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NEW BLUE RIBBON RESOURCES LTD.

1998 TO 2000 EXPLORATION OF THE PELICAN MOUNTAIN PROPERTY

CENTRAL, ALBERTA

Metallic and Industrial Mineral Permits
9398030175-180, 9398030193, 9398030254-259, 9398080104-105,
9398100053-54, 9398100120 and 9398100121

Geographic Co-ordinates
55° 22' to 55° 50' N
113° 05' to 114° 00' W
NTS Sheets 83 P/1, 83 P/6, 83 P/11-14

Submitted by:

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1. SUMMARY

The Pelican Mountains Property is centered about 70 km north of the Town of Athabasca in central Alberta, and is comprised of 19 Metallic and Industrial Mineral permits which encompass an area of 167,795 hectares. Exploration from 1998 to early 2000 was primarily for kimberlite(s), and to evaluate a heavy mineral bearing sand occurrence that was discovered during this exploration. Preliminary results indicate that the Pelican Mountains heavy mineral sand occurrence contains significant concentrations of titanium. Further work is required to determine if the occurrence may be of economic size and composition. In addition, the potential for the discovery of kimberlitic or related intrusives remains favourable.

Future exploration of the Pelican Mountains Heavy Mineral Occurrence (PMHMO) should include:

a) processing of a small bulk sample, about 100 to 200 kg of material, to determine the concentrations of heavy minerals that may be extracted; and
b) these extracted heavy minerals should be examined with respect to chemistry and grain size to better determine mineralogy and quality.

If the extraction of a reasonable quality product is demonstrated, further exploration should include:

a) expansion of the ground magnetic grid to the east and southwest to determine if additional, potentially stacked, higher-grade beach strands are present beyond the current limits of investigation;
b) variograms should be constructed around the current data set to better define the distribution of the heavy minerals; and
c) larger diameter drilling with closer spacing is required to better define the extent of the main high-grade beach strand and its eastern limits.

Continued exploration for diamondiferous kimberlites and associated intrusives should include:

a) re-evaluation of the existing airborne geophysical data with emphasis on subtle magnetic signatures; and
b) detailed till and stream sediment sampling to properly assess the source of recovered diamond indicator minerals.

2. INTRODUCTION

During 1998 to early 2000, New Blue Ribbon Resources Ltd. (NBL) conducted exploration on its Pelican Mountains area properties (Pelican Mountains Property) for primary diamond deposits and of a recently discovered heavy mineral occurrence (PMHMO). Exploration activities included a high-resolution aeromagnetic survey, till and stream sediment sampling for diamond indicator minerals, ground magnetometer surveys, diamond drilling, and evaluation of the economic potential of heavy mineral sand occurrence.

This assessment report describes exploration conducted on the Pelican Mountains Property and is based on publically available information and work conducted by Dahrouge Geological Consulting Ltd. (Dahrouge).

3. GEOGRAPHIC SETTING

3.1 LOCATION AND ACCESS

The Pelican Mountains Property is located in central Alberta approximately 43 km north of Calling Lake within NTS Map Sheets 83 P/1, 83 P/6, and 83 P/11 to 14. The property extends from about 55° 22' 00" to 55° 50' 00" north latitude and 113° 05' 00" to 114° 00' 00" west longitude, is centered about 220 km north of the City of Edmonton and about 70 km north of the Town of Athabasca (Fig. 3.1).

Access to the property from the Town of Athabasca is by paved Provincial Highway 813 north to Calling Lake. At this point Highway 813 turns to gravel and passes through the central part of the property from which logging trails and seismic lines provide four wheel drive, all terrain vehicle, and/or snowmachine access to remote parts of the property. The western portion of the property is accessible via the Martin Hills forest service road which branches from Highway 88 about 10 km north of the Town of Slave Lake.

3.2 TOPOGRAPHY, VEGETATION AND CLIMATE

The Pelican Mountains Property is located within the Alberta High Plains portion of the Interior Plains physiographic region of Canada (Ozoray and Lytviak, 1980). Topography is characterized by rolling hills and undulating plains with elevations ranging from greater than 1,000 m above sea level (a.s.l.) at Pelican Mountain on the northern property boundary to 720 m a.s.l. within lowlands along the southern and eastern boundaries.

Vegetation is classified as boreal forest and is dominated by stands of aspen poplar, white spruce and pine on topographic highs. Lakes, peat bogs, and muskeg of Sphagnum mosses and black spruce are common in low lying areas.

