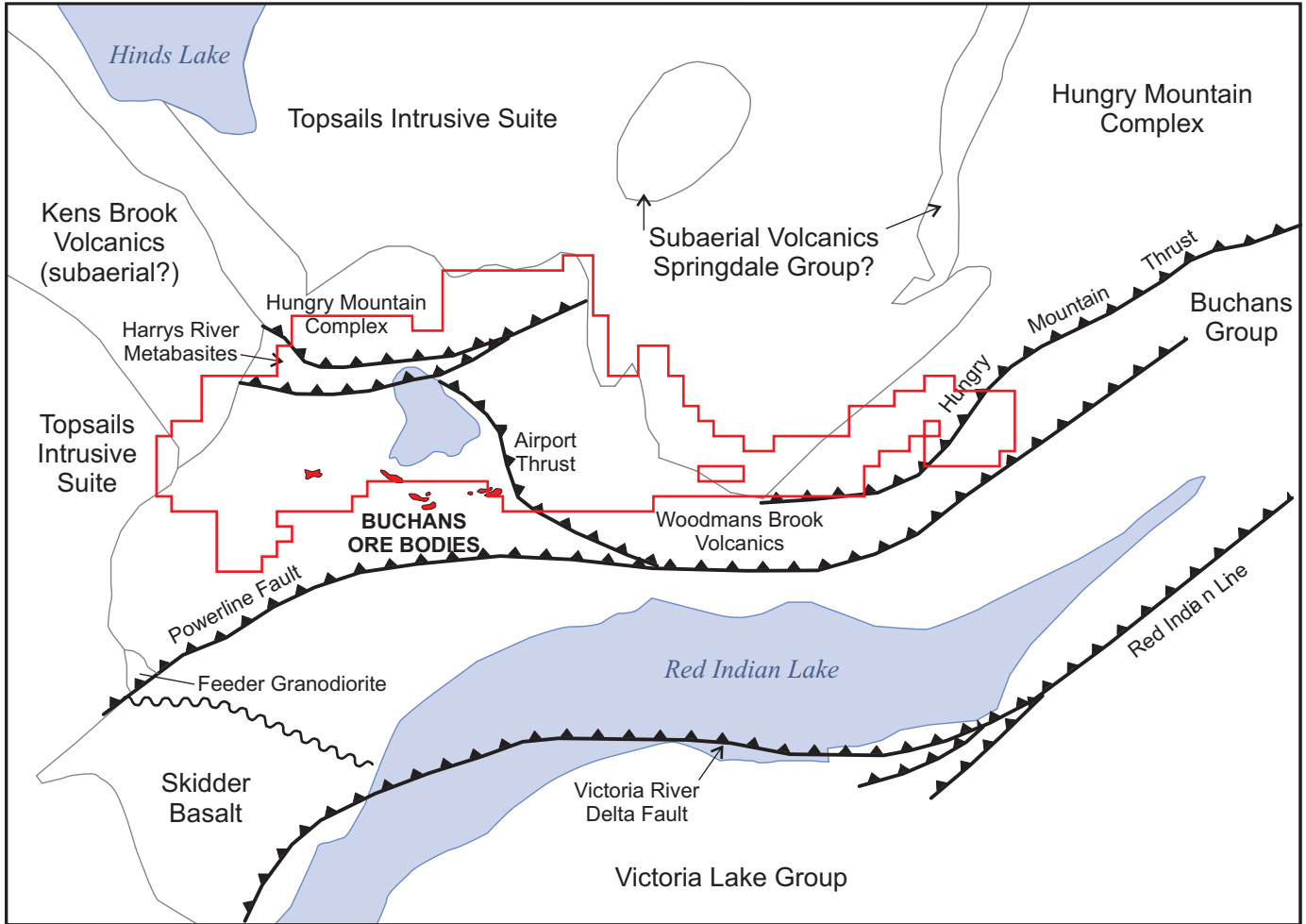
For the purpose of this report the regional geology of the Buchans property has been described as it is considered to be relevant. The reader is referred to Webster et al. (2008b) for a complete geological description of the remaining Buchans area properties.

The five main ore bodies historically mined at Buchans are thought to occur within a single felsic stratigraphic horizon within the Buchan Group, mainly the Buchans River Formation. The Buchans Group forms part of the Dunnage Zone, a Lower Paleozoic volcano-sedimentary terrain, which includes a complex assemblage of island-arc and back-arc basins formed by the integrated orogenic relationships that records the opening and subsequent closing of the Iapetus Ocean (Williams, 1978, 1979). The final closure of Iapetus, essentially fusing Laurentia and Gondwana, is delineated by the inferred Red Indian Line, which separates the respective Notre Dame subzone to the northwest and the Exploits subzone to the southeast (Williams 1988) (Figure 4).

The volcanics range in composition from basalt to rhyolite and tend to become increasingly felsic with height in the stratigraphy and may be laterally extensive and correlative with the Roberts Arm Group of Notre Dame Bay (Thurlow and Swanson, 1981). This variation from mafic to felsic volcanism is repeated several times within the Buchans Group and repetition was originally interpreted as repeating volcanic cycles (e.g. Thurlow et al., 1975). A new geological interpretation now considers the repetition to be largely caused by thrusting (Thurlow and Swanson, 1981).

The Buchans Group lies structurally above the ophiolitic Skidder Basalt in the southwest, and the Victoria Lake Group of Cambro-Ordovician origin to the southeast (Figure 5). The Feeder Granodiorite is an intrusive body that represents part of the subvolcanic magma chamber which fed the Buchans Group in some areas (Thurlow and Swanson,





 BUV Claim Outline

Geology after Thurlow, 1999



**ROYALROADSCORP.**

Figure 5

Buchans Area Geology (Thurlow)

Date: Oct. 2008



1981). Geochemical evidence suggests the Feeder Granodiorite is the source of granitic boulders found within the breccia-conglomerate deposits within the transported ores at Buchans (Thurlow and Swanson, 1981).

Polydeformed intrusive rocks of the Cambro-Ordovician Hungry Mountain complex are thrust over the Buchans Group in the north and are intruded by the Devonian Topsails Granite in the northeast. In the northwest, Silurian subaerial volcanics unconformably overlie the Buchans Group and carboniferous red beds overlie the Buchans Group in the Red Indian Lake basin. The Kens Brook Volcanics are thought to overlie the Buchans Group but this relationship is not clearly understood (Thurlow and Swanson, 1987), (Thurlow, 1999). The rocks in the Buchans area are metamorphosed to low grade prehnite-pumpellyite facies and a U-Pb zircon age of 473 +/- 2Ma was obtained from the Buchans Group rhyolite (Dunning et al., 1987).

## 6.2 Property Geology

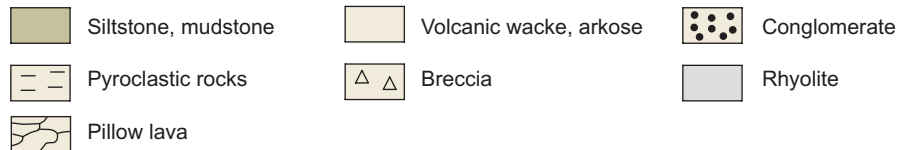
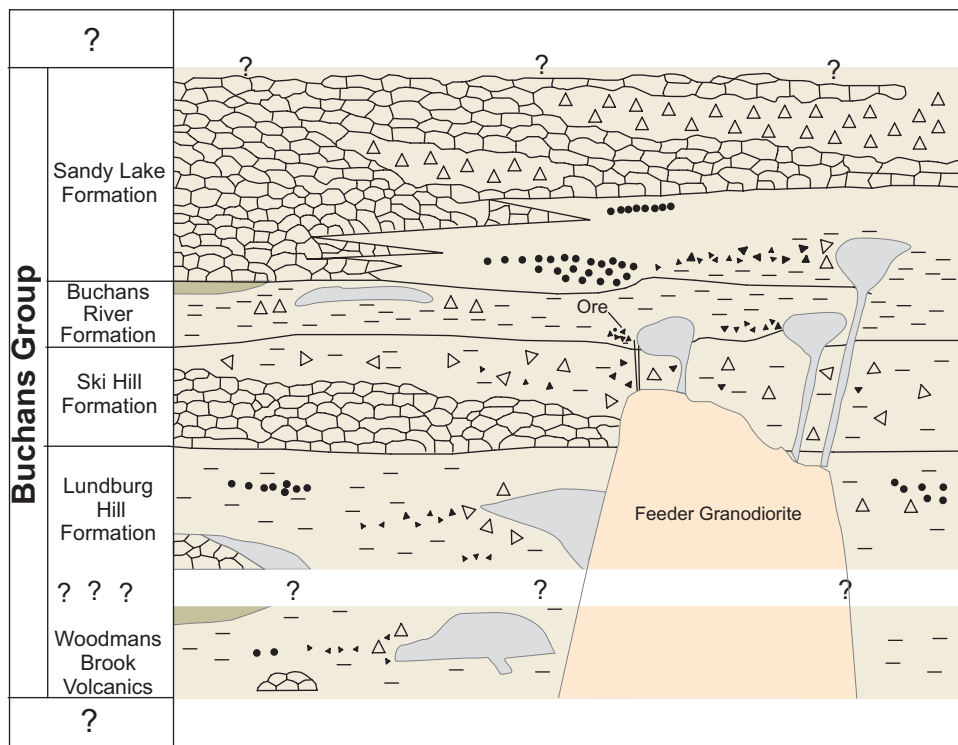
For the purpose of this report the property geology for the Buchans property has been described as it is considered to be relevant. The reader is referred to Webster et al. (2008b) for a complete geological description of the remaining Buchans area properties.

The five main ore bodies historically mined at Buchans are thought to occur within a single felsic stratigraphic horizon within the Buchan Group, however the recognition of this stratigraphy is regionally complex. Thurlow (1975) noted that the mafic to felsic volcanism was repeated several times within the Buchans Group and initially explained this as a cyclical reoccurrence. Subsequent studies following the mine closure resulted in the recognition of regional thrusting and the structural repetition of geology resulting in reinterpretation of the Buchans Group stratigraphy (Thurlow and Swanson, 1987). The stratigraphic re-interpretation of the Buchans Group is largely based on the relationship of fault bound mineralized blocks and has led to the establishment of four sub-units within the Buchan Group (Figure 6).

The Buchans Group was broken down into four felsic and mafic formations, that include the Lundberg Hill, Ski Hill, Buchans River, and Sandy Lake Formations in addition to the Feeder Granodiorite and an unresolved unit named the Woodmans Brook Volcanics (Thurlow, 1999) (Figure 6).

The lowermost unit of the Buchans Group is the Lundberg Hill Formation, which is characterized by felsic pyroclastic rocks, coarse pyroclastic breccia, rhyolite, tuffaceous wacke, siltstone, and lesser basalt with minor chert and magnetic iron formations. The Lundberg Hill Formation has a maximum thickness which ranges from 200 to 1000 m (Dunning, Kean, Thurlow and Swinden 1987).

The Lundberg Hill Formation is conformably overlain by the Ski Hill Formation which is dominantly composed of dark green often amygdaloidal mafic pillow lavas, breccias and pyroclastic rocks (Dunning, Kean, Thurlow and Swinden 1987). The Ski Hill Formation



**Stratigraphy of the Buchans Group**

Formation	Maximum Thickness in Orientall Block	Maximum Thickness	Lithologies
Sandy Lake Formation	200m	2000m?	Basaltic pillow lava, pillow breccia intertonguing with coarse grained, redeposited clastic rocks of felsic volcanic derivation (arkosic conglomerate, arkose, wacke, siltstone). Local abundant tuff, breccia, polyolithic pyroclastic breccia and tuffaceous sedimentary rocks.
Buchans River Formation	200m	400m?	Felsic tuff, rhyolite breccia, pyritic siltstone, wacke, polyolithic breccia-conglomerate, granite boulder conglomerate, high-grade in situ and transported orebodies.
Ski Hill Formation	1000m	1000m?	Basaltic to andesite hyaloclastic breccia, pillow lava and massive flow with local polyolithic breccia near the stratigraphic top. Minor felsic tuff.
Lundburg Hill Formation	200m minimum	1000m?	Felsic pyroclastic rocks, coarse pyroclastic breccia, rhyolite, tuffaceous wacke, siltstone, lesser basalt, minor chert and magnetic iron-formation



Figure 6  
Generalized Stratigraphy of the Buchans Group  
Newfoundland



is host to stockwork systems within the footwall to the in situ ore hosted within the overlying Buchans River Formation. The Buchans River Formation hosts the historically mined ore deposits at Lucky Strike, Old Buchans and Oriental, and is comprised of felsic tuff, rhyolite breccia, pyritic siltstone, wacke, poly lithic breccia-conglomerate, granite boulder conglomerate, high-grade in situ and transported orebodies. This Formation ranges from 200-400 m in thickness (Dunning, Kean, Thurlow and Swinden 1987) in the mine area and more discrete amounts of the formation are found locally throughout the Buchans area (Dunning, Kean, Thurlow and Swinden 1987) (Figure 6).

The Buchans Group has been subjected to two major periods of deformation (Thurlow, 1981). The first was a Silurian episode of south-easterly-directed thrusting during which the Hungry Mountain Complex, which consists largely of pre-deformed granitoid rocks, was emplaced upon the Buchans Group. In addition, this period of thrusting may have caused repetition of units within the Buchans Group including the possible repetition of an originally continuous ore horizon sequence. The second deformational event consisted of a period of broad open folding during the Devonian, which imparted a weak, northeast-trending axial planar cleavage to all rock types. A major, northeast-trending syncline in the Buchans Group is related to this event (Thurlow, 1981).

In 2001 a new structural model was proposed to explain the repetition of geology within the Buchans Group. This re-interpretation suggested that instead of an imbricated thrust stack, the structural geology could be explained by recumbent nappe structures, over turned to the south (Millar, 2001). This model was thought to provide a clearer understanding of the inter-relationship between the various faults and the thrusts that controlled emplacement and deformation of the Buchans mineralization.

Lithochemical studies throughout the Buchans area also lead to a new interpretation of stratigraphy. The new hierarchy is based solely on geochemical parameters as opposed to the more subjective previous criteria of lithologies and textures (Jenner, 2001). These studies have identified two separate volcanic cycles and the felsic rocks which host the Buchans orebodies are interpreted to occur near the interface of Cycle 1 and Cycle 2. The implications of this work suggest that recumbent overturned folding may open up many untested zones where the ore horizon could be repeated (Jenner, 2001).

A further discussion of the property geology is located in Section 10 of this report.

## 7.0 Deposit Types

The Buchans area deposits and showings are generally VMS (volcanogenic massive sulphide) type ores and are primarily comprised of base-metal sulphides and barite, and show strong similarities to the Kuroko style deposits of Japan (Thurlow, 1981). The Buchans orebodies comprise three distinct, but genetically related deposit types and occur as in situ ore, mechanically transported ore, and stockwork ore (Thurlow and Swanson, 1981). The high-grade in situ and transported ores were the focus of historic mining in

the area and the stockwork zone, which tends to be lower grade, is the focus of the current exploration program by BUV.

The zoned massive sulphides of the in situ deposits formed in close proximity to the volcanic discharge zone. They consist of thick lenses of high-grade ore and form the largest ore bodies in the Buchans area. The in situ ores are overlain by a capping of massive barite, which is characteristic of the Buchans deposits, and which may provide an important lithogeochemical exploration tool (Thurlow et al., 1975). The felsic volcanics also host lower grade, base metal enriched sulphide systems of hydrothermal alteration known as stockwork mineralization.

Stockwork mineralization consists of a network of sulphide veins and veinlets that cut strongly altered and sulphide impregnated hosts rocks. The largest known concentration of stockwork and disseminated mineralization underlies the Lucky Strike deposit and has been named the Lundberg deposit, and has been the subject of a diamond drilling program by BUV. The stockwork ore has a high proportion of pyrite to base metal sulphides than the in situ ores and consists of fine to coarse grained pyrite with lesser amounts of chalcopyrite, sphalerite, galena and barite.

Transported ore deposits are coarser grained and are interpreted to be debris flows from the in situ ores, which have been redeposited in paleochannels or downslope regions. The transported ores at Buchans are elongate-tabular accumulations of high-grade massive sulphide and lithic fragments that occur within paleo-topographic channels. Six of these channels, containing at least seven orebodies or sub-economic sulphide deposits have been recognized in the Buchans area (Walker and Barbour, 1981). The orebodies consist of discrete sulphide breccia lenses, which grade laterally into low-grade breccia conglomerate and granite conglomerate.

The breccia ores (i.e. occurrences of high-grade ore clasts) have been noted in historic drill holes and are wide spread within the Buchans area. Normally occurring as polyolithic breccias they appear to be located in the same stratigraphic horizon as the major in situ and transported ores, although clasts have also been noted in areas up to 6.7 km from any known occurrence of in situ ore (Thurlow and Swanson, 1981). They are thought to form as a result of disruption of in situ massive sulphides or transported as part of debris flows along paleo-topographic channels. The breccia ores consist of massive sulphide and lithic fragments in a matrix of finer grained material that is compositionally similar to the fragments. Clasts include various volcanic, sedimentary and plutonic lithologies, all of which are locally derived. Granitoid fragments show an anomalous composition and a higher degree of rounding than other fragments (Thurlow, 2001). Massive sulphides and barite occur both as clasts and matrix material.

The breccias display a wide variation in fragment type and in the development of sedimentary features (e.g. bedding, sorting, grading). All occur as channel fillings, having sharp footwall and hanging wall contacts and showing evidence of scouring and incorporation of fragments of underlying lithologies (Walker and Barbour, 1981).

The original ore deposit model for Buchans suggests that mineralization formed from a submarine exhalite caldera and that mineralization is bound by a structure to the south of Buchans (Thurlow, 1999). However, a new ore deposit model has been proposed and northeast-trending, synvolcanic normal faults have been suggested as the primary discharge zone for mineralizing fluids for the Buchans orebodies (Millar, 2001). It is thought that orebodies and alteration zones acted as loci for thrusting, with the result that all major orebodies are fault bound, and that massive sulphide clasts found along the faults are possibly derived from larger undiscovered bodies along or near the feeder structures. The new model suggests that in the Lucky Strike area the overall geometry is represented by recumbent folds or nappe structures. This interpretation suggests that untested ore zones may exist where the contact is re-interpreted to be overturned (Millar, 2001).

### 7.1 Other Properties

The reader is referred to Webster et al. (2008a/b) for a complete description of deposit types of the remaining properties.

## 8.0 Mineralization

Mineralization in the Buchans area is associated with the three main genetically related ore deposit types. The Lucky Strike and Orient #1 orebodies are the best known examples of the in situ type ore and represent the highest grade ore mined in the Buchans area and occur on the RRO property. The Lucky Strike orebody consisted of massive high-grade sulphides where Asarco mined 5.6 million tonnes of ore with head grades averaging 18.4% Zn, 8.6% Pb, 1.6% Cu, 112 g/t Ag & 1.7 g/t Au (calculated based on Thurlow and Swanson, 1981, pp 122 to 128). Massive in situ ore occurs as several ore textures but the massive fine grained streaky ore seems to form within the bulk of the deposit occurring as aggregates of sphalerite, galena, barite and lesser chalcopyrite. Thurlow et al, (1975) reported trace amounts of enargite, native silver and argentite, ruby silver and gold tellurides, in addition to native silver and gold. Minor sulphides also include tetrahedrite-tenantite, chalcocite and bornite. Pyrite forms a relative minor part of the massive ore but is more common in association with stockwork ores (Thurlow and Swanson, 1981). The paragenetic sequence of mineral deposition is complex but includes resorption, fracturing and re-deposition. Pyrite appears to be the first mineral deposited and sphalerite, chalcopyrite and galena are thought to be deposited at the same time but chalcopyrite is also seen as blebs, lamellae and veins (Strong 1981).

Transported ores occur as elongate-tabular accumulations of discrete high-grade fragments (Thurlow and Swanson, 1981). The deposits are transported by density flows that occur in paleotopographic lows, down slope from in situ ore bodies. MacLean, Rothermere, Clementine and Oriental #2 are examples of transported ore and together with the massive ore represent 98% of the ore mined in Buchans. The transported ore bodies occur as mechanically transported sulphide breccia lenses composed of sulphide bearing fragments derived from in situ ore (Thurlow and Swanson, 1981). They maintain

grade and have been noted to travel distances of up to 2 km from source areas. Sulphide fragments range from angular to sub-rounded and display streaky textures with sphalerite galena, chalcopyrite and barite being the main minerals. Unlike the in situ ore they have no associated stockwork zone. All of these orebodies occur on the RRO property.

Stockwork mineralization is typically associated with in situ ore and the best example is the Lundberg deposit which was the subject of a drill program by BUV in late 2007 and early 2008 under management of BUV and the author. The Lundberg deposit is stratigraphically below the historically mined Lucky Strike orebody and consists of quartz-barite-carbonate-sulphide veins and veinlets cutting strongly altered mafic to intermediate volcanics with disseminated sulphide mineralization. The stockwork mineralization comes to surface on the eastern edge of the zone and forms an elongate, wedge shaped body that is 350 m deep on the western end. The highest concentration of sulphide mineralization appears to be within close proximity to the Lucky Strike orebody and more diffuse away from the historic workings. Unlike the in situ ores, fine to coarse grained euhedral pyrite is the dominate sulphide and occurs with varying amounts of chalcopyrite, sphalerite, galena and barite (Thurlow and Swanson, 1981).

A second zone of stockwork mineralization is associated with the Engine House deposit which lies almost immediately south of Lucky Strike and typically has a greater proportion of chalcopyrite. The stockwork system of the Engine House does not appear to connect directly to the Lundberg deposit, in their present configuration, as determined by historic drilling as well as drilling completed by BUV in 2008.

Mineralization is also found in association with high-grade clasts noted from drilling within the Buchans area and their source is not clearly understood (Thurlow and Swanson, 1981). Clasts range in size from grains and pebbles to 30cm boulders of high-grade sulphide mineralization. The clasts contain galena, sphalerite, pyrite, chalcopyrite and gold and silver and are similar in metal grades to the in situ Buchans ores. They occur in polyolithic conglomerates within the same stratigraphic horizon as the in situ ore but also at distances of up to 6.7 km away from any know in situ orebody (Thurlow and Swanson, 1981).

Mineralization also occurs within undeveloped prospects at Clementine, Sandfill, Middle Branch and Little Sandy (Figure 2).

The Clementine prospect represents an undeveloped non NI43-101 compliant historical resource of 365,000 tonnes grading 4.9% Zn, 2.6% Pb, 0.3% Cu and 41 g/t Ag (Picket, 1994). Mineralization is hosted in transported ore described as a sulphide bearing breccia composed of a chaotic mixture of generally sub-angular volcanics and sedimentary clasts (Calhoun and Hutchinson, 1981).

The Sandfill and Middle Branch prospects are located 2 km northeast of the former Oriental mine and mineralization consists of high-grade clasts of zinc, lead and barite occurring in a fragmental unit (Halpin 2001). No current NI-43-101 compliant resource estimates exist for the Middle Branch prospect, however, Abitibi-Price in 1984 (archived

internal company correspondence) estimated a uncategorized, historic resource consisting of approximately 68,000 tonnes averaging 1.5% Cu, 4.7% Pb, 10.0% Zn, 86 g/t Ag and 0.3 g/t Au. An historical drill hole is also reported to have returned assay grades of 4.8% Zn, 3.1% Pb, 0.4% Cu, 48 g/t Ag, and 0.7 g/t Au over 1.8 m, at a depth of 518 m (Wallis, 2002).

The Little Sandy prospect was discovered by Asarco and consists of disseminated veinlets and fracture filling chalcopyrite and pyrite near the contact between mafic and felsic volcanic rocks. A non NI43-101 historical resource of 160,000 tonnes at 1.9% Cu has been outlined at the prospect (Thurlow and Pearce, 1979). The prospect occurs within the larger Little Sandy alteration zone that has been defined by IP and diamond drilling (Harris, 2001). Previous drilling on this prospect by Terra Nova Exploration in 1979 yielded drilled intercepts assaying up to 5.3% Cu over 0.3 m and 3.3% Cu over 7.9 m at depths of less than 50 m (Thurlow, 1979).

### 8.1 Other Properties

The reader is referred to Webster et al. (2008a/b) for a complete description of mineralization on the remaining properties.

## 9.0 Exploration

In December 2006 RRO acquired a controlling interest in Buchans River Limited (BUV) and at that time new management took over operation of the company. In July 2008, RRO purchased all remaining shares of BUV by way of a Plan of Arrangement giving RRO an effective 100% interest in BUV and its property holdings, including the Buchans Project. Exploration completed since December 2006 by the company is not considered entirely relevant to this report, which focuses on the Lundberg deposit (Figure 7). The reader is referred to Webster et al. (2008a/b) for a complete description of recent exploration on the RRO/BUV mineral properties.

Relevant exploration in proximity to the Lundberg deposit has included 53 diamond drill holes (8,058 metres) that were designed to specifically test the mineral grade and extent of the known stockwork mineralization. Other recent exploration in the Buchans area included 4 drill holes on the Clementine West prospect. Also completed was a Titan 24 MT-DCIP survey covering a 20 km<sup>2</sup> area immediately west of Lundberg deposit and extending to the northwest 5.1 km over the historically mined Buchan's orebodies, the Clementine prospect, and other prospective ground. The reader is referred to Webster et al (2008b) for a complete description of the results of other diamond drill projects and the TITAN survey.

## 9.1 Lundberg Deposit

In September 2007, BUV announced that it had located archived documents outlining an uncategorized resource estimate for a zone of stockwork type base metal mineralization peripheral to the former Lucky Strike mine. This historic uncategorized resource estimate reported approximately 13.1 short tons (11.9 million tonnes) with an average grade of 1.83% zinc, 0.67% lead, 0.38% copper, 0.16 ounces per ton silver (5.5 g/t) and trace gold (Asarco, 1974) (BUV Press Release PR #14-07). The 1974 Asarco documents, plans and sections detail a mineralization zone referred to as the Lucky Strike Low Grade mineralization. BUV named this the Lundberg deposit, which represents the broad mineralized stockwork alteration halo underlying the Lucky Strike Glory hole which is suspected to have fed the higher grade in situ sulphide accumulation of the Lucky Strike ore. The Asarco resource estimate is considered historic in nature and is not National Instrument 43-101 compliant and therefore cannot be relied upon.

The mineralized zone was described by Thurlow (1981) as a network of sulphide veins cutting strongly altered and sulphide impregnated host rocks occurring under the Lucky Strike deposit at Buchans. He describes a wedge shaped zone of mineralization 360 m wide, extending 600 m down dip and having a thickness of up to 100 m. The zone subcrops within 1.5 m of surface at the east end of the Lucky Strike pit where it has returned sulphide rich mineralization from drill holes completed by Asarco and BUV (Figure 7). Highlights of the BUV drilling are summarized in Section 10.0 of this report.

In the fall of 2007, BUV contracted Mercator to complete a digital compilation of the historic diamond drilling and to propose a diamond drilling program that would test the mineralized zone and provide sufficient information for the completion of a NI 43-101 compliant resource estimate. Mercator outlined a 40 hole, 6,000 metre diamond drill program to test the extent of the Asarco outlined historic resource and adjacent areas. The program was completed in May, 2008 having drilled a total of 53 drill holes (8,058 metres). The results of these holes are discussed in Section 10.

## 10.0 Drilling

RRO (and predecessor BUV) completed eight diamond drilling programs since the fall of 2006. In the Buchans area, 6 holes totaling 850 metres were completed at Little Sandy prospect, 8 holes totaling 3,850 metres were completed to test targets outlined by Billiton within the area of the historic Buchans area mines (Figure 2), and 43 holes totaling 6,853 metres were completed within the Lundberg deposit, and ten holes totaling 1,205 metres were completed within the Engine House deposit. In addition 88 drill holes totaling 17,078 metres were completed on the Tulks North properties (Webster et al, 2008a). The programs were managed by Mercator under the supervision of BUV management and the author. All logging and sampling of drill core was performed by Mercator geologists in suitable onsite facilities in Buchans. This report focuses on the Lundberg deposit drilling and the reader is referred to Webster et al. (2008a/b) for a complete description of recent drilling throughout the Buchans and Tulks North properties. The following describes the Lundberg deposit drilling program only.

## 10.1 Lundberg Deposit

A discussion of the findings and results of 43 drill holes totaling 6,853 metres are summarized as follows. The true widths of the mineralization have not been estimated from drill hole intersections due to the stockwork and disseminated nature of mineralization, however, a predominant sub-horizontal mineral trend exists in the stockwork system beneath the Lucky Strike Glory hole (Figure 7). The Lundberg deposit is defined as a zone containing greater than 1% combined base metal grade (Zn+Cu+Pb). This zone was previously interpreted by Asarco in 1974 as a low grade alteration package.

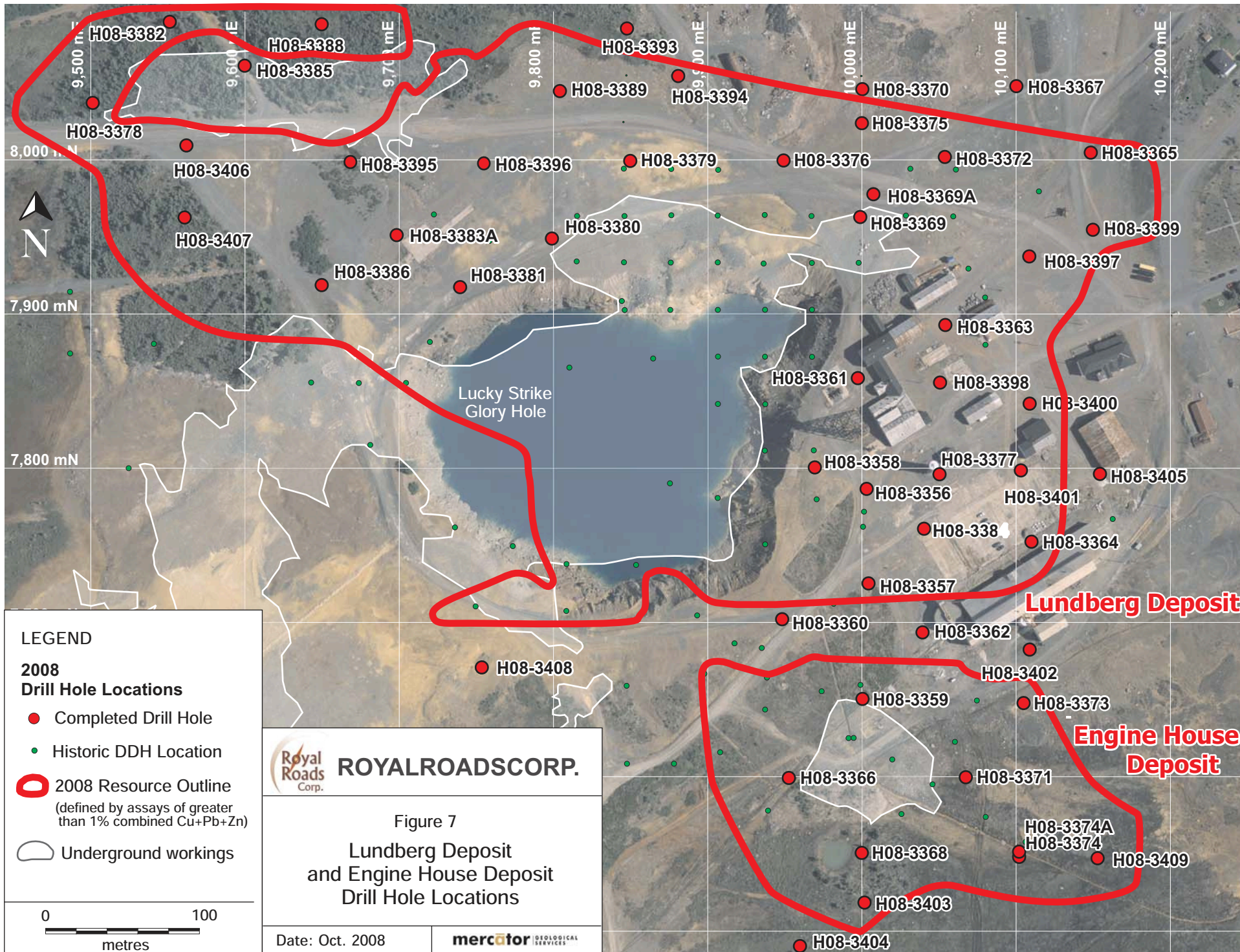
The Lundberg deposit demonstrates a sub-horizontal zone of mineralization which appears to dip gently to the north and plunge to the northwest, and subcrops as an erosional surface in contact with overburden in the eastern portion of the zone. It is bound to the South by the Airport Thrust fault, to the north by the Ski Hill Thrust fault, and gradually wanes to the west where it is overlain by the transported ore deposits previously mined by Asarco. The deposit is underlain, by thrust contact of the Old Buchans Fault, with the younger Sandy Lake formation which is locally composed of hematitic amygdaloidal basalt and exhibits a weak magnetic character in comparison to the non-magnetic character of the Ski Hill Formation basalt. The stockwork zone does not locally penetrate the Sandy Lake Formation, indicating pre-tectonic mineral deposition.

The mineralization is dominantly composed of a quartz-carbonate-barite stockwork system hosted by brecciated and vesicular intermediate to mafic volcanics correlative with the Intermediate Footwall (Ski Hill Formation) described by Thurlow (1999). The quartz-carbonate-barite phase is accompanied by pyrite, chalcopyrite and fine-grained galena-sphalerite. Immediately to the east of the Lucky Strike Glory hole, an area is defined by the erosional surface of the stockwork sequence subcropping within 1.5 metres of surface. Localized mottled semi-massive horizons of quartz, barite, carbonate and variable amounts of base-metals with up to 30% pyrite occurring as stringers, blebs and fracture fills, cut the quartz barite phase. Massive pyritic Zn-Pb-Cu sulphides were noted near the interpreted top of the stockwork zone immediately to the northwest of the glory hole but are not considered to be remnant Lucky Strike high-grade in situ massive sulphides as they are compositionally and texturally distinct. Alteration was observed to be most advanced in this area.

## 10.2 Engine House Deposit

The Engine House deposit has been defined as a separate mineralized body that sits immediately adjacent to the main Lundberg deposit and for the purposes of this resource estimate has been modeled as a separate zone (Figure 7). A total of ten holes totaling 1,205 metres were completed within the Engine House deposit. Two intimately-related styles of base metal mineralization were identified on the periphery of the former Engine House orebody. The first style comprises a thin horizon of exhalative massive sulphides (likely corresponding to the historically mined Engine House orebody), capped by a red

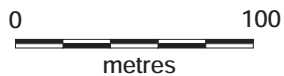




**LEGEND**

**2008 Drill Hole Locations**

- Completed Drill Hole
- Historic DDH Location
- 2008 Resource Outline  
(defined by assays of greater than 1% combined Cu+Pb+Zn)
- Underground workings



**Royal Roads Corp.**  
**ROYALROADSCORP.**

Figure 7  
 Lundberg Deposit  
 and Engine House Deposit  
 Drill Hole Locations

Date: Oct. 2008

**mercator** GEOLOGICAL SERVICES



chert bed and then overlain by a felsic tuff of the Buchans River Formation. Stratigraphically below the narrow massive sulphide-zone is a stockwork system dominated by chalcopyrite-pyrite with lesser galena-sphalerite hosted within polyolithic breccia-volcanics and an altered chloritic matrix, lithologically similar to that of the intermediate footwall underlying the Lucky Strike Glory hole. The stockwork veins contain notably less quartz-carbonate and slightly higher barite than the neighbouring Lundberg deposit to the north. The massive sulphide horizon was observed in drill holes within close proximity to the historically mined Engine House Orebody.

### 10.3 Logistics

Springdale Forestry Resources of Springdale Newfoundland was contracted to provide core drilling services for the 2007 and 2008 BUW programs and supplied a diesel-powered skid-mounted Duralite 500 wire-line drilling unit equipped to recover NQ size rock core (4.76 cm in diameter). The company also provided all necessary support equipment, including an excavator and bulldozer for drill moves and site preparation work. Drilling was typically carried out on a 24 hour per day basis.

Mercator provided geological and technical staff for all drilling projects to facilitate day to day coring operations and logging functions, with project planning and oversight provided through consultation with senior BUW and Mercator staff. All drilling, field and geological personnel were accommodated through local housing and restaurant facilities. Mercator provided field support including trucks for the entire field program, while BUW supplied accommodation and secure core logging facilities to Mercator staff.

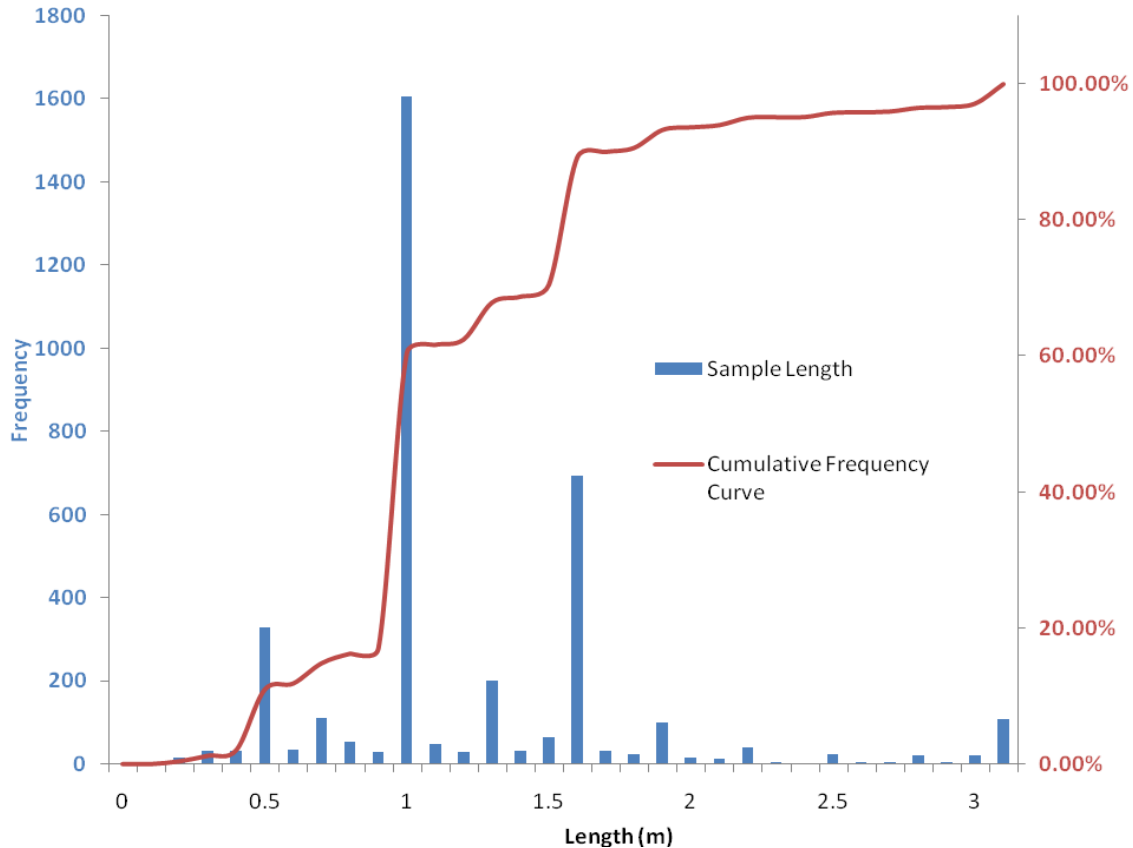
Drill collar locations for each drill hole were based on Universal Transverse Mercator Zone 21 (UTM NAD 83) as grid coordinates and were established initially in the field by handheld GPS units, followed by differential GPS surveys upon completion of the drilling by Red Indian Surveys of Grand Falls, NL. Drill holes were typically tested for inclination and azimuth variation using Flex-it<sup>®</sup> down hole survey instruments and results were incorporated in the project database.

### 11.0 Sampling Method and Approach

Drill core was descriptively logged on site, aligned, marked for sampling by Mercator geologists in a secure logging facility in Buchans Newfoundland. All drill core was cut in half, longitudinally, using a diamond saw blade by Mercator technical personnel. Samples consist of half NQ-size diamond core (47.6 mm diameter core), consistently taken from the right hand side of the core (looking downhole). The unsampled half of the core is preserved in core boxes for future reference. As part of QA/QC protocol, samples of core are bagged, tagged, sealed and delivered directly to Eastern Analytical Limited laboratory in Springdale, NL by Mercator personnel respecting appropriate chain of custody measures. Sample numbers were recorded in both the core log and in sample record logs for the drill hole. In accordance with the quality assurance and quality control protocol set up by Mercator for this drill program, duplicate, blanks and standard samples

were inserted in the number sequence at set intervals. The QA/QC program is discussed detail latter in this report. Base metal bearing samples are nominally 1 metres to 1.5 metres in length, except where specific geologic parameters require a smaller interval be sampled (Figure 8).

**Figure 8: Sample Length Distribution**



## 12.0 Sample Preparation and Analysis

Sample preparation was completed by Eastern Analytical with each sample crushed to approximately 75% of -10 mesh and split using a rifle splitter to approximately 300 g. Each sample split was pulverized using a ring mill to approximately 98% -150 mesh. In addition to regular samples, blank samples (one per 20 samples) and certified standards (one per 20 samples) were also submitted for sample preparation and assay. All coarse reject material was maintained for the duration of the drill program but has since been discarded. Representative pulp samples have been preserved by the company.

All assays were completed by Eastern Analytical of Springdale Newfoundland by the inductively coupled plasma method (ICP-11) for base metals (Cu, Pb, Zn) and to Ore Grade Assay Cu, Pb and Zn if upper detection limits by ICP were exceeded for either

element (upper detection limits; Cu 10,000 ppm, Pb 2,200 ppm, Zn 2,200 ppm). ICP analyses were completed using a 0.50 g sample digested in nitric and hydrochloric acid and analyzed by ICPOES (Inductively Coupled Plasma Optical Emission Spectroscopy). Base metal ore grade assays (Cu, Pb, Zn) were completed using a 0.20 g sample digested in nitric and hydrochloric acid and analyzed by the atomic absorption (AA) method. Silver assays were completed using a 1,000 mg sample digested in hydrochloric and nitric acid and analyzed by AA. Gold assays were completed by standard ½ assay ton fire assay using the AA method. All samples analyzed by the Ore Grade Assay method were re-assayed as check assays by ALS Chemex of Vancouver, BC. Eastern also completed independent QA/QC protocols that include insertion of blanks and certified CanMet standards as part their routine analyses.

The following list compiles elements included in laboratory analysis, with detection limits, etc.

## 13.0 Data Verification

Quality assurance and control protocols were implemented to monitor accuracy, reproducibility and precision through each stage of data collection. These stages include sampling, assaying and geological observation. During the 2007/2008 drilling programs Mercator, on behalf of BUW and RRO, carried out a comprehensive QA/QC program. Each step of this program lends itself to a different aspect of quality control and assurance. The insertion of blind standards allows observers to monitor the precision of assay results by comparison to known grades for the control sample. Blanks were used to detect and evaluate issues of cross contamination. The analysis of duplicate sample slits is used to determine the accuracy of reproducing results. In the final verification measure a split of selected sample pulps is sent to a second independent laboratory as means for checking assay of ore grade samples to ensure analytical validity in reported grades. The details are as follows.

### 13.1 Certified Standard Program

Canadian Resource Laboratories of Delta, BC provided two certified standards for use in the Lundberg drilling program. The standards were selected on a basis of mineral composition and grade range, including high-grade and low grade standards. The standards selected were CDN-HLHZ and CDN-FCM-4, the details of which can be found in Appendix III. The Standards were inserted blindly every even 20<sup>th</sup> sample number in chronologic order with core samples and marked accordingly in the sample record book. Results of each sample were checked against the laboratory supplied grade range tolerances. All certified standards used in drill programs within the Buchans area fall within acceptable limits and considered appropriate for VMS mineralization (Figure 9 & 10).

Figure 9: HLHZ Standard Evaluation

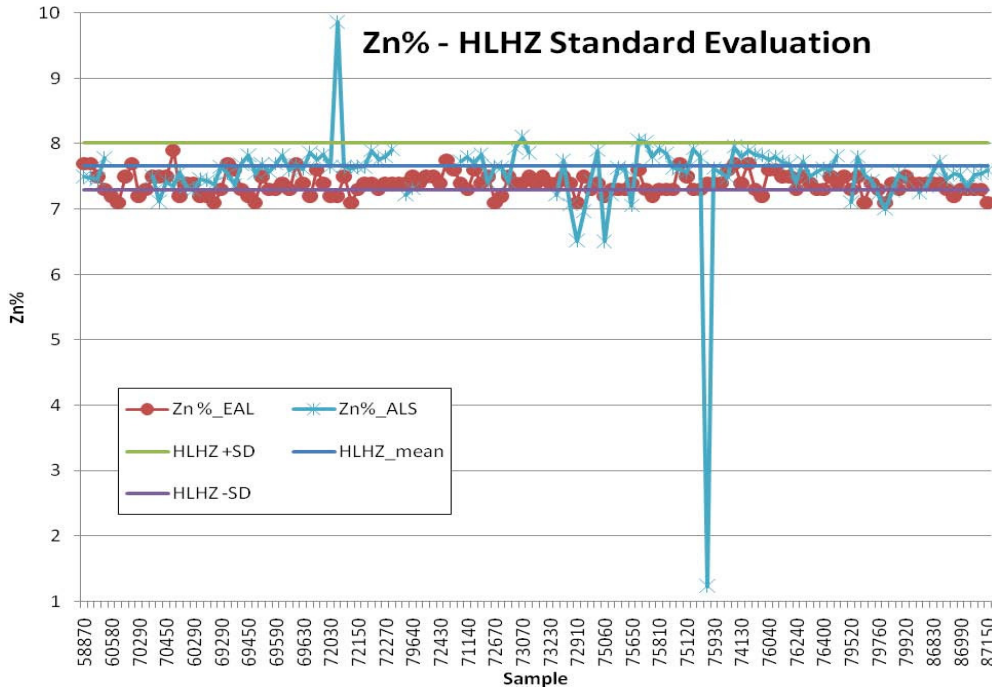
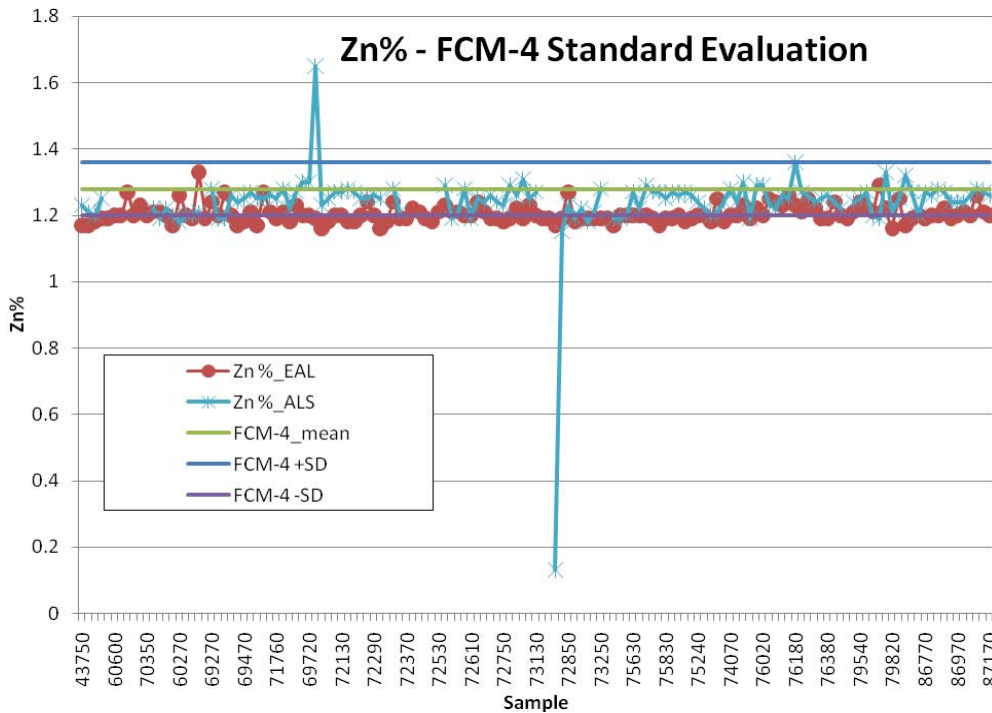


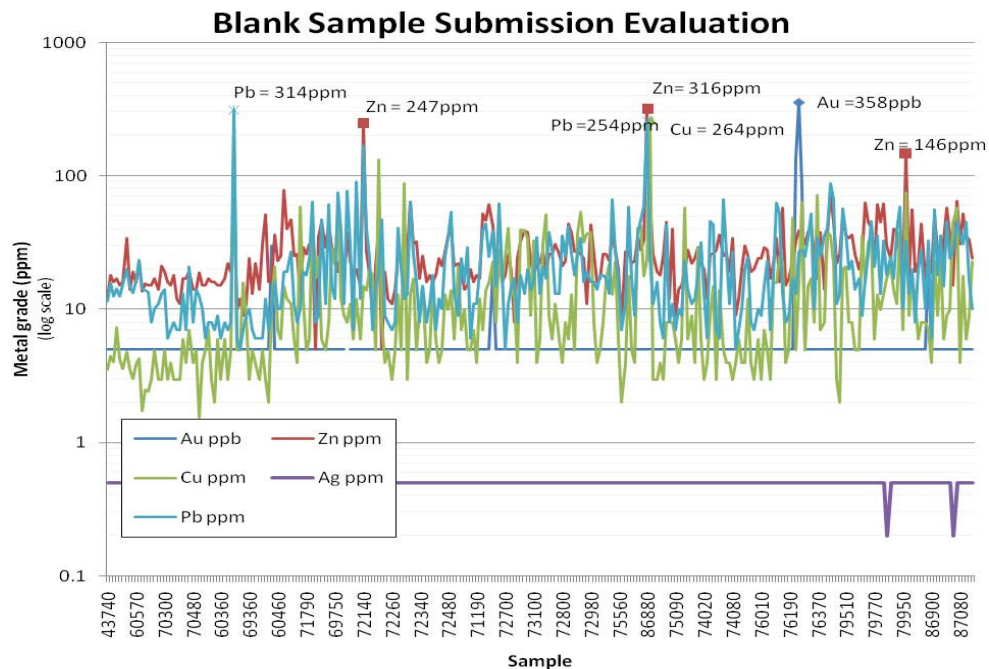
Figure 10: FCM-4 Standard Evaluation



### 13.2 Blind Blank Sample Program

Blank samples were inserted in chronological succession at an interval of every odd 20<sup>th</sup> sample and noted in the sample record book as a blank. Blank sample material is comprised of benign sandstone collected by Mercator geologists from outcrops near the south shore of Red Indian Lake, NL. Blanks samples were assayed by Eastern Analytical throughout the course of the drilling programs. Results for blank samples indicate a consistent background level and results fell with accepted limits (Figure 11).

**Figure 11: Blank Sample Evaluation**



### 13.3 Duplicate Sample Program

Duplicate samples were not collected as drill core samples. Duplicate sample pulps were prepared in the laboratory setting by Eastern Analytical for every 20<sup>th</sup> sample, and were used by Mercator and Eastern Analytical as in house quality control. Results for the duplicate pairs were reviewed with respect to lead and zinc values (ICP analysis only). Duplicates from Eastern Analytical show good reproducibility and check assays display 1:1 correlation which suggests the data is reliable (Figure 12).

### 13.4 Check Assay Program

All blanks, standards and samples pulps contained within ore grade mineralized envelope (as defined by Mercator) were sent to ALS Chemex for check assay, respecting appropriate chain of custody measures. Comparison of analytical results between ALS

Chemex and Eastern Analytical indicate strong 1:1 correlation. It is the opinion of this author that the data sets discussed in this report are acceptable (Figure 13).

Figure 12: Duplicate Sample Evaluation

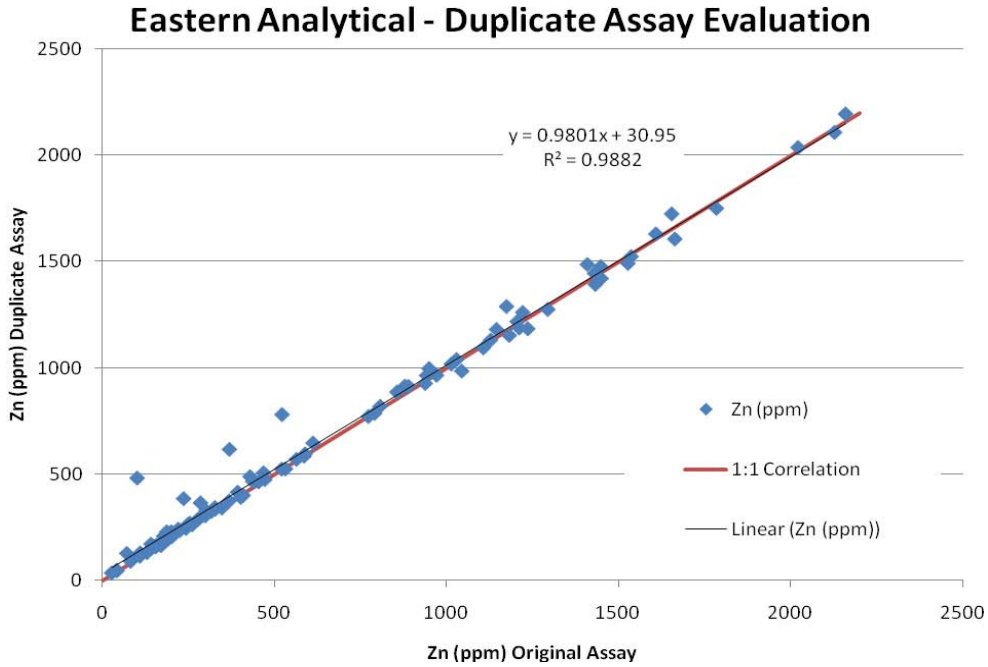
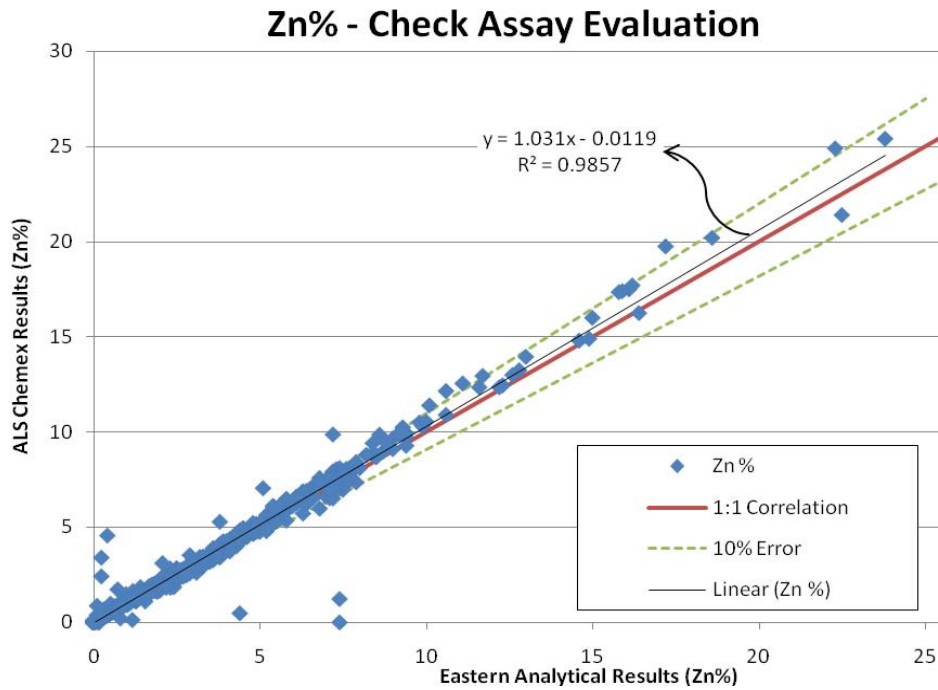


Figure 13: Check Assay Evaluation



## 14.0 Adjacent Properties

There are no adjacent properties as defined by NI 43-101 are pertinent to this report.

## 15.0 Mineral Processing and Metallurgical Testing

No mineral processing and metallurgical testing has been completed by RRO on any of the properties discussed in this report.

## 16.0 Mineral Resource and Mineral Reserve Estimates

### 16.1 General

The definition of mineral resource and associated mineral resource categories used in this report are those recognized under National Instrument 43-101 and set out in the Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Reserves *Definitions and Guidelines* (the CIMM Standards). Assumptions, metal threshold parameters and deposit modeling methodologies associated with the current resource estimate are discussed below in report sections 16.2 through 16.4.

Mercator and the authors were contracted to assist in the design and implementation of a diamond drilling program to test and verify base metal mineralization associated with the Lundberg and Engine House deposits, to confirm existing mineralization outlined by ASARCO, and to improve the confidence in the distribution of mineral grade. These resource estimates have been completed from a database compiled from new and existing drill hole data and verified by Mercator and the authors. The database has been fully validated and formatted such that it is suitable for use in mineral resource estimation.

### 16.2 Geological Interpretation Used in Resource Estimation

In total, 53 diamond drill holes (comprising 8,057.82 metres) were drilled vertically from surface over the Lundberg and Engine House deposits. Lithological descriptions were captured in digital format and displayed on geological cross-sections with corresponding assay results in conjunction with historical surface and underground diamond drilling results. Lithological and mineralogical correlations were determined based on these cross-sections. For the purpose of this resource estimate, mineralogical correlation was the defining parameter for the continuity and distribution of mineral grade used to confine the resource.

## 16.3 Methodology and Resource Estimation

### 16.3.1 Overview of Current Estimation Procedure

These resource estimates reflect a three-dimensional deposit block model developed by Mercator using Surpac© Version 6.0.3 deposit modeling software. Analytical results for 178 diamond drill holes were used to calculate the resource estimate in this model, of which 42 drill holes are from recent Company drilling, and 136 drill holes are from validated historic data. The model utilized 1 metre down-hole assay composites individually calculated for Zn(%), Pb(%), Cu(%), Ag(g/t), Au(g/t), and BaSO<sub>4</sub> assay values. Model blocks measured 5 metres x 5 metres x 5 metres with sub-blocking at 2.5 metres x 2.5 metres x 2.5 metres within the Lundberg solid, and 2.5 metres x 2.5 metres x 2.5 metres with sub-blocking at 1.25 metres x 1.25 metres x 1.25 metres for the Engine House solid.

The model was constrained by individual wireframed solids representing resource estimates for the Lundberg and Engine House deposits respectively. The wireframes were outlined from geological sections and reflect a minimum included grade of approximately 1% combined base metal (Zn% + Pb% + Cu%). Internal dilution within individual drill holes was limited to a maximum of 40% of the overall drillhole intersection. No high-grade capping factors were applied to high-grade samples. The Lundberg resource solid occurs between the bedrock-overburden interface in the east and plunges to a maximum depth of approximately 350 metres below surface in the west. The Engine House wireframe solid ranges in elevation from between 25 metres to a depth of approximately 145 metres below surface. Historical underground development was reviewed and where information was available, was modeled into 3-dimensional solids for volume purposes. All underground workings volumes occurring within the resource block model volumes were removed from the resource estimate after the grade interpolation process was completed.

Metal grades were assigned to the block model using inverse distance squared (ID<sup>2</sup>) interpolation methodology with blocks being peripherally constrained by wireframe solids.

The Lundberg solid incorporated two interpolation domains occurring north and south of gridline 7930N. Two unique interpolation ellipses were determined for these two domains. Major and minor axis parameters were selected based on continuity and distribution of metal grade and reflect geological characteristics of the mineralized zones. The domain south of line 7930N used an ellipse aligned at 305 degrees azimuth with a dip and plunge of -7.5 degrees and 7.5 degrees respectively. The domain north of line 7930N used an ellipse aligned at 305 degrees azimuth, with a dip and plunge of -25 degrees and -25 degrees respectively. Both ellipses have a major and semi-major axis range of 75 metres and minor axis range of 37.5 metres in order to preserve the relatively sub-horizontal character of mineralization.



The Engine House estimate incorporated four solids, each having independent interpolation domains, and used an isotropic model with a 75 metre range. Three of the domains were modeled to reflect isolated stringer style mineralization in pyroclastic volcanics located below the main stockwork mineralization.

Results of 1,577 1 metre composites of separate laboratory determinations of specific gravity (“SG”) were used in the block model. The mean SG value from within the resource solids of 2.88 g/cm<sup>3</sup> was assigned to blocks occurring within the Lundberg and Engine House models.

The results of the Mineral Resource Estimate can be seen as a schematic in Figure 14, where the grade cut-offs of 1% combined base metal (Zn% + Pb% + Cu%), 1% Zn, 1.5% Zn, 2% Zn, and 3% Zinc can be seen as color contours of the extreme outline projected to surface. Figure 15 outlines the block model on an east-west vertical cross-sections through line 7,850N (A-A’), and Figure 16 outlines the block model in a north-south section through line 10,000E (B-B’). The Lucky Strike glory hole and underground workings can be seen as white lines.

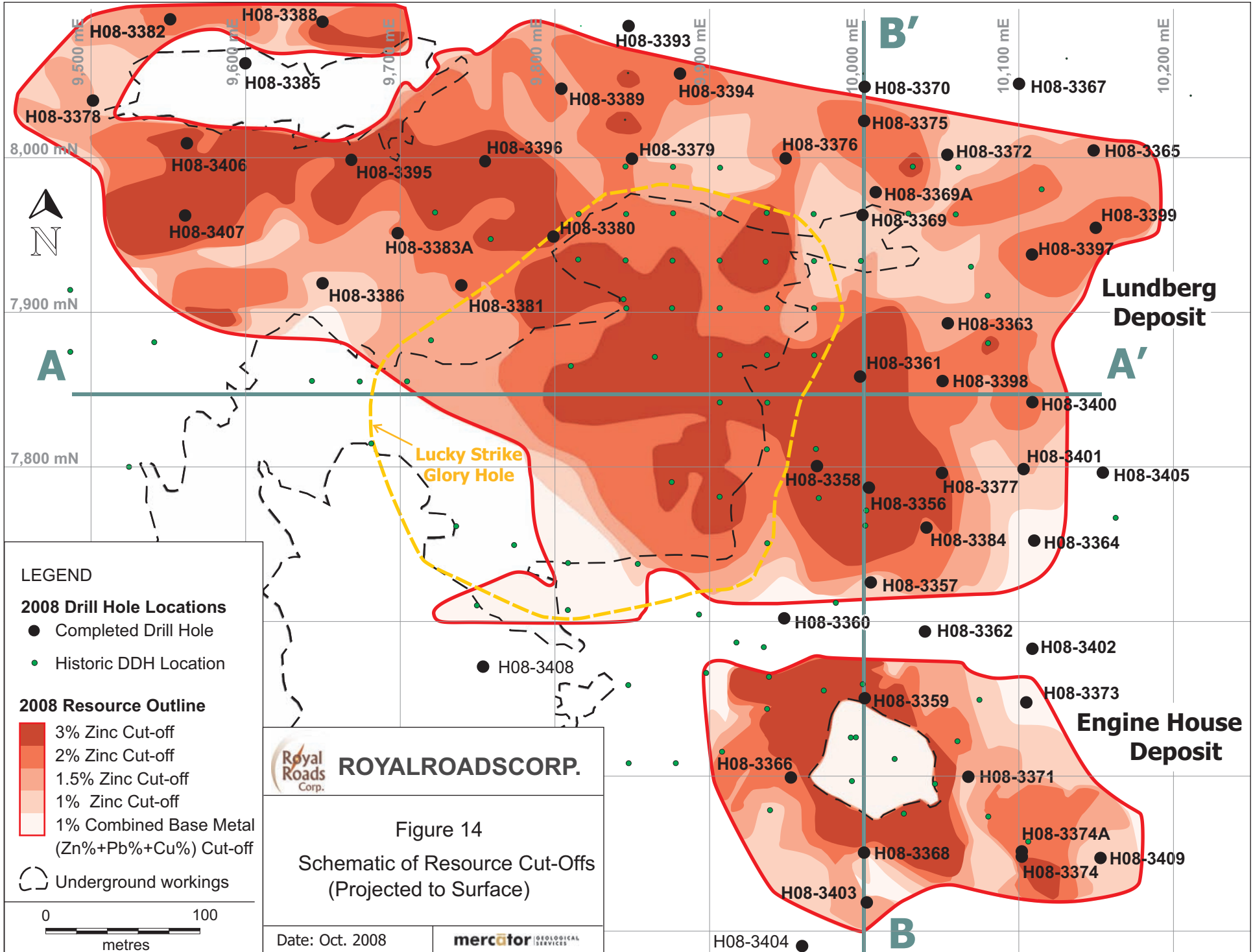
A calculation of the percentage of the mineral resource lying within 100 metres of surface was completed for the client. The results of this are discussed in section 16.3.7 of this report.

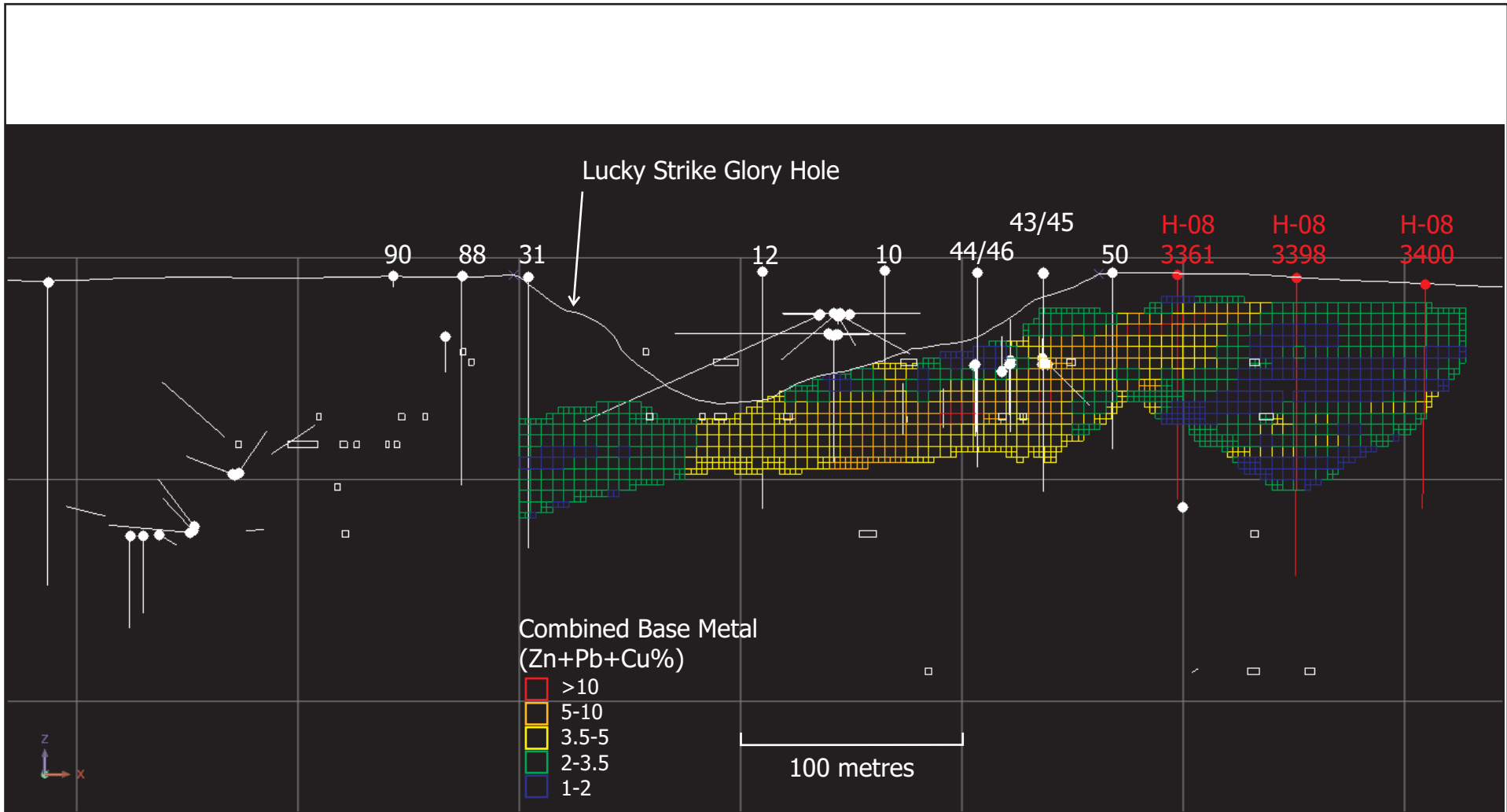
### **16.3.2 Capping of High-grade Assays**

No high-grade capping factors were applied to high-grade samples. Through analysis of metal grade distribution, it was concluded that high values lay within zones where geology and mineralogy support the presence of high-grade material. Figures 17 to 22 demonstrate the log-frequency distribution and descriptive statistics of the 1 metre grade composites for base metal mineralization within the Lundberg and Engine House. Quality control measures outlined in Section 13 have confirmed the validity of assay data from recent company drilling.

### **16.3.3 Compositing of Drill Holes and Statistics**

All assay information from historic and current drilling was reviewed, validated and added to the Surpac© database by Mercator. All assays lying spatially outside of the interpreted 1% combined base metal (CBM) cut-off wireframe were excluded from compositing methods. Individual composites for Zn%, Pb%, Cu%, Ag g/t, Au g/t, and Ba% were calculated over 1 metre intervals in a downhole direction, starting with the first sample within the resource wireframe and continuing to the last. These composites were used as point data in determining the block grades in the model. In areas where there was no sampling, or missing assay data, no composites were created. If there was information from historic drill logs that indicated mineralization occurred in these areas, the model was allowed to interpolate over these holes. If there was no information available to determine if mineralization was present the holes were deleted from the database. This applied to four drill holes. In total, 4574 composites were used in the





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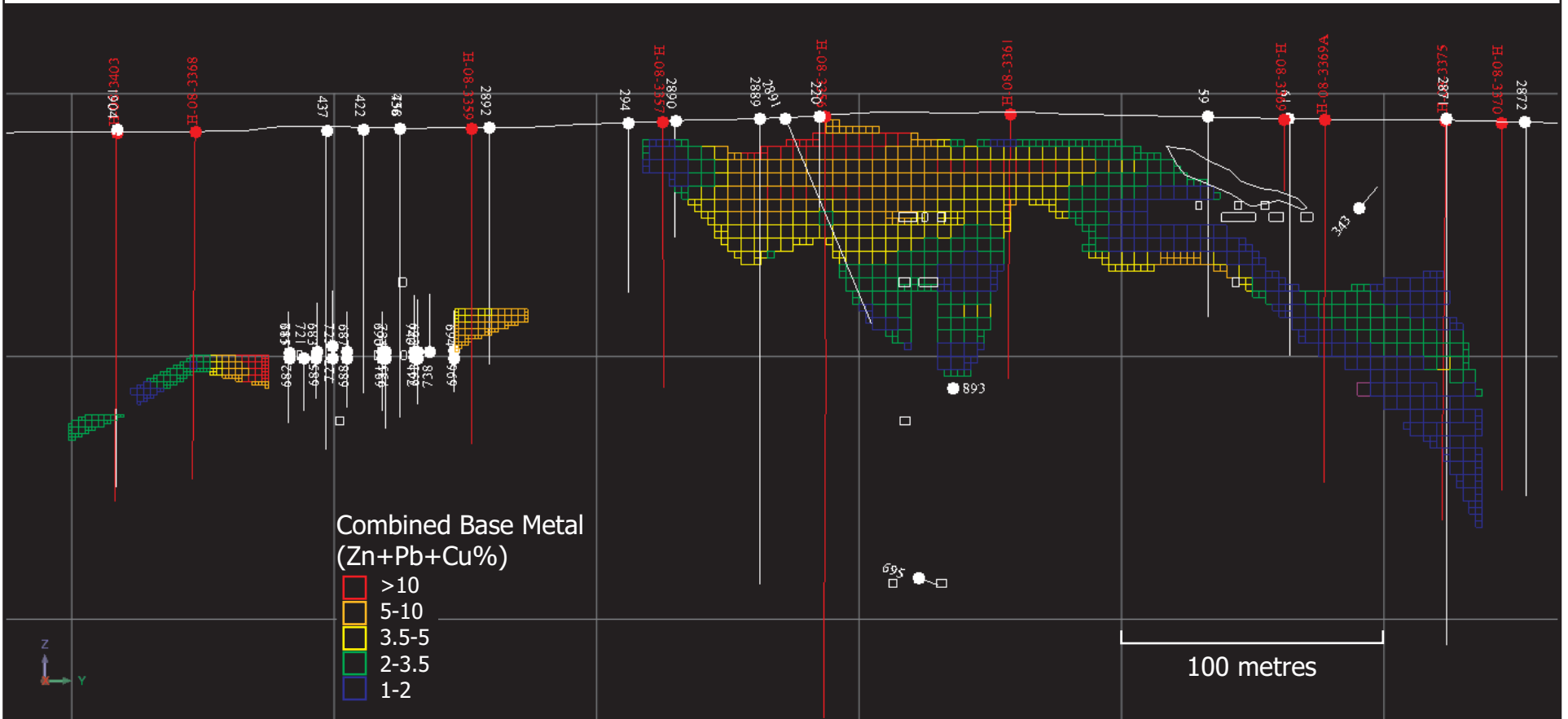

**ROYAL ROADS CORP.**

Figure 15  
 East-West  
 Vertical Cross Section  
 Along Line 7850N

Date: Oct. 2008
 

B

B'



36

Figure 16  
North-South Vertical Cross Section  
Along Line 10000E

Date: Oct. 2008

block model interpolation. Figures 17 through 22 represent the histogram distribution and descriptive statistics for the 1m composite dataset for individual metals used in the calculation of this estimate.

#### 16.3.4 Variography

An inverse distance squared ( $ID^2$ ) interpolation method was used in the estimation of grade in the block modeling procedure, and as such no variography was performed in the calculation of the Lundberg or Engine House resource estimates.

#### 16.3.5 Setup of 3-Dimensional Block Model used in Current Resource

The block model extents were defined in local grid coordinates (metric) spanning from grid line 9,450E to 10190E and from line 7,500N to 9,000N. The local grid is oriented parallel to the UTM NAD83 (zone 21) grid, and co-ordinates are obtained by subtracting 500,000 from the UTM easting and 5,400,000 from the UTM northing. Drillhole coordinates used in the resource model are included in Appendix II. The model extends from a maximum surface elevation of 300 metres to -50 metres (elevation relative to sea level datum, ASL), with the nominal topographic surface around the Lundberg deposit being 195 metres ASL. All resource solids respect the bedrock/overburden surface. Images of the block model can be seen in Figure 15 and 16

A standard block size for the model was established at 5 metres x 5 metres x 5 metres with sub-blocking at 2.5 metres x 2.5 metres x 2.5 metres within the Lundberg solid, and 2.5 metres x 2.5 metres x 2.5 metres with sub-blocking at 1.25 metres x 1.25 metres x 1.25 metres for the Engine House solid. A minimum sub-block size of 1.25 metres x 1.25 metres x 1.25 metres was permitted to better constrain the model along geological, topographic and peripheral solid limits. Discretisation was 1 metre x 1 metre x 1 metre and no block rotation was applied. The chosen block size locally smoothes the effects of intermittent stockwork and reduces overestimation of volume along mineral boundaries.

Resource estimation was completely constrained within a series of resource solids developed from systematic wireframing of the interpreted mineralized envelope limits. Vertical east-west and north-south cross-sections were used in creating the solids. The resource solids were developed using a minimum threshold of 1.00% combined base metal (Zn% + Cu% + Pb %) values over a minimum downhole length of 5 metres. In areas with low assay values, 40% dilution of less than 1% combined material was included in the initial assessment of interpretation. For example, within any 5 metres interval the model would accept 2 metres of sub 1% combined material. In most cases, the Lundberg solid was constrained along the upper boundary of the Ski Hill Formation, under which the stockwork system was developed. In instances where mineralization was intersected by recent drilling in the Buchans River Formation, the grade would be included in the resource. The Engine House solids included both stockwork of the Ski

Figure 17: Lundberg 1m Zinc Composite Histogram

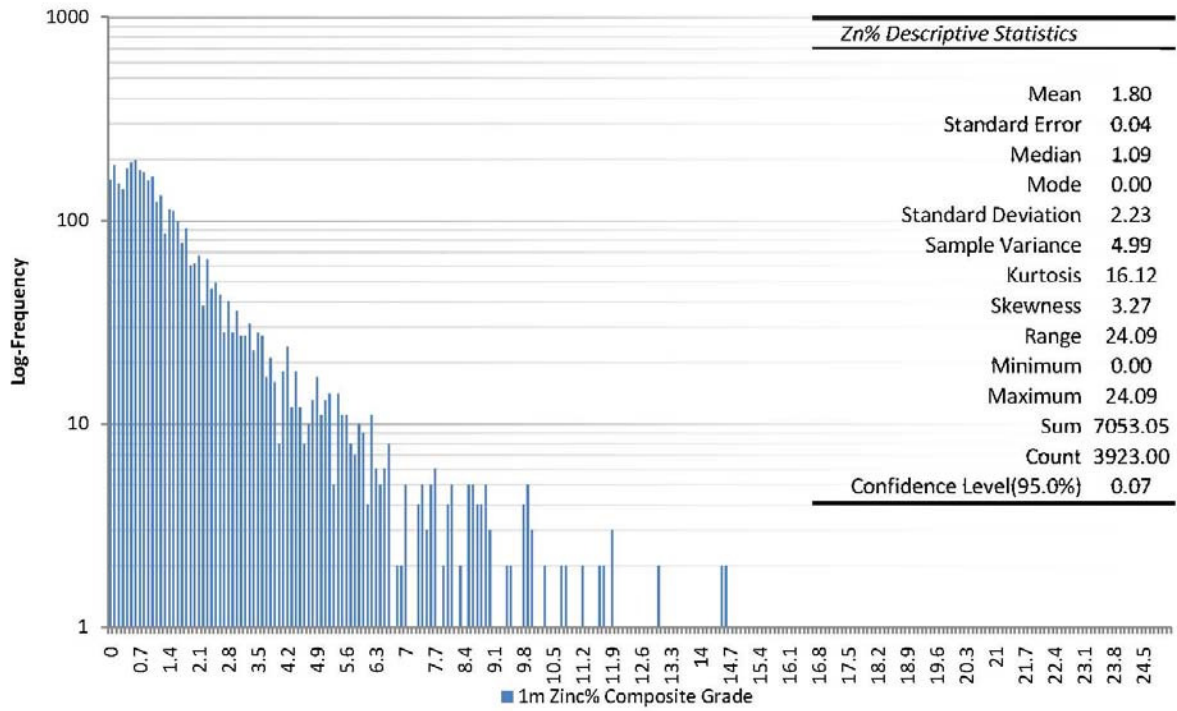


Figure 18: Lundberg, 1m Lead Composite Histogram

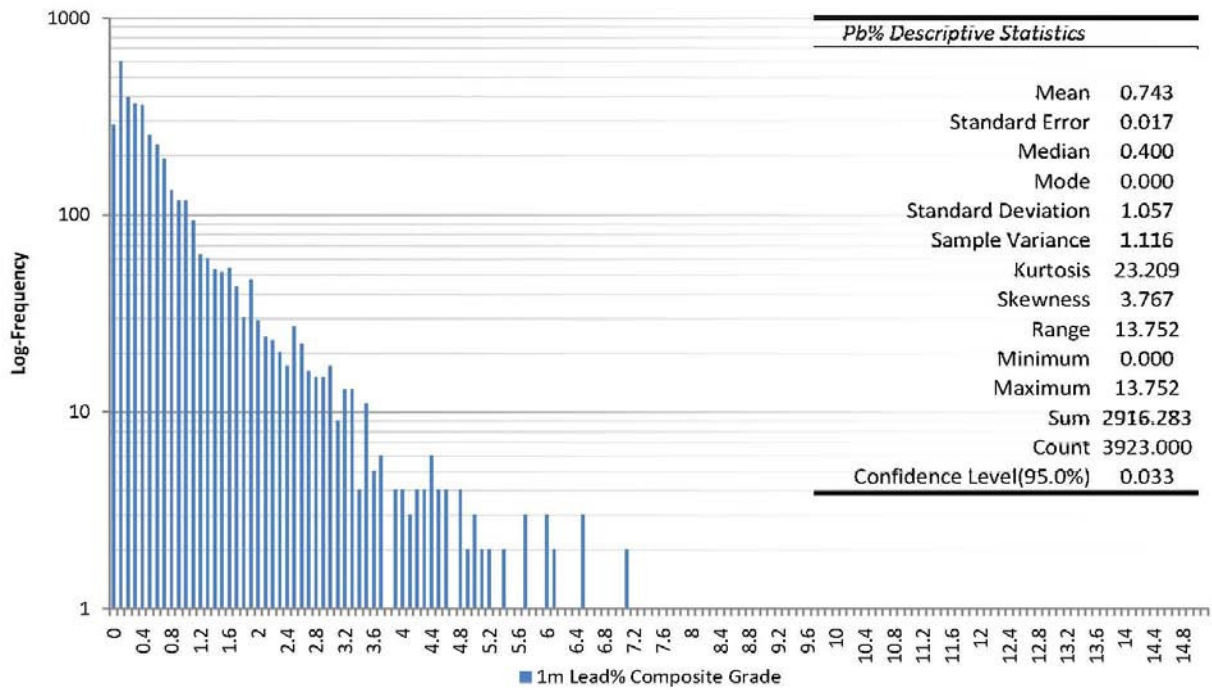


Figure 19: Lundberg, 1m Copper Composite Histogram

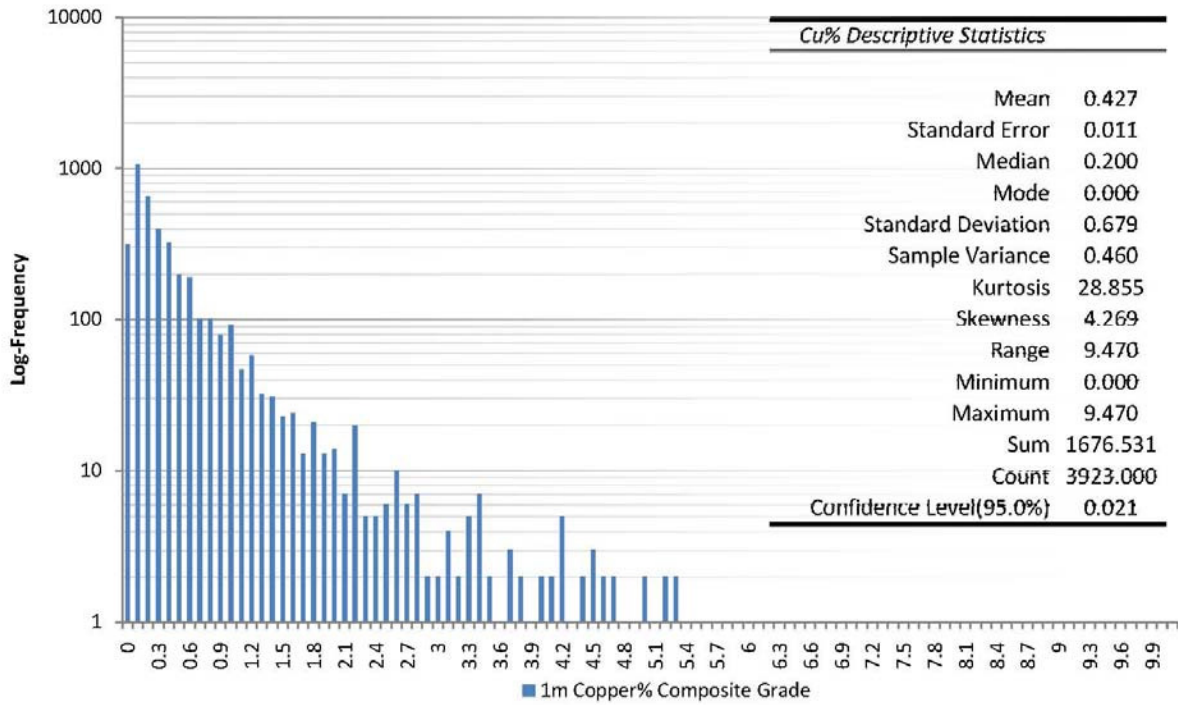


Figure 20: Engine House, 1m Zinc Composite Histogram

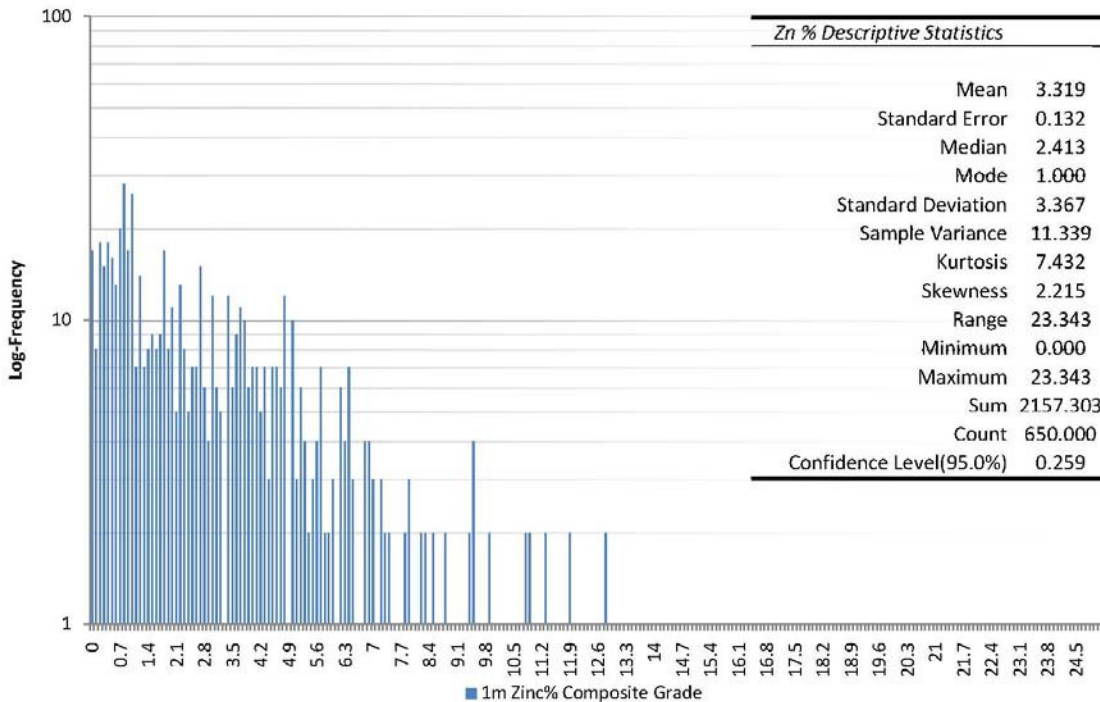




Figure 21: Engine House, 1m Lead Composite Histogram

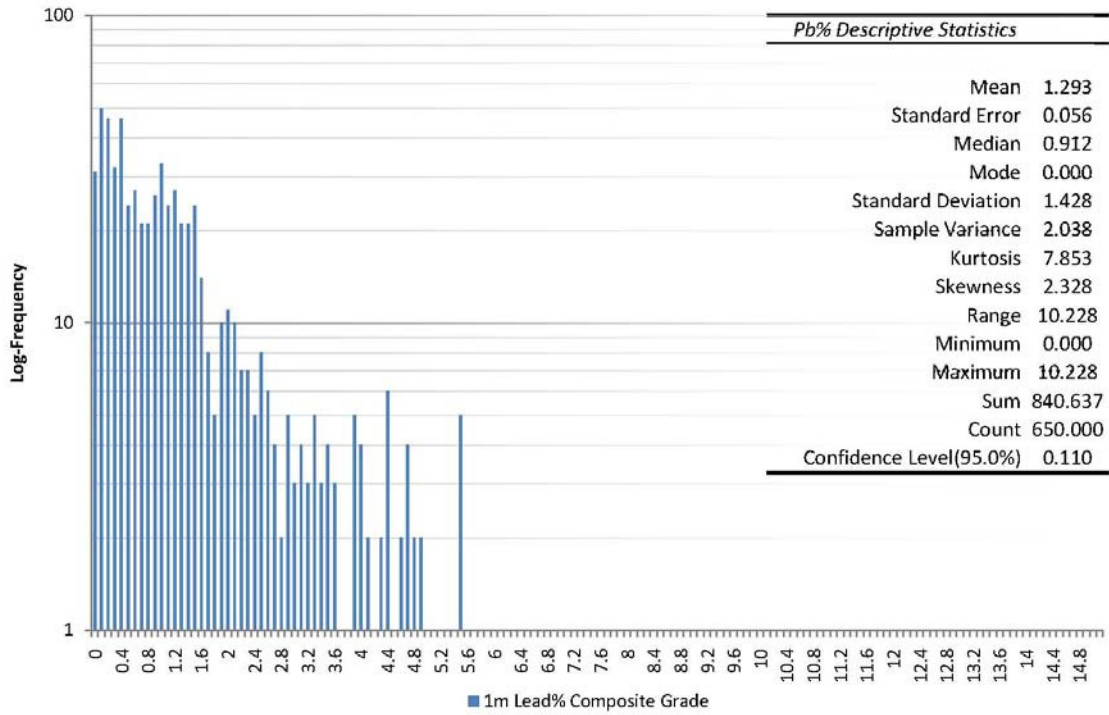
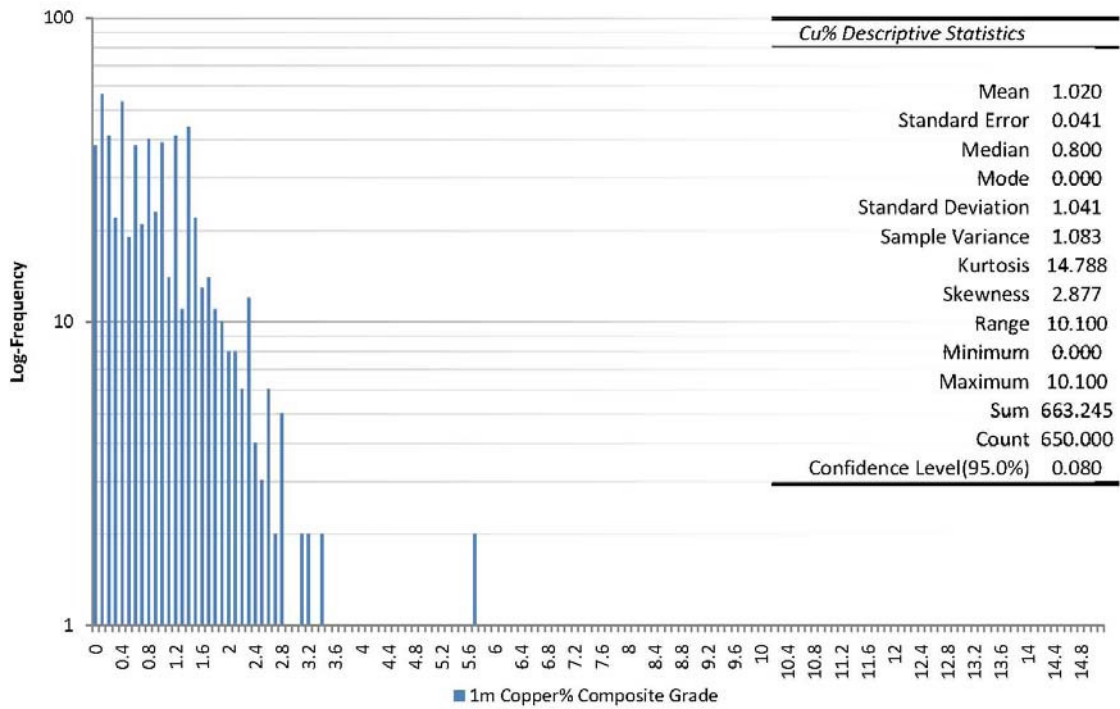


Figure 22: Engine House, 1m Copper Composite Histogram





Hill Formation and a narrow band of massive, presumably exhalative, sulphide contained in the lower Buchans River Formation.

The limits of the resource extended 50 metres horizontally from the last drill hole, or where the last drill hole was outside the wireframe, the midpoint between two drill holes was used. Any historic holes drilled from the surface or underground that lay within this boundary were included in the resource. The edges of the solid were interpreted and smoothed based on geology in areas of low density of drilling to avoid a jagged surface of the solid.

A 3-dimensional model of the historic underground development was created from archived plan maps and sections, and volumes were developed based on the best information that was available. Where underground workings intersected model resource blocks, the associated volumes and grade of those blocks were removed from the final reported resource after the interpolation of the model was completed. Historic drillhole data that lay within the workings was used in the interpolation.

#### **16.3.6 Material Densities**

Density information used in the resource estimate is based only on drill core data collected by Mercator staff during the current diamond drill program, as no historic data was available. All samples that lay within the base metal enriched mineralized zone, were analyzed using Ore Grade methods at Eastern Analytical and were then sent to ALS Chemex for check assay. In addition to quality assurance check assaying procedures, sample pulps were subjected to specific gravity (SG) determinations using pycnometer methods (ALS method OA-GRA08b, refer to Section 12.2). In total 1,577 samples were analyzed, are relevant to and were used in this resource.

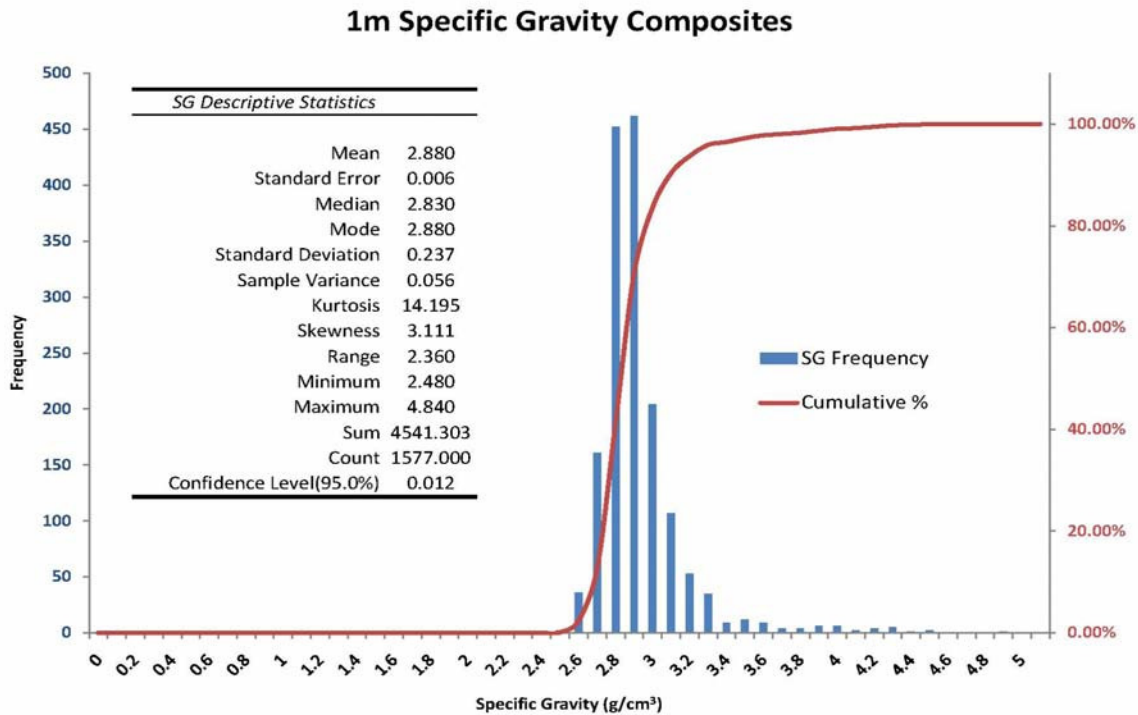
No information was obtained with reference to specific gravity from historical drilling by Asarco on this property. Sample data collected analyses by ALS Chemex as part of the current drilling is considered representative of the rock within the resource boundaries, and was incorporated into the database in order to determine a useable SG value. A detailed assessment of mineralogy and grade variability in relation to specific gravity is required to assign unique densities for volumes of rock within the Lundberg and Engine House deposits, due to their polymetallic nature.

The majority of mineralization occurs within a stockwork system hosted by mafic to intermediate volcanics with varying degrees of alteration. Preliminary analysis did not produce a useable proxy for density determination as related to mineral concentration or lithology. Figure 23 is a log normal histogram distribution of the rock density data obtained from current drilling that lies within the resource wireframe. The distribution of specific gravity values range from 2.48 g/cm<sup>3</sup> to 4.84 g/cm<sup>3</sup>. The mean value of 2.88 g/cm<sup>3</sup> was used ubiquitously as the specific gravity within these resource estimates.

### 16.3.7 Interpolation Ellipse and Resource Estimate

Inverse Distance Squared ( $ID^2$ ) grade interpolation methodology was used to assign block model grades with blocks being fully constrained by limits of the resource solids. The search ellipse used for grade interpolation was developed on the basis of the deposit's geological model defined from interpolation of geological cross-sections. The Lundberg solid incorporated two interpolation domains defined north and south of gridline 7,930N. Two unique interpolation ellipses were determined for these two domains. Major and minor axis parameters were selected based on continuity and

**Figure 23: 1m Specific Gravity Histogram**



distribution of metal grade and reflect geological characteristics of the mineralized zones. The domain south of line 7930N used an ellipse aligned at 305 degrees azimuth with a dip and plunge of -7.5 degrees and 7.5 degrees respectively. The domain north of line 7,930N used an ellipse aligned at 305 degrees azimuth, with a dip and plunge of -25 degrees and -25 degrees respectively. Both ellipses have major and semi-major axes ranges of 75 metres and minor axis range of 37.5 metres in order to preserve the relatively sub-horizontal character of mineralization.

In the initial design of the model, passes of Nearest Neighbour (NN) and Inverse Distance Squared ( $ID^2$ ) grade interpolation using the search ellipse described above were completed in each bearing domain for zinc, lead, copper, gold, silver and barite. These passes were followed by passes using a variety of major, semi-major and minor axis ranges. Optimum results occurred with a 75 metre range interpolation ellipse provided the best fit of grade trends to the geological model and on this basis it was retained for the

final estimation purposes. Use of smaller ellipses resulted in poor grade correlation in areas where reasonable geological certainty existed and larger ellipses extended higher grade values to some areas that did not have sufficient geological support.

The interpolation ellipse uses weighted average grades from up to 21 known data points (1m composites) that occur closest to the block. A constraint of a maximum of 7 composite samples per drill hole was applied when interpolating grade for each resource block. In effect, this forced the interpolation algorithm to search to adjacent drillholes for data points once a maximum of 7 data points were reached from any one particular drill hole. This encouraged an influence of grade from surrounding drill holes in the interpolation method on any particular block, preserved the heterogeneity of grade along drill holes, and reduced the smoothing of variable grade of resource blocks along any drill hole. A maximum of 21 reporting composites from all surrounding drill holes was applied to limit excessive influence in areas of high density drilling.

Final constraints were applied to the block models in order to filter out blocks with a low degree of confidence. The volume and associated grade of blocks being interpolated from only 1 contributing composite, and blocks that had no contributing composites within 55 metres were eliminated from the final estimate.

The final resource model was generated by running the interpolation ellipses within each domain. Estimation was performed using the ID<sup>2</sup> method as it provided a more satisfactory visual grade distribution and correlation than the nearest neighbour methodology. Block grade, block density and block volume parameters were combined to produce the final deposit tonnage and grade estimate. This estimate updates an earlier released Inferred Resource having an effective date of September 15, 2008 (PR#17-08 Sept 17, 2008) and incorporates more complete historic precious metal assay data compiled from historic drilling and assays, resulting in a nominal increase in the precious metal contents. Results of the resource estimation program are presented in Tables 3 and 4 below and are compliant with the Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Reserves: Definitions and Guidelines (the *CIMM* Standards) as well as disclosure requirements of National Instrument 43-101. Resources are classified in the Inferred and factors supporting such classification are discussed below in section 16.3.8.

Upon request from the client, a calculation outlining the percentage of the resource tonnage that lies within 100m from surface was undertaken. These numbers do not constitute or suggest the amenity of economics or mineability of the resource contained therein, but do offer insight into the spatial distribution of minerals within the current block model.

**Table 3: Lundberg Inferred Resource Estimate - Zn % Threshold - Nov 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %	Percentage of Tonnage within 100m of Surface
1.00	15,690,000	1.96	0.83	0.38	3.17	6.57	0.08	2.36	61.79%
1.50	9,300,000	2.46	1.03	0.43	3.92	8.26	0.10	2.84	66.40%

2.00	5,340,000	3.02	1.25	0.49	4.76	10.27	0.12	3.47	70.62%
2.50	3,170,000	3.56	1.46	0.53	5.55	12.28	0.14	4.65	72.83%
3.00	1,880,000	4.13	1.66	0.57	6.36	14.32	0.14	6.20	75.68%
3.50	1,090,000	4.79	1.93	0.62	7.34	16.46	0.15	8.64	81.35%

**Table 4: Engine House Inferred Resource Estimate - Zn % Threshold - Nov 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %	Percentage of Tonnage within 100m of Surface
1.00	890,000	2.37	0.95	0.96	4.28	11.29	0.15	4.40	58.73%
1.50	600,000	2.89	1.10	1.05	5.04	12.17	0.16	4.87	60.56%
2.00	370,000	3.62	1.27	0.97	5.86	12.71	0.19	5.51	60.40%
2.50	240,000	4.35	1.41	0.94	6.70	12.34	0.22	5.56	52.04%
3.00	190,000	4.77	1.50	0.93	7.20	12.32	0.23	5.63	56.35%
3.50	140,000	5.28	1.56	0.91	7.75	12.33	0.23	5.60	56.28%

### 16.3.8 Resource Category Definitions and Classifications

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

#### Inferred Mineral Resource

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

Only an *Inferred Mineral Resource* is reported in this document for extents of the block model estimation.

#### Indicated Mineral Resource

An *Indicated Mineral Resource* is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters to support mine planning and evaluation of the economic viability of the resource gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes, that are spaced closely enough for geological and grade continuity to be reasonably assumed.

There is no *Indicated Mineral Resource* in this estimation.

### **Measured Mineral Resource**

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

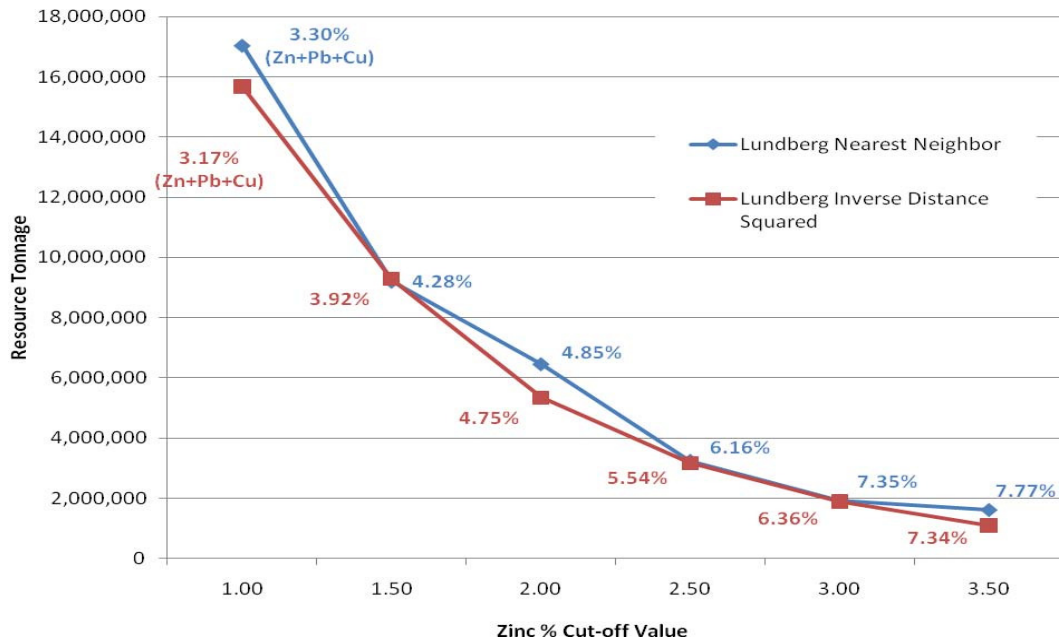
There is no *Measured Mineral Resource* in this estimation.

#### **16.3.9 Validation of Model**

Information presented within this resource calculation is considered to be accurate and reflects a level of confidence that falls within the definition of an Inferred Mineral Resource as defined by NI 43-101. Visual inspection of final grade distribution is considered reasonable with respect to that observed on geological cross-sections, and corresponds with mineral correlation defined by Mercator geologists.

To verify the mathematical derivation of the current Mineral Resource Estimate, two separate modelling algorithms have been implemented on the data using the defined mineral resource solid and using identical block constraints. In the initial design of the model, an isotropic Nearest Neighbour (NN) algorithm was used as a preliminary pass on the resource block model to obtain an order of magnitude of resource volumes, and to gain insight in global grade trends. The model was composed of a single domain with an isotropic search ellipse and a range of 75 metres. The final model utilized an Inverse Distance Squared (ID<sup>2</sup>) grade interpolation algorithms using the parameters described in Section 16.3.5. The final estimation was performed using the ID<sup>2</sup> method as it provided a more satisfactory visual grade distribution and correlation than the NN methodology.

A comparison of the two methods can be seen in figure 24. The smoothing effect of ID<sup>2</sup> modelling can be clearly seen between the two curves, as NN tends to segment various blocks of grade throughout the model and lacks the ability to blend grade trends between two known data points. A relict of this feature is noted at the 2% Zinc cut-off where the variance in the resource combined base metal value (Zn%+Pb%+Cu%) decreases when the volume variance increases. In general, the comparison of the two methods supports the use of the ID<sup>2</sup> model, and confirms the validity of the model's grade and volume distribution.

**Figure 24: Block Model Validation, Nearest Neighbour vs. Inverse Distance Squared**

## 16.4 Previous Resource or Reserve Estimations

BUV located archived documents in late 2007 that contain an uncategorized resource estimate for a zone of stockwork mineralization peripheral to the former Lucky Strike mine, which is now referred to as the Lundberg deposit. The document which was dated December of 1974 was prepared by the former operators of the historic Buchans mine, American Smelting and Refining Company (“Asarco”). This resource estimate calculated a total of approximately 13,100,000 short tons (11.8 million tonnes) with an average grade of 1.83% zinc, 0.67% lead, 0.38% copper, 0.16 ounces per ton silver (5.5 g/t) and trace gold. A specific gravity value of 10 ft<sup>3</sup> per ton (3.2 g/cm<sup>3</sup>) was used in the determination of the historic resource estimate.

The calculation was determined using a polygonal estimation method based on the interpretation of low grade mineralization from 16 vertical cross-sections at 100 ft spacing oriented normal to the strike of geology. Each section consisted of one polygon that was defined by approximately a 1 % combined base metal cu-off and was delineated using the multiple drill holes on the section and adjacent sections. The exact method of how grade was obtained for the polygon is not known to the authors. The calculation was performed prior to current NI 43-101 regulations. The Asarco resource is considered historic in nature and should not be relied upon.

Mercator, in completion of the Lundberg and Engine House resource estimates, also tabulated mineral resource on the Lundberg and Engine House deposits based on a 1% combined base metal grade cut-off (Zn% +Pb% + Cu%). This tabulation is considered to be NI 43-101 compliant as it is based on the methods and data verification parameters

outlined above. This tabulation is intended to compare the overall volume and grade of Asarco's historic resource calculation with the modeling parameters used in the Lundberg Resource Estimate described above. It should be noted that the overall footprint delineated by the Mercator resource estimate is larger than that of Asarco's determinations due to the additional drilling completed by BUV, and that the methods used to derive the totals are different than those used in the historic methods. The details of the Mercator 1% combined base metal resource are described as follows:

**Table 5: Lundberg Inferred Resource Estimate – 1% Zn+Pb+Cu Combined Threshold**

Threshold (Zn%+Pb%+Cu%)	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %
1.00	20,700,000	1.68	0.72	0.38	2.78	5.92	0.07	2.11

**Table 6: Engine House Inferred Resource Estimate – 1% Zn+Pb+Cu Combined Threshold**

Threshold (Zn%+Pb%+Cu %)	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO4 %
1.00	1,120,000	2.04	0.85	0.82	3.71	9.79	0.12	3.74

## 17.0 Other Relevant Data and Information

A large amount of historical data relevant to the Buchans area properties exists but is not included in this report. This information is available in government files or in various other publications prepared by previous and present owners, external consultants, contractors and both government and academic researchers. In addition, a number of the properties discussed in this report are under option to third party exploration companies who may have completed exploration work required under the terms of the option agrees.

Due to the historical nature and multiple sources of much of the data being used in this resource, a number of corrections, assumptions, and adjustments have been made in order to merge the data into a useable database. The following is a list of such manipulations:

- Historical drill hole collar elevations have been converted to metric elevations relative to sea level, and have had 8 metres added to the values used historically in order to match them with modern survey datum surveyed by Red Indian Surveys of Grand Falls, NL.
- The Lucky Strike Glory hole was modeled by Eagle mapping from stereographic triangulation of historic aerial photography. The elevation of the Glory hole and surrounding surface DEM elevation has been supplied in UTM (NAD83) coordinates. The elevation datum for these data has been increased by 3 metres to match them with the modern survey datum surveyed by Red Indian Surveys of Grand Falls, NL.
- Where historical drill logs listed "Tr" as an assay value, it was assumed that this was a trace amount above detection, and was given a numerical value of 0.001 in the database in their respective unit of measure

- Where historical drill logs listed “NIL” as an assay value, it was assumed that this was an amount below detection, and was given a numerical value of 0.0001 or 0 (zero) in the database in their respective unit of measure
- In some cases, drill hole location in association with lithological descriptions did not correspond with the reported assay values, and therefore it was decided that these holes be discarded from the database. These holes include 48, 49, 50 and 384.
- In some cases, no assay information could be located for drill holes, these holes were left in the database as they would have no impact on the grade interpolation methods used in the mineral resource calculation. In cases where lithological descriptions were found for these holes, this information was used in correlating geological boundaries.
- Underground workings have been reproduced to be as representative as the source information would allow. Assimilation of historic 2-dimensional plan view sections, 2-dimensional cross-sections, and known drill hole elevations has provided the basis for the model generation. In most cases, 2D plan view maps were the only source for the lateral extent of the development, with stoping information being extrapolated from rare cross-sectional views. It is acknowledged that the depiction of the underground workings is not precise, but where uncertainties exist, a liberal approach was taken to ensure that the removed volumes were not underestimated.

## 18.0 Interpretation and Conclusions

Royal Roads holds 100% mineral interest in the Buchans claims group which is host to numerous base metal prospects and to the Lundberg and Engine House deposits. Exploration within this claim group has targeted polymetallic (Zn-Pb-Cu-Ag-Ba) volcanogenic massive sulphide (VMS) style mineral environments.

The Lundberg and Engine House deposits exist in the footwall volcanics as a base metal sulphide enriched stockwork system that is in conformable contact with the overlying Buchans River Formation. The Lundberg deposit underlies the previously mined Lucky Strike glory hole, and the Engine House deposit surrounds the previously mined underground Engine House orebody. The mineralized stockwork system which comprises the Lundberg deposit was previously delineated by ASARCO in 1974 as a low-grade mineral resource, which was never subsequently mined. Review and validation of historic exploration data, incorporation of results from previous core drilling and twinning of selected holes showed that historic data were of acceptable quality for resource estimation purposes. Recent drilling by RRO was completed under the supervision of Mercator and RRO, and delineated the mineralized the base metal stockwork zone. On this basis, a fully constrained 3-dimensional block model for the deposit was developed using Surpac© 6.02 deposit modeling software. Model blocks measured 5 metres x 5 metres x 5 metres with sub-blocking at 2.5 metres x 2.5 metres x 2.5 metres within the Lundberg solid, and 2.5 metres x 2.5 metres x 2.5 metres with sub-blocking at 1.25 metres x 1.25 metres x 1.25 metres for the Engine House solid.



Grade interpolation was accomplished using Inverse Distance Squared (ID<sup>2</sup>) methodology. This estimate updates an earlier released Inferred Resource having an effective date of September 15, 2008 (PR#17-08 Sept 17, 2008) and incorporates more complete historic precious metal assay data compiled from historic drilling and assays, resulting in a nominal increase in the precious metal contents. The model was fully constrained within a deposit solid based on a minimum metre 1% zinc cutoff resulting in the definition of an Inferred Mineral Resource that is compliant with NI43-101 and CIM reporting standards. Table 7 and 8 summarize the Inferred Mineral Resource Estimate.

**Table 7: Lundberg Inferred Resource Estimate - Zn % Threshold - Nov 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO <sub>4</sub> %	Percentage of Tonnage within 100m of Surface
1.00	15,690,000	1.96	0.83	0.38	3.17	6.57	0.08	2.36	61.79%
1.50	9,300,000	2.46	1.03	0.43	3.92	8.26	0.10	2.84	66.40%
2.00	5,340,000	3.02	1.25	0.49	4.76	10.27	0.12	3.47	70.62%
2.50	3,170,000	3.56	1.46	0.53	5.55	12.28	0.14	4.65	72.83%
3.00	1,880,000	4.13	1.66	0.57	6.36	14.32	0.14	6.20	75.68%
3.50	1,090,000	4.79	1.93	0.62	7.34	16.46	0.15	8.64	81.35%

**Table 8: Engine House Inferred Resource Estimate - Zn % Threshold - Nov 3 2008**

Zn % Threshold	Tonnes Rounded	Zn %	Pb %	Cu %	Combined Zn+Pb+Cu %	Ag g/t	Au g/t	BaSO <sub>4</sub> %	Percentage of Tonnage within 100m of Surface
1.00	890,000	2.37	0.95	0.96	4.28	11.29	0.15	4.40	58.73%
1.50	600,000	2.89	1.10	1.05	5.04	12.17	0.16	4.87	60.56%
2.00	370,000	3.62	1.27	0.97	5.86	12.71	0.19	5.51	60.40%
2.50	240,000	4.35	1.41	0.94	6.70	12.34	0.22	5.56	52.04%
3.00	190,000	4.77	1.50	0.93	7.20	12.32	0.23	5.63	56.35%
3.50	140,000	5.28	1.56	0.91	7.75	12.33	0.23	5.60	56.28%

## 19.0 Recommendations

Based on the results of the Inferred Mineral Resource Estimate completed for this report the author provides the following recommendations with respect to future exploration on the Lundberg and Engine House deposits.

### Phase 1

1. Complete relogging of historic drill holes in areas where potential exists to expand the current resource.
2. Complete geological compilation, and planning for a 2,500 metre diamond drilling program.

3. Complete an additional 2,500 m of diamond drilling on the Lundberg and Engine House deposits to confirm mineralization and extend the limits of the current resource estimate.

The following list of 11 vertical drill hole locations are recommended.

**Table 9: Recommended Phase 1 Drill Holes**

Hole ID	Easting	Northing	Depth	Comment
PROP08-01	10200	8000	150	Near Surface Extension East of Lundberg
PROP08-02	10200	7950	125	Near Surface Extension East of Lundberg
PROP08-03	10150	7875	100	Near Surface Extension East of Lundberg
PROP08-04	9750	8090	225	Infill to N of Lundberg, area of incomplete drilling
PROP08-05	9750	7960	200	Delineate high-grade trend, deepen historical drilling
PROP08-06	9700	7975	225	Delineate high-grade trend, deepen historical drilling
PROP08-07	9600	7960	225	East of H-08-3407, within current resource
PROP08-08	9500	7960	225	West of H-08-3407, extend current resource
PROP08-09	9600	7900	150	South-East of H-08-3407, extend current resource
PROP08-10	9525	7900	175	South-West of H-08-3407, extend current resource
PROP08-11	9900	7600	200	West of H-08-3366, and confirm results of 2895
Contingency			500	
<b>Total</b>			<b>2500m</b>	

### Estimated Phase 1 Budget

Survey	Units		Costs
Geology (field, relogging Etc)	120	days	\$65,000
includes assistant & expenses			
Geology (reports, planning, compilation)	50	days	\$65,000
Drilling (includes assays & geologist etc.)	2500	m	\$500,000
<b>Total</b>			<b>\$630,000</b>

## Phase 2

1. Complete 5,000 m of additional diamond drilling necessary to upgrade the current Inferred Mineral Resource to and Indicated category, based on positive results of Phase 1 drilling.
2. Plan to confirm resource delineated underneath the Lucky Strike Glory hole, as only historic drilling information exists for this area.

Based on the recommendation presented above the following Phase 1 and Phase 2 budgets are proposed.

### Proposed Phase 2 Budget

Phase 2 exploration is contingent on positive results of the Phase 1 programs.

### Estimated Phase 2 Budget

Survey	Units	Costs
Geology (field, relogging etc) includes assistant & expenses	240 days	\$130,000
Geology (reports, planning, compilation)	60 days	\$77,500
Drilling (includes assays & geologist etc.)	5000 m	\$1,000,000
<b>Total</b>		<b>\$1,207,500</b>

Submitted;

Dated this 3rd Day of November, 2008.

*“Original signed and sealed by”*

Peter C. Webster, B.Sc., P.Geol.  
President

*and*

*“Original signed by”*

P. James F. Barr  
Project Geologist

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**Reed, L.E 2001:** Second year supplementary, third year supplementary, fourth year supplementary, fifth year supplementary, sixth year supplementary, seventh year supplementary, eighth year, eighth year supplementary and ninth year assessment report on geophysical exploration in the Buchans area, central Newfoundland; Billiton Exploration Canada Limited and Buchans River Limited. **Geofile 012A/1000**

**Reed, L.E 2001:** Assessment report on geophysical exploration for 2001 submission in the Buchans area, central Newfoundland; Billiton Exploration Canada Limited and Buchans River Limited. **Geofile 021A/15/1162**

**Saunders, P.; Harris, J.; Reed, L.E. and Scott, S.A 2000:** Second year supplementary, third year supplementary and seventh year supplementary assessment report on geophysical and diamond drilling exploration in the Clementine Lake area, near Buchans, central Newfoundland; Billiton Exploration Canada Limited, Buchans River Limited, Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/0968**

**Saunders, P 1997:** Second and third year assessment report on prospecting and geochemical exploration in the Red Indian Lake area, central Newfoundland; Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0788**

**Saunders, P 1999:** Third and fourth year assessment report on geochemical exploration for licence 4570 on claims 16193-16194 and licence 4574m on claims in the Meelpaeg lake area, south-central Newfoundland. **Geofile 012A/0844**

**Saunders, P.; Harris, J.; Winter, L.; Wilton, D.H.C.; Spurvey, P. and Scott, W.J 1998:** First, third, fourth and fifth assessment report on geochemical, geophysical and diamond drilling exploration in the Buchans area, central Newfoundland; Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0854**

**Saunders, P. and Harris, J 1998:** First, second, third and fourth year assessment report on geochemical exploration and relogging of diamond drill core in the Buchans area, central Newfoundland; Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0842**

**Saunders, P.; Reed, L.E. and Woods, D.V 1999:** Assessment report on prospecting and geophysical exploration for 1999 submission for the Anglo-Newfoundland Development Company Limited in the Buchans area, central Newfoundland; Billiton Exploration Canada Limited, Buchans River Limited, Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0941**

**Saunders, P.; Harris, J. and Scott, S.A 2000:** Assessment report on geophysical and diamond drilling exploration for 1999 submission for free simple grant volume 1 folios 61-62 and for first year supplementary, second year supplementary, in the Little Sandy Lake area, near Buchans, central Newfoundland; Billiton Exploration Canada Limited, Buchans River Limited, Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0942**

**Saunders, P.; Harris, J. and Woods, D.V 2000:** Assessment report on geophysical and diamond drilling exploration for 2000 submission for the Anglo-Newfoundland Development Company Limited Charter in the Little Sandy Lake area, near Buchans, central Newfoundland; Billiton Exploration Canada Limited, Buchans River Limited, Newfoundland Mining and Exploration Limited and GT Exploration Limited. **Geofile 012A/15/0991**



**Saunders, P and Harris, J 2001:** Sixth year supplementary report on diamond drilling exploration in the Clementine Lake area, near Buchans, central Newfoundland; Billiton Exploration Canada Limited and Newfoundland Mining and Exploration Limited.

**Geofile 012A/15/0887**

**Squires, G; Smith, P.A. and Coulson, S.T 1992:** First year assessment report on geological, geochemical, geophysical and diamond drilling exploration in Buchans Junction, Joe Glodes Brook and Mary March Brook areas, central Newfoundland; Noranda Exploration Company Limited. **Geofile 012A/0636**

**Squires, G.C 1996:** Fifth year assessment report on diamond drilling exploration in the Buchans Junction area, central Newfoundland; Noranda Mining and Exploration Incorporated. **Geofile 012A/0754**

**Swanson, E.A 1975:** Diamond drilling data for 1947 from the Buchans area, Newfoundland; American Smelting and Refining Company. **Geofile 012A/15/0147**

**Thurlow, J.G., Swanson, E.A. and Strong, D.F. 1975:** Geology and litho-geochemistry of the Buchans polymetallic sulfide deposits, Newfoundland. **Geofile 012A/15/0145.**

**Thurlow, J.G. and Pearce, D 1979:** Preliminary report on geological, geochemical, geophysical and diamond drilling exploration for the Anglo-Newfoundland Development Company Limited Charter, Red Indian Lake area, central Newfoundland; Asarco Incorporated and the Price Company Limited. **Geofile 012A/1090**

**Thurlow, J.G. 1987:** Stratigraphy and Structure of the Buchans Group. *In* Buchans Geology, Newfoundland, *Edited by* R.V. Kirkham, Geological Survey of Canada. **Geofile 012A/0442**

**Thurlow, J.G. 1991:** Geology of the Buchans Orebodies- A 1990 Summary. *In* Metallogenic Framework of Base and Precious Metal Deposits, Central and Western Newfoundland. **Geofile NFLD/2156**

**Thurlow, J.G 1996:** First year assessment report on diamond drilling exploration in the Buchans area, central Newfoundland; Phelps Dodge Corporation of Canada Limited and GT Exploration Limited. **Geofile 012A/0832**

**Thurlow, J.G 1996:** First year assessment report on diamond drilling exploration in the Buchans area, central Newfoundland; Phelps Dodge Corporation of Canada Limited. **Geofile 012A/15/0833**

**Thurlow, J.G., and Jagodits, F.L 2000:** Assessment report on geological, geochemical, geophysical and diamond drilling exploration for 1999 submission for the Anglo-Newfoundland Development Company Limited Charter in the Buchans Junction area, central Newfoundland; Phelps Dodge Corporation of Canada Limited and Noranda Mining and Exploration. **Geofile 012A/1026**

**Thurlow, J.G 2001:** Assessment report on diamond drilling exploration for 2000 submission for the Anglo-Newfoundland Development Company Limited Charter in the Buchans Junction area, central Newfoundland; Phelps Dodge Corporation of Canada Limited and Noranda Mining and Exploration. **Geofile 012A/15/1166**

**Tuach, J., Saunders, P. and Jagodits, F.L. 1993:** First year assessment report on compilation for licence 4223 on claim block 7097 and licence 4270 on claim block 4882 and 4991-4992 in the Barasway de Cerf, Morgan Arm Brook and Bell Pond areas, southern Newfoundland. **Geofile 001M/13/0331.**

**Wallis, R.H. 2002:** Report on Exploration History and Mineral Potential of the Buchans Mine Property and the Buchans West Property, Buchans, Newfoundland, Canada; Buchans River Limited. (Technical report)

**Webster, Peter C.; Barr, James F. and Calvancanti de Albuquerque, Rafael 2008(a):** Technical Report on the Daniels Pond Deposit and Property Holdings of Royal Roads Corp, Red Indian Lake Area, Newfoundland; Mercator Geological Services Limited.

**Webster, Peter C.; Nicholson, Danielle and Neilson, Helen 2008(b):** Technical Report on the Buchans River Limited Properties, Newfoundland, Canada; Mercator Geological Services Limited.

**Wilton, D.H.C 2001:** Assessment report on geochemical exploration for 2001 submission in the Buchans area, central Newfoundland; Billiton Exploration Canada Limited and Buchans River Limited. **Geofile 012A/15/0917**

**Woods, D.V. and Kubo, W.K 2000:** Assessment report on geophysical exploration for 2000 submission in the Buchans area, central Newfoundland; Billiton Exploration Canada Limited and Buchans River Limited. **Geofile 012A/15/1221**

# **Appendix I**

## **Statement of Qualifications**

## STATEMENT OF QUALIFICATIONS

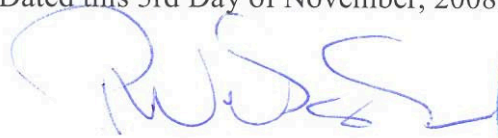
I am Peter C. Webster, of 186 Crichton Ave., Dartmouth, Nova Scotia, and hereby certify that:

- 1) I am the President of Mercator Geological Services Limited a private consulting firm offering geological services, and located at 65 Queen St. in Dartmouth, Nova Scotia.
- 2) I am a Professional Geoscientist, licensed to practice by the Association of Professional Engineers and Geoscientists of Newfoundland, Registration No.: 03337.
- 3) I am a Professional Geoscientist, licensed to practice by the Association of Professional Geoscientists of Nova Scotia, Registration No. 0047.
- 4) I am a graduate of Dalhousie University, from which I received a Bachelor of Science degree in Geology in 1981.
- 5) I received a Certificate of Environmental Management from the Technical University of Nova Scotia in 1996.
- 6) I have worked as a geologist in Canada and internationally since graduation from university.
- 7) I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
- 8) I am the qualified person responsible for preparation of the technical report entitled:

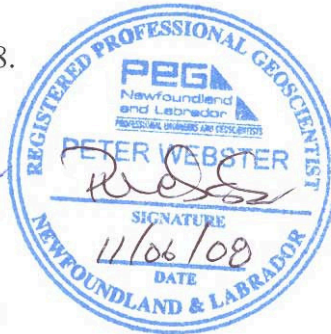
Technical Report On The  
Mineral Resource Estimate  
For The  
Lundberg and Engine House deposits  
Buchans Area Newfoundland,  
Canada  
Prepared for  
Royal Roads Corp.  
by  
Peter C. Webster, B.Sc., P.Geo.,  
P. James F. Barr, B.Sc.  
Mercator Geological Services Limited  
Effective Date November 3, 2008

- 9) I visited the Royal Roads Corp./ Buchans River Limited properties on several occasions between February 2007 and March 2008 in the company of Royal Roads Corp./Buchans River Limited and Mercator staff, at which time drill core was visually examined.
- 10) I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- 11) I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
- 12) I have read National Instrument 43-101 and Form 43-101F1, and believe that this Technical Report has been prepared in compliance with that instrument and form.
- 13) I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 3rd Day of November, 2008.



Peter C. Webster, B.Sc., P.Geo.  
President  
Mercator Geological Services Limited



## CONSENT of AUTHOR

TO:

British Columbia Securities Commission  
Alberta Securities Commission  
Saskatchewan Financial Services Commission  
Manitoba Securities Commission  
Ontario Securities Commission  
Autorité des marchés financiers  
New Brunswick Securities Commission  
Nova Scotia Securities Commission  
Prince Edward Island Securities Office  
Securities Commission of Newfoundland and Labrador  
Northwest Territories Securities Registries  
Government of Nunavut, Legal Registries Division  
Yukon Registrar of Securities

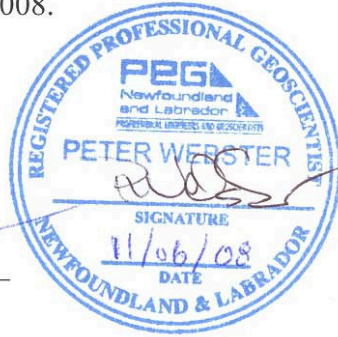
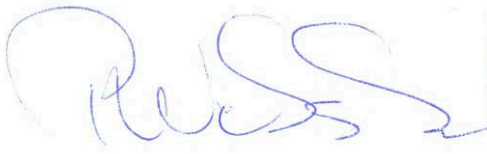
I, Peter Webster, B.Sc., P.Geo. do hereby consent to the filing, with the regulatory authorities referred to above, of the technical report titled

Technical Report On The  
Mineral Resource Estimate  
For The  
Lundberg and Engine House deposits  
Buchans Area Newfoundland,  
Canada  
Prepared for  
Royal Roads Corp.  
by  
Peter C. Webster, B.Sc., P.Geo.,  
P. James F. Barr, B.Sc.  
Mercator Geological Services Limited  
Effective Date November 3, 2008

dated November 3, 2008, (the “Technical Report”) and to the public filing of the written disclosure of the Technical Report and of extracts from or a summary of the Technical Report being filed.

I also certify that I have read the written disclosure being filed and I do not have any reason to believe that there are any misrepresentations in the information derived from the written disclosure of the Technical Report.

Dated this 3rd Day of November, 2008.



Peter C. Webster, B.Sc., P.Ge.  
President  
Mercator Geological Services Limited

## STATEMENT OF QUALIFICATIONS

P James F Barr

I, James Barr, B.Sc., do hereby certify that:

1. I currently reside in Musquodoboit Harbour, Nova Scotia Canada.
2. I am employed as a Project Geologist with Mercator Geological Services Limited, 65 Queen Street, Dartmouth, Nova Scotia, Canada, B2Y 1G4.
3. I graduated with an Honours Bachelor of Science degree (major in Environmental Science and minors in both Earth Science and Chemistry) from the University of Waterloo (2003) in Waterloo, Ontario.
4. I have been employed as a technical, field, and consulting geologist for various mineral exploration projects in Canada in the past 5 years.
5. I participated in the planning, management, and execution of the drilling projects described in the technical report titled:

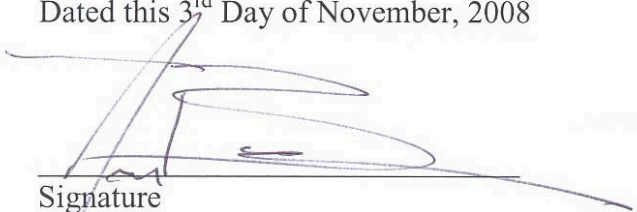
Technical Report On The  
Mineral Resource Estimate  
For The  
Lundberg and Engine House deposits  
Buchans Area Newfoundland,  
Canada  
Prepared for  
Royal Roads Corp.  
by  
Peter C. Webster, B.Sc., P.Geo.,  
P. James F. Barr, B.Sc.  
Mercator Geological Services Limited  
Effective Date November 3, 2008

6. I participated in preparation of the Lundberg and Engine House mineral resource estimate and three dimensional block model described in the aforementioned technical report. My participation as Project Geologist was supervised by Mr. Peter Webster, P. Geo.
7. This report is based on reviews of public and private technical reports, other relevant documents, and the author's knowledge and experience in working on base metal exploration in Newfoundland. I have visited the Lundberg and Engine House deposit property that is the subject of this Technical Report, on numerous occasions.



8. I have no personal interest, directly or indirectly, in the subject property or in the securities of Royal Roads Corp., or in close affiliates of the companies, nor do I expect to receive, directly or indirectly, any interest in such property or securities. I am independent of Royal Roads Corp. My compensation for this report is strictly on a professional fee basis.

Dated this 3<sup>rd</sup> Day of November, 2008



Signature

P James F Barr

Project Geologist

Mercator Geological Services Limited

## **Appendix II**

### **Drill Hole Locations**

**Drill Hole Collar Locations Lundberg Drilling**

<b>HOLE-ID</b>	<b>Easting UTM (NAD83)</b>	<b>Northing UTM (NAD83)</b>	<b>Elevation</b>	<b>COLLAR DIP</b>	<b>COLLAR AZ</b>	<b>LENGTH (m)</b>	<b>PROPERTY</b>
H-08-3356	510,003	5,407,787	291.6	-90	0	251	Buchans
H-08-3357	510,004	5,407,725	289.413	-90	0	101	Buchans
H-08-3358	509,970	5,407,800	292.96	-90	0	83	Buchans
H-08-3359	510,001	5,407,652	286.732	-90	0	120	Buchans
H-08-3360	509,949	5,407,701	288.635	-90	0	102	Buchans
H-08-3361	509,997	5,407,858	292.463	-90	0	101	Buchans
H-08-3362	510,040	5,407,694	287.185	-90	0	102	Buchans
H-08-3363	510,055	5,407,893	290.745	-90	0	110	Buchans
H-08-3364	510,111	5,407,752	287.179	-90	0	102	Buchans
H-08-3365	510,149	5,408,006	287.435	-90	0	152	Buchans
H-08-3366	509,952	5,407,605	286.593	-90	0	138	Buchans
H-08-3367	510,100	5,408,046	287.624	-90	0	134	Buchans
H-08-3368	510,002	5,407,547	285.419	-90	0	132	Buchans
H-08-3369	510,001	5,407,962	290.28	-90	0	27.3	Buchans
H-08-3369A	510,007	5,407,978	290.03	-90	0	137.72	Buchans
H-08-3370	510,000	5,408,045	289.062	-90	0	140	Buchans
H-08-3371	510,064	5,407,597	283.909	-90	0	120	Buchans
H-08-3372	510,056	5,408,001	288.83	-90	0	128	Buchans
H-08-3373	510,105	5,407,648	284.686	-90	0	120	Buchans
H-08-3374	510,103	5,407,543	282.62	-90	0	47	Buchans
H-08-3374A	510,103	5,407,546	282.618	-90	0	120	Buchans
H-08-3375	509,999	5,408,024	289.828	-90	0	150	Buchans
H-08-3376	509,949	5,408,000	291.125	-90	0	143	Buchans

HOLE-ID	Easting UTM (NAD83)	Northing UTM (NAD83)	Elevation	COLLAR DIP	COLLAR AZ	LENGTH (m)	PROPERTY
H-08-3377	510,053	5,407,796	290.83	-90	0	114	Buchans
H-08-3378	509,501	5,408,037	287.916	-90	0	339	Buchans
H-08-3379	509,851	5,407,999	291.707	-90	0	140	Buchans
H-08-3380	509,799	5,407,949	292.498	-90	0	167	Buchans
H-08-3381	509,738	5,407,918	292.034	-90	0	135	Buchans
H-08-3382	509,550	5,408,090	289.356	-90	0	336	Buchans
H-08-3383	509,698	5,407,951	292.316	-90	0	24.5	Buchans
H-08-3383A	509,697	5,407,952	292.335	-90	0	201	Buchans
H-08-3384	510,039	5,407,760	289.92	-90	0	104	Buchans
H-08-3385	509,600	5,408,062	291.042	-90	0	253.14	Buchans
H-08-3386	509,651	5,407,919	292.615	-90	0	152	Buchans
H-08-3388	509,650	5,408,087	291.729	-90	0	251	Buchans
H-08-3389	509,803	5,408,044	292.88	-90	0	198.5	Buchans
H-08-3393	509,846	5,408,083	292.053	-90	0	255	Buchans
H-08-3394	509,881	5,408,055	291.716	-90	0	177	Buchans
H-08-3395	509,668	5,407,999	292.02	-90	0	239	Buchans
H-08-3396	509,754	5,407,998	292.735	-90	0	225.66	Buchans
H-08-3397	510,109	5,407,938	288.272	-90	0	143	Buchans
H-08-3398	510,051	5,407,855	290.843	-90	0	134	Buchans
H-08-3399	510,151	5,407,954	287.403	-90	0	161	Buchans
H-08-3400	510,110	5,407,841	287.87	-90	0	101	Buchans
H-08-3401	510,103	5,407,798	287.727	-90	0	110	Buchans
H-08-3402	510,106	5,407,682	286.345	-90	0	131	Buchans
H-08-3403	510,000	5,407,517	285.027	-90	0	140	Buchans

<b>HOLE-ID</b>	<b>Easting UTM (NAD83)</b>	<b>Northing UTM (NAD83)</b>	<b>Elevation</b>	<b>COLLAR DIP</b>	<b>COLLAR AZ</b>	<b>LENGTH (m)</b>	<b>PROPERTY</b>
H-08-3404	509,959	5,407,488	285.762	-90	0	170	Buchans
H-08-3405	510,152	5,407,798	287	-90	0	107	Buchans
H-08-3406	509,561	5,408,010	291.592	-90	0	272	Buchans
H-08-3407	509,560	5,407,960	290.567	-90	0	230	Buchans
H-08-3408	509,750	5,407,680	290.505	-90	0	188	Buchans
H-08-3409	510,153	5,407,543	281.421	-90	0	98	Buchans

# **Appendix III**

## **Laboratory Procedures and Standards**

## Sample Preparation, Analysis and Security

### Sample Security and Chain of Custody

In 2006, Buchan's River Ltd enlisted Mercator Geological Services to implement a sample protocol for its Buchan's drilling program. In accordance with that Sample Protocol all drill core samples were delivered from the field to a secured and private core logging facility by the drill contractor, Springdale Forest Resources of Newfoundland, or Mercator Geological Services staff. From this point on samples were handled exclusively by Mercator personnel. Half core samples were assigned unique sample tags, sealed in plastic bags and temporarily stored in rice bags. When storage was required samples were locked in the secure core facility on site. Samples were delivered in a timely fashion to Eastern Analytical Lab in Springvale, NL. All pulps are stored at Eastern Analytical for 30 days and coarse reject material is stored for 90 days.

Initially, ore grade samples were mailed from Eastern Analytical to Mercator's office in Dartmouth, NS and then forwarded to ALS Chemex in Sudbury, ON an ISO9001:2000 certified lab. However, since January 2008 ore grade samples are being shipped directly from Eastern Analytical to ALS Chemex.

### Sample Preparation

#### *Eastern Analytical Sample Preparation Procedures*

Once received at the lab samples were organized and labeled. They were subsequently placed in drying ovens until completely dry. Samples were then crushed in a Rhino Jaw Crusher to approximately 75% -10 mesh material. The complete sample was rifle split until approximately 250 – 300 grams of material was produced. The remainder of the sample was bagged and stored as coarse reject material. The 250 – 300 gram split was then pulverized using a ring mill to approximately 98% -150 mesh material. The sample preparation technician inspected the equipment between samples and used silica sand to clean the equipment as needed.

#### *ALS Chemex Sample Preparation Procedures*

The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

Method Code	Description
LOG-22	Sample is logged in tracking system and a bar code label is attached.

CRU-31	Fine crushing of rock chip and drill samples to better than 70 % of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85 % of the sample passing 75 microns.

## Sample Analysis

### *Eastern Analytical Ltd Assay Procedures*

- For base metals (lead, zinc, copper), a 0.200g sample is digested in a beaker with 10ml of nitric acid and 5ml of hydrochloric acid for 45 minutes. Samples are then transferred to 100ml volumetric flasks and then analyzed on the Atomic Absorption Spectro-Photometer (AA). The lower detection limit is 0.01 % and the upper detection limit is 2200 ppm (.22%) lead or zinc.
- For silver, a 1000mg sample is digested in a 500ml beaker with 10ml of hydrochloric acid and 10ml of nitric acid with the cover left on for 1 hour. Covers are then removed and the liquid is allowed to evaporate leaving a moist paste. 25ml of hydrochloric acid and 25ml of deionized water are then added and the solution is gently heated and swirled to dissolve the solids. The cooled material is transferred to 100ml volumetric flask and is analyzed using AA. The lower detection limit is 0.01oz/t of silver with no upper detection limit.
- For gold, a 15g or 30g sample is measured into a crucible containing lead-oxide fluxes and mixed. Silver nitrate is added and the sample is fire fused to create a mixture. The mixture is allowed to cool which results in a lead button that is separated from the slag to obtain a silver bead which contains the gold. The silver is removed using nitric acid and then hydrochloric acid. After cooling, de-ionized water is added to bring the sample up to a preset volume and then analysed using AA.

### *ALS Chemex Assay Procedures*

- Au-AA25 Assay procedure for Au (gold) detection: A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead. The bead is digested in 0.5 mL dilute nitric acid in the microwave oven. 0.5 mL concentrated hydrochloric acid is then added and the bead is further digested in the microwave at a lower power setting. The digested solution is cooled, diluted to a total volume of 10 mL with de-mineralized water, and analyzed by atomic absorption spectroscopy against matrix-matched standards. The lower detection limit for this assay technique is .01ppm and 100ppm.



- ME-0G46 Multi-Element Assay for silver (Ag), lead (Pb), zinc (Zn) and copper (Cu): Assays for the evaluation of ores and high-grade materials are optimized for accuracy and precision at high concentrations. Ultra high concentration samples (> 15 -20%) may require the use of methods such as titrimetric and gravimetric analysis, in order to achieve maximum accuracy. A prepared sample is digested in 75% aqua regia for 120 minutes. After cooling, the resulting solution is diluted to volume (100 mL) with de-ionized water, mixed and then analyzed by inductively coupled plasma - atomic emission spectrometry or by atomic absorption spectrometry. Upper and lower detection limits for elements of interest are as follows:
  - Ag 1 ppm – 1500 ppm
  - Cu 0.01% - 40%
  - Pb 0.01% - 20%
  - Zn 0.01% - 60%
- ME-XRF Assay procedure for Ba detection: A calcined or ignited sample (0.9 g) is added to 9.0g of Lithium Borate Flux (50 % - 50 %  $\text{Li}_2\text{B}_4\text{O}_7$  –  $\text{LiBO}_2$ ), mixed well and fused in an auto fluxer between 1050 - 1100°C. A flat molten glass disc is prepared from the resulting melt. This disc is then analysed by X-ray fluorescence spectrometry. The lower detection limit for this assay technique is 0.01% and the upper limit is 50 %.

## **Quality Control and Assurance**

The purpose of a quality assurance and control program is to monitor accuracy, reproducibility and precision through each stage of data collection. These stages include sampling, assaying and geological observation. During the 2007 drilling program Mercator Geological Services, on behalf of Buchan's River Ltd, carried out a comprehensive QAQC program. This program included; blind insertion of standards and blanks, tracking of duplicates and check assays which were analyzed by a second lab, ALS Chemex in Sudbury, ON. Each step of this program lends itself to a different aspect of quality control and assurance. Blindly inserted standards allow observers to monitor the precision of assay results. This is possible because the standard is a known value with expected parameters. Blanks on the other hand are devoid of high grade material and can therefore be used to detect and evaluate issues of cross contamination. Evaluation of duplicates is a valuable means for determining a labs ability to accurately reproduce results. A final check of a labs assay results is done by sending a predetermined number of check assays to a second independent lab for testing and comparison.

### *Certified Standards Program*

Canadian Resource Laboratories of Delta, BC provided the two certified standards used in the 2007 drilling program up to hole DN-07-123: CDN-HLHZ and CDN-FCM-4. Standards were inserted blindly every even 20<sup>th</sup> sample as a continuous number of the

series and marked accordingly in the sample record book. Results for 40 standard samples, 20 HLHZ and 20 FCM-4, are displayed in Figures A, B and C. Results for HLHZ are systematically low, particularly with respect to lead levels. Check assay results from ALS Chemex are available for comparison (Figures C, D, E) and confirm that Eastern's results tend to be low with respect to copper and lead. This may indicate a minor calibration issue with instruments at Eastern. However, given that there are only 4 results for comparison this is not an overwhelming determination. It is the opinion of the author that although there is a systematically low bias with respect to results from Eastern Analytical for copper, lead and zinc the deviation is not significant enough to warrant further investigation.

Results for 20 FCM-4 standards are presented in Figure F and indicate no anomalies of concern.

#### *Blind Blank Sample Program*

Blank samples were inserted with each batch sent to Eastern Analytical at an interval of every odd 20<sup>th</sup> sample. These blanks were labelled as a continuous number of the series and noted in the sample record book as a blank. Blank sample material is comprised of benign sandstone from outcrops near the south shore of Red Indian Lake, NL. Results for 40 blank samples (Figure G) indicate all results fall below 35ppm for zinc, lead and copper. No anomalous results are present in this data set.

#### *Duplicate Sample Program*

Duplicate samples were run by Eastern Analytical labs every 20<sup>th</sup> sample.

#### *Check Assay Program*

All samples containing ore grade material, standards and blanks were sent to ALS Chemex for check assay by Mercator staff.

# CDN Resource Laboratories Ltd.

10945-B River Road, Delta, B.C., Canada, V4C 2R8, 604-540-2233, Fax: 604-540-2237 (www.cdnlabs.com)

## ORE REFERENCE STANDARD: CDN-FCM-4

Recommended values and the "Between Lab" Two Standard Deviations

*Gold* 0.97 ± 0.08 g/t  
*Silver* 54.9 ± 6.4 g/t  
*Copper* 0.702 ± 0.042 %  
*Lead* 0.340 ± 0.028 %  
*Zinc* 1.28 ± 0.08 %

**PREPARED BY:** CDN Resource Laboratories Ltd.  
**CERTIFIED BY:** Duncan Sanderson, B.Sc., Licensed Assayer of British Columbia  
**INDEPENDENT GEOCHEMIST:** Dr. Barry Smee., Ph.D., P. Geo.  
**DATE OF CERTIFICATION:** August 19, 2007

### **METHOD OF PREPARATION:**

Reject ore material was dried, crushed, pulverized and then passed through a 200 mesh screen. The +200 material was discarded. The -200 material was mixed for 5 days in a double-cone blender. Splits were taken and sent to eleven laboratories for round robin assaying. The material has been packaged in nominal 100g lots or 60g lots in tin-top kraft bags which have been individually vacuum-sealed in polyethylene bags.

### **ORIGIN OF REFERENCE MATERIAL:**

The ore was supplied by Hunter Dickinson (Farallon) from their Campo Morado property in Mexico. The Campo Morado precious-metal-bearing, volcanogenic massive sulphide deposits occur in a lower Cretaceous bimodal, calc-alkaline volcanic sequence. Most deposits occur in the upper part of a sequence of felsic flows and heterolithic volcanoclastic rocks or at its contact with overlying chert and argillite. Gold, silver, zinc, and lead are associated with pyrite, quartz, ankerite, sphalerite, chalcopyrite and galena, with minor tennantite-freibergite, arsenopyrite, and pyrrotite.

### **Approximate chemical composition is as follows:**

	Percent		Percent
SiO <sub>2</sub>	19.6	MgO	1.9
Al <sub>2</sub> O <sub>3</sub>	< 0.1	K <sub>2</sub> O	0.1
Fe <sub>2</sub> O <sub>3</sub>	46.2	TiO <sub>2</sub>	< 0.1
CaO	3.1	LOI	27.0
Na <sub>2</sub> O	< 0.1	S	34.2

### **Statistical Procedures:**

The final limits were calculated after first determining if all data was compatible within a spread normally expected for similar analytical methods done by reputable laboratories. Data from any one laboratory was removed from further calculations when the mean of all analyses from that laboratory failed a t test of the global means of the other laboratories. The means and standard deviations were calculated using all remaining data. Any analysis that fell outside of the mean ±2 standard deviations was removed from the ensuing data base. The mean and standard deviations were again calculated using the remaining data. This method is different from that used by Government agencies in that the actual "between-laboratory" standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Confidence Limits published on other standards.

## STANDARD REFERENCE MATERIAL CDN-FCM-4

### Results from round-robin assaying:

#### Assay Procedures:

**Au:** Fire assay pre-concentration, AA or ICP finish (10g sub-sample).

**Ag, Cu, Pb, Zn:** 4-acid digestion, AA or ICP finish.

	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11
	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t	Au g/t
FCM4-1	0.98	0.965	1.032	0.92	0.92	0.995	0.99	0.980	1.09	0.95	1.047
FCM4-2	0.92	0.963	1.016	0.95	0.98	0.969	0.99	0.984	1.06	0.96	1.134
FCM4-3	0.9	1.045	1.038	0.98	0.95	1.002	0.99	1.050	1.03	0.93	1.088
FCM4-4	0.96	0.897	1.018	0.92	0.93	1.016	0.95	0.936	0.97	0.96	1.087
FCM4-5	1.02	0.967	1.044	0.95	0.95	0.985	1.00	0.986	0.95	1.03	1.077
FCM4-6	0.99	1.005	1.012	0.93	0.96	0.977	0.99	0.951	0.97	0.97	1.061
FCM4-7	0.92	1.095	1.020	0.96	0.96	0.983	0.98	0.955	0.94	0.98	1.116
FCM4-8	0.96	0.952	1.026	0.94	0.94	1.026	1.00	0.974	0.97	0.95	1.103
FCM4-9	0.91	0.942	1.020	0.97	0.92	0.979	0.96	0.948	1.00	0.92	1.044
FCM4-10	0.98	0.957	1.032	0.97	0.91	0.991	0.94	0.972	0.97	0.92	1.096
Mean	0.95	0.98	1.03	0.95	0.94	0.99	0.98	0.97	1.00	0.96	1.09
Std. Devn.	0.0398	0.0562	0.0104	0.0213	0.0220	0.0179	0.0213	0.0317	0.0495	0.0327	0.0290
% RSD	4.17	5.74	1.01	2.25	2.34	1.81	2.18	3.26	4.97	3.41	2.67
	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t	Ag g/t
FCM4-1	57	57.4	43.0	50.1	53.9	54.8	56	53.0	59	49.1	58
FCM4-2	56	58.1	42.7	50.0	52.7	54.2	57	53.1	59	50.4	59
FCM4-3	56	57	42.6	51.1	53.7	54.0	56	53.5	59	50.1	54
FCM4-4	56	58.2	42.8	48.0	53.0	53.2	58	53.0	59	49.2	58
FCM4-5	58	57.5	43.0	48.1	53.9	53.1	56	53.8	62	48.4	58
FCM4-6	57	58.4	43.1	50.2	53.7	54.6	58	52.6	59	49.3	59
FCM4-7	56	58.7	42.9	51.5	53.3	53.3	57	52.0	59	49.5	61
FCM4-8	56	58.8	42.6	50.1	53.3	54.5	56	54.7	59	50.5	59
FCM4-9	56	58.5	42.5	49.5	53.4	54.7	58	55.3	62	48.6	59
FCM4-10	56	56.4	42.8	50.5	53.4	56.2	55	52.1	57	49.9	57
Mean	56.4	57.9	42.8	49.9	53.4	54.3	56.7	53.3	59.4	49.5	58.2
Std. Devn.	0.6992	0.7930	0.2000	1.1328	0.4072	0.9359	1.0593	1.0588	1.5055	0.7180	1.8135
% RSD	1.24	1.37	0.47	2.27	0.76	1.72	1.87	1.99	2.53	1.45	3.12

**Note:** 1. "Au" data from laboratory 11 were excluded from the calculations for failing the "t" test  
 2. "Ag" data from laboratory 3 were excluded from the calculations for failing the "t" test.

**STANDARD REFERENCE MATERIAL CDN-FCM-4**

	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11
	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu
FCM4-1	0.721	0.725	0.68	0.676	0.708	0.714	0.712	0.712	0.730	0.690	0.679
FCM4-2	0.724	0.745	0.65	0.682	0.696	0.710	0.709	0.711	0.738	0.670	0.669
FCM4-3	0.730	0.734	0.67	0.681	0.706	0.722	0.706	0.702	0.735	0.693	0.679
FCM4-4	0.729	0.741	0.66	0.676	0.705	0.720	0.724	0.709	0.729	0.700	0.700
FCM4-5	0.731	0.727	0.68	0.673	0.711	0.718	0.698	0.707	0.731	0.691	0.658
FCM4-6	0.710	0.736	0.67	0.675	0.707	0.720	0.708	0.703	0.725	0.698	0.702
FCM4-7	0.714	0.751	0.66	0.675	0.709	0.719	0.703	0.694	0.734	0.700	0.712
FCM4-8	0.720	0.769	0.66	0.683	0.699	0.708	0.704	0.725	0.729	0.699	0.689
FCM4-9	0.714	0.758	0.66	0.675	0.704	0.710	0.698	0.707	0.734	0.691	0.663
FCM4-10	0.729	0.733	0.66	0.673	0.708	0.711	0.702	0.694	0.728	0.700	0.685
Mean	0.722	0.742	0.665	0.677	0.705	0.715	0.706	0.706	0.731	0.693	0.684
Std. Devn.	0.0076	0.0140	0.0097	0.0037	0.0045	0.0052	0.0077	0.0091	0.0039	0.0092	0.0176
% RSD	1.06	1.89	1.46	0.55	0.64	0.72	1.08	1.29	0.53	1.32	2.57
	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb
FCM4-1	0.35	0.323	0.33	0.34	0.339	0.359	0.360	0.356	0.339	0.313	0.34
FCM4-2	0.35	0.328	0.32	0.34	0.332	0.362	0.360	0.356	0.341	0.309	0.33
FCM4-3	0.35	0.321	0.32	0.34	0.340	0.351	0.348	0.353	0.341	0.320	0.32
FCM4-4	0.35	0.321	0.32	0.34	0.333	0.353	0.365	0.355	0.340	0.322	0.33
FCM4-5	0.36	0.317	0.32	0.35	0.339	0.353	0.352	0.352	0.343	0.322	0.32
FCM4-6	0.36	0.327	0.33	0.34	0.338	0.356	0.355	0.351	0.340	0.321	0.33
FCM4-7	0.36	0.324	0.32	0.34	0.338	0.353	0.352	0.346	0.347	0.319	0.34
FCM4-8	0.36	0.326	0.32	0.34	0.335	0.364	0.352	0.360	0.346	0.320	0.32
FCM4-9	0.35	0.325	0.32	0.34	0.336	0.365	0.353	0.353	0.346	0.316	0.33
FCM4-10	0.35	0.315	0.32	0.34	0.340	0.360	0.350	0.347	0.339	0.320	0.34
Mean	0.354	0.323	0.322	0.341	0.337	0.358	0.355	0.353	0.342	0.318	0.330
Std. Devn.	0.0052	0.0042	0.0042	0.0032	0.0029	0.0051	0.0053	0.0042	0.0031	0.0043	0.0082
% RSD	1.46	1.32	1.31	0.93	0.86	1.42	1.50	1.20	0.89	1.34	2.47
	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn
FCM4-1	1.39	1.31	1.17	1.24	1.24	1.30	1.30	1.28	1.30	1.25	1.27
FCM4-2	1.39	1.31	1.14	1.22	1.22	1.26	1.30	1.27	1.32	1.19	1.26
FCM4-3	1.36	1.33	1.16	1.26	1.21	1.29	1.28	1.26	1.30	1.24	1.13
FCM4-4	1.37	1.28	1.15	1.26	1.24	1.28	1.32	1.27	1.31	1.26	1.32
FCM4-5	1.39	1.18	1.16	1.22	1.23	1.29	1.29	1.26	1.31	1.27	1.29
FCM4-6	1.36	1.28	1.17	1.24	1.24	1.29	1.30	1.26	1.32	1.26	1.33
FCM4-7	1.36	1.33	1.14	1.23	1.24	1.27	1.28	1.24	1.32	1.27	1.33
FCM4-8	1.36	1.25	1.15	1.24	1.23	1.28	1.31	1.29	1.31	1.24	1.30
FCM4-9	1.34	1.25	1.13	1.24	1.24	1.29	1.29	1.26	1.32	1.26	1.31
FCM4-10	1.39	1.26	1.16	1.25	1.23	1.29	1.28	1.23	1.33	1.25	1.31
Mean	1.37	1.28	1.15	1.24	1.23	1.28	1.30	1.26	1.31	1.25	1.29
Std. Devn.	0.0179	0.0459	0.0134	0.0141	0.0094	0.0103	0.0135	0.0175	0.0097	0.0228	0.0593
% RSD	1.31	3.59	1.16	1.14	0.76	0.80	1.05	1.39	0.74	1.83	4.61

**Note:** 1. "Cu" data from laboratory 2 were excluded from the calculations for failing the "t" test  
2. "Zn" data from laboratory 3 were excluded from the calculations for failing the "t" test

**STANDARD REFERENCE MATERIAL CDN-FCM-4**

**Participating Laboratories:**

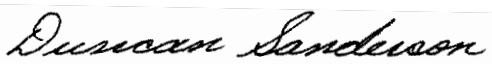
(not in same order as listed in table of results)

Acme Analytical Laboratories Ltd., Vancouver  
Assayers Canada Ltd., Vancouver  
Alaska Assay Laboratory, USA,  
Alex Stewart (Assayers) Argentina  
ALS Chemex Laboratories, North Vancouver  
Genalysis Laboratory Services Ltd., Perth  
GTK Laboratory, Finland  
OMAC Laboratory Ltd., Ireland  
Skyline Assayers and Laboratories, Arizona, USA  
Teck Cominco - Global Discovery Laboratory, Vancouver  
TSL Laboratories Ltd., Saskatoon Laboratories, Perth, Australia

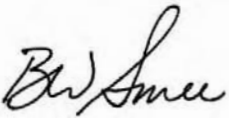
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Certified by

  
Duncan Sanderson, Certified Assayer of B.C.

Geochemist

  
Dr. Barry Smee, Ph.D., P. Geo.

# CDN Resource Laboratories Ltd.

10945-B River Road, Delta, B.C., Canada, V4C 2R8, 604-540-2233, Fax: 604-540-2237 (www.cdnlabs.com)

## ORE REFERENCE STANDARD: CDN-HLHZ

Recommended values and the “Between Lab” Two Standard Deviations

<i>Gold</i>	<i>1.31 ± 0.16 g/t</i>
<i>Silver</i>	<i>101.2 ± 10.8 g/t</i>
<i>Copper</i>	<i>0.76 ± 0.03 %</i>
<i>Lead</i>	<i>0.815 ± 0.06 %</i>
<i>Zinc</i>	<i>7.66 ± 0.36 %</i>

**PREPARED BY:** CDN Resource Laboratories Ltd.  
**CERTIFIED BY:** Duncan Sanderson, B.Sc., Licensed Assayer of British Columbia  
**INDEPENDENT GEOCHEMIST:** Dr. Barry Smee., Ph.D., P. Geo.  
**DATE OF CERTIFICATION:** August 8, 2006

### **METHOD OF PREPARATION:**

Reject ore material was dried, crushed, pulverized and then passed through a 200 mesh screen. The +200 material was discarded. The -200 material was mixed for 5 days in a V- mixer. Splits were taken and sent to twelve laboratories for round robin assaying. The material has been packaged in nominal 100g lots in tin-top kraft bags which have been individually vacuum-sealed in polyethylene bags.

### **ORIGIN OF REFERENCE MATERIAL:**

The ore is described as massive to semi-massive sulphides from the High Lake West Zone orebody, an archean aged VMS deposit in the Slave structural province of Canada. It consists of pyrite, pyrrhotite, chalcopyrite, sphalerite and minor galena. Gangue minerals include quartz, chlorite, feldspar, cordierite, biotite, magnetite, anthophyllite and grunerite.

### **Approximate chemical composition is as follows:**

Standard CDN-HLHZ is a high sulphide material with approximately 36% sulphur.

### **Statistical Procedures:**

The mean and standard deviation for all data was calculated. Outliers were defined as samples beyond the mean  $\pm 2$  Standard Deviations from all data. These outliers were removed from the data and a new mean and standard deviation was determined. This method is different from that used by Government agencies in that the actual “between-laboratory” standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Confidence Limits published on other standards.

### **Results from round-robin assaying are presented on subsequent pages:**

### **Assay Procedures:**

**Au:** Fire assay pre-concentration, AA or ICP finish (10g sub-sample).  
**Ag, Cu, Pb, Zn:** 4-acid digestion, AA or ICP finish.

## STANDARD REFERENCE MATERIAL CDN-HLHZ

	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12
	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt	Au gpt
HLHZ-1	1.31	1.22	1.33	1.34	1.45	1.19	1.28	1.23	1.41	1.30	1.36	1.32
HLHZ-2	1.34	1.16	1.40	1.37	1.44	1.24	1.24	1.48	1.34	1.26	1.32	1.23
HLHZ-3	1.42	1.31	1.31	1.31	1.59	1.15	1.38	1.30	1.41	1.28	1.32	1.20
HLHZ-4	1.24	1.32	1.24	1.38	1.44	1.21	1.29	1.41	1.18	1.27	1.48	1.25
HLHZ-5	1.33	1.22	1.22	1.43	1.44	1.23	1.29	1.26	1.21	1.29	1.38	1.22
HLHZ-6	1.30	1.15	1.35	1.26	1.40	1.47	1.43	1.27	1.14	1.17	1.39	1.28
HLHZ-7	1.39	1.30	1.27	1.28	1.50	1.18	1.37	1.40	1.34	1.27	1.34	1.37
HLHZ-8	1.37	1.22	1.38	1.38	1.33	1.30	1.36	1.33	1.41	1.32	1.41	1.29
HLHZ-9	1.38	1.29	1.40	1.26	1.50	1.38	1.32	1.40	1.27	1.21	1.36	1.27
HLHZ-10	1.30	1.23	1.25	1.30	1.49	1.25	1.42	1.20	1.26	1.26	1.30	1.29
Mean	1.34	1.24	1.32	1.33	1.45	1.26	1.34	1.33	1.30	1.26	1.37	1.27
Std. Devn.	0.053	0.061	0.068	0.060	0.072	0.099	0.064	0.091	0.099	0.042	0.053	0.050
% RSD	3.98	4.89	5.14	4.49	4.96	7.82	4.75	6.87	7.67	3.36	3.86	3.95
	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt	Ag gpt
HLHZ-1	102.8	102	105	99	110	97.1	105	112.5	93.8	102	99.7	100.6
HLHZ-2	100.8	95	102	95	113	96.2	106	107.9	93.3	100	108	102.2
HLHZ-3	103.0	98	107	101	110	98.3	106	110.4	92.5	100	108	97.5
HLHZ-4	98.3	97	105	101	111	94.2	104	110.3	93.3	99	111	103.4
HLHZ-5	101.0	100	103	97	106	93.1	104	112.7	93.5	97	96.7	103.3
HLHZ-6	99.3	104	104	98	107	95.1	104	99.8	92.4	99	97.9	100.6
HLHZ-7	98.6	90	102	98	111	93.3	108	101.5	93.2	103	98.1	100.8
HLHZ-8	103.5	93	105	98	107	94.0	110	123.7	93.3	101	99.5	103.2
HLHZ-9	100.2	95	107	100	110	96.8	106	108.8	93.2	101	95.2	107.5
HLHZ-10	98.9	95	106	98	109	97.8	107	105.2	92.9	99	97.5	101.6
Mean	100.6	96.9	104.6	98.5	109.4	95.6	106.0	109.3	93.1	100.1	101.2	102.1
Std. Devn.	1.921	4.228	1.838	1.841	2.297	1.900	1.944	6.679	0.430	1.692	5.618	2.610
% RSD	1.91	4.36	1.76	1.87	2.10	1.99	1.83	6.11	0.46	1.69	5.55	2.56



**STANDARD REFERENCE MATERIAL CDN-HLHZ**

	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12
	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu	% Cu
HLHZ-1	0.746	0.80	0.774	0.76	0.749	0.739	0.788	0.769	0.74	0.776	0.77	0.76
HLHZ-2	0.749	0.81	0.766	0.74	0.749	0.752	0.784	0.759	0.74	0.773	0.76	0.77
HLHZ-3	0.738	0.78	0.774	0.75	0.749	0.758	0.783	0.761	0.74	0.772	0.77	0.76
HLHZ-4	0.739	0.78	0.768	0.75	0.741	0.747	0.789	0.761	0.74	0.774	0.76	0.77
HLHZ-5	0.747	0.77	0.769	0.74	0.737	0.749	0.790	0.759	0.73	0.771	0.78	0.77
HLHZ-6	0.745	0.78	0.771	0.75	0.741	0.749	0.800	0.765	0.75	0.773	0.75	0.77
HLHZ-7	0.743	0.77	0.787	0.75	0.746	0.756	0.793	0.762	0.74	0.774	0.78	0.76
HLHZ-8	0.745	0.77	0.772	0.75	0.75	0.758	0.788	0.749	0.73	0.772	0.79	0.77
HLHZ-9	0.741	0.77	0.768	0.75	0.748	0.750	0.792	0.750	0.74	0.776	0.77	0.77
HLHZ-10	0.744	0.76	0.757	0.75	0.748	0.757	0.786	0.759	0.74	0.772	0.78	0.78
Mean	0.744	0.779	0.771	0.749	0.746	0.752	0.789	0.759	0.739	0.773	0.771	0.768
Std. Devn.	0.0035	0.0152	0.0076	0.0057	0.0047	0.0060	0.0049	0.0061	0.0057	0.0016	0.0120	0.0063
% RSD	0.47	1.96	0.98	0.76	0.63	0.80	0.62	0.80	0.77	0.21	1.55	0.82
	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb	% Pb
HLHZ-1	0.76	0.84	0.85	0.80	0.83	0.81	0.86	0.785	0.82	0.80	0.75	0.83
HLHZ-2	0.75	0.85	0.84	0.78	0.83	0.83	0.85	0.767	0.81	0.80	0.74	0.84
HLHZ-3	0.76	0.84	0.85	0.78	0.83	0.84	0.85	0.779	0.82	0.80	0.76	0.82
HLHZ-4	0.76	0.84	0.84	0.79	0.82	0.83	0.84	0.770	0.82	0.80	0.73	0.82
HLHZ-5	0.76	0.84	0.84	0.76	0.82	0.84	0.85	0.764	0.82	0.80	0.76	0.82
HLHZ-6	0.75	0.86	0.84	0.77	0.82	0.83	0.84	0.773	0.82	0.80	0.73	0.82
HLHZ-7	0.76	0.84	0.85	0.78	0.83	0.84	0.85	0.769	0.82	0.81	0.73	0.82
HLHZ-8	0.78	0.83	0.86	0.77	0.83	0.84	0.84	0.780	0.82	0.80	0.73	0.82
HLHZ-9	0.75	0.85	0.85	0.78	0.83	0.83	0.84	0.763	0.82	0.80	0.72	0.82
HLHZ-10	0.76	0.85	0.84	0.78	0.83	0.84	0.85	0.769	0.82	0.81	0.74	0.84
Mean	0.76	0.84	0.85	0.78	0.83	0.83	0.85	0.77	0.82	0.80	0.74	0.83
Std. Devn.	0.0088	0.0084	0.0070	0.0110	0.0050	0.0082	0.0064	0.0073	0.0032	0.0026	0.0137	0.0085
% RSD	1.15	1.00	0.83	1.41	0.60	0.99	0.76	0.94	0.39	0.32	1.85	1.03
	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn	% Zn
HLHZ-1	7.51	7.83	7.95	7.53	7.48	7.78	7.98	7.54	7.66	7.71	5.38	7.79
HLHZ-2	7.46	7.63	7.90	7.50	7.47	7.96	8.02	7.51	7.66	7.71	5.26	7.95
HLHZ-3	7.55	7.66	7.88	7.48	7.45	7.93	7.89	7.48	7.69	7.67	5.43	7.78
HLHZ-4	7.40	7.48	7.75	7.66	7.38	7.90	7.81	7.46	7.68	7.68	5.31	7.82
HLHZ-5	7.39	7.56	8.03	7.44	7.35	7.90	7.97	7.52	7.63	7.73	5.35	7.79
HLHZ-6	7.50	7.47	7.83	7.51	7.39	7.74	7.91	7.54	7.57	7.62	5.32	7.75
HLHZ-7	7.44	7.89	7.93	7.57	7.42	7.76	7.83	7.47	7.64	7.67	5.07	7.77
HLHZ-8	7.48	7.46	7.82	7.51	7.46	7.83	7.93	7.52	7.65	7.69	5.28	7.79
HLHZ-9	7.41	7.49	7.83	7.53	7.44	7.82	7.89	7.48	7.66	7.69	5.28	7.73
HLHZ-10	7.44	7.54	7.78	7.60	7.43	7.89	7.86	7.56	7.64	7.71	5.59	8.00
Mean	7.46	7.60	7.87	7.53	7.43	7.85	7.91	7.51	7.65	7.69	5.33	7.82
Std. Devn.	0.052	0.152	0.085	0.063	0.045	0.076	0.066	0.033	0.033	0.031	0.133	0.088
% RSD	0.70	2.00	1.08	0.84	0.60	0.96	0.84	0.44	0.43	0.40	2.49	1.12

**NOTE: Pb data and Zn data from Lab. 11 were excluded from the data set for failing the “t” test.**

**STANDARD REFERENCE MATERIAL CDN-HLHZ**

**Participating Laboratories:**

(not in same order as listed in table of results)

Acme Analytical Laboratories Ltd., Vancouver  
Assayers Canada Ltd., Vancouver  
ALS Chemex Laboratories, North Vancouver  
Actlabs, Ontario, Canada  
Alex Stewart Assayers (Argentina) Ltd.  
GTK Laboratory, Finland  
International Plasma Laboratories Ltd., Vancouver  
OMAC Laboratory Ltd., Ireland  
SGS-XRAL, Toronto  
Skyline Laboratory, Arizona, USA  
Teck Cominco - Global Discovery Laboratory, Vancouver  
TSL Laboratories Ltd., Saskatoon

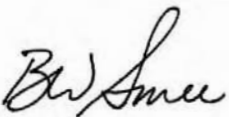
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Certified by

  
Duncan Sanderson, Certified Assayer of B.C.

Geochemist

  
Dr. Barry Smee, Ph.D., P. Geo.