The regional climate is sub-arctic and characterized by short cool summers with mean temperatures as follows: January, -17.9° C; July 17.1° C; and annually 1.2° C (Ozoray and Lytviak, 1980). The area is snow covered from late September to late April with annual mean precipitation ranging between 50 to 70 cm.

4. PROPERTY

4.1 MAIM PERMITS

The Pelican Mountains Property consists of 19 contiguous metallic and industrial mineral permits (MAIM) covering an area of about 167,795 hectares within four properties: Criss, North Slope, Pelican Mountains and Sandy Lake (Fig. 4.1). Pertinent details are in Table 4.1. New Blue Ribbon Resources Ltd. holds an option on the Criss Property from Grizzly Gold Inc., whereby NBL may earn a 95 per cent interest in the property for certain cash payments, share issuances, and work commitments (NBL, 1998b). The Pelican Mountains Property is held 100 per cent through a subsidiary company, Arctic Star Resources Ltd. (NBL, 1999a). The property is encumbered by a 1.5 per cent Net Smelter Return. The North Slope and Sandy Lake properties are held 100 per cent by NBL (NBL, 1998a).

4.2 HISTORY AND PREVIOUS INVESTIGATIONS

Exploration in the region of the Pelican Mountains Property has been limited primarily to geologic mapping and airborne geophysical surveys conducted by various government agencies (GSC, 1983; Green et al., 1970). In addition, limited oil, gas, and water well logs have been compiled by Alberta government agencies into drift thickness and bedrock topography maps (Pawlowicz and Fenton, 1995a, b).

Reconnaissance diamond indicator mineral sampling has been conducted in the region of the Pelican Mountains Property by the Alberta Geologic Survey (AGS). Although only a few samples have been collected within the Pelican map sheet, information made public by the AGS describe the discovery of diamond indicator mineral grains in a glacial till sample. AGS till sample NAT95-129 (Fig. 6.3) collected within the northwestern portion of the property yielded two confirmed pyrope garnets, a titanium-rich G1, and a chrome-rich G10 garnet (Pawlowicz et al., 1998).

TABLE 4.1 LIST OF MAIM PERMITS

Permit	Commencement Date	Expiry Date	Land Description (Twp-Rg-Mer: Sections)	Size (Ha)
Criss Property				
9398100053	10-26-1998	10-26-2000	77-21-W4: 1; 2E; 4W; 5-36	8,704
9398100054	10-26-1998	10-26-2000	77-22-W4: 1; 4-6; 8-17; 19-29; 32-36	7,680
North Slope Property				
9398100120	10-28-1998	10-28-2000	76-23-W4: 3-6 76-24-W4: 3-10; 13-36	9,216
9398100121	10-28-1998	10-28-2000	77-25-W4: 1-24	6,144
Pelican Mountains Property				
9398030175	03-12-1998	03-12-2000	75-22-W4: 1-9; 10S½; 10NE¼; 11-36	9,152
9398030176	03-12-1998	03-12-2000	75-23-W4: 1-4; 9; 10; 11S½; 11NW¼; part of 11NE¼; 13-16; 21-29; 32-36 76-23-W4: 1; 2; 10E½; 11-14; 15E½; 24; 25; 36	9,139
9398030177	03-12-1998	03-12-2000	75-23-W4: 5-8; 17-20; 30; 31 75-24-W4: 1-4; 9-16; 21-28; 31-36	9,216
9398030178	03-12-1998	03-12-2000	75-24-W4: 5-8; 17-20; 29; 30 75-25-W4: 1-5; 8-17; 20-29; 36	9,216
9398030179	03-12-1998	03-12-2000	75-25-W4: 32-35 76-25-W4: 1-5; 8-17; 20-36	9,216
9398030180	03-12-1998	03-12-2000	76-25-W4: 6; 7; 18; 19 76-26-W4: 1-4; 5E½; 8E½; 9-16; 17E½; 20E½; 21-28; 29E½; 32E½; 33-36	7,936
9398030193	03-12-1998	03-12-2000	76-22-W4: 1-24; 26-35 77-22-W4: 2; 3	9,216
9398030254	03-17-1998	03-17-2000	74-21-W4: 1-36	9,216
9398030255	03-17-1998	03-17-2000	74-22-W4: 1-4; 9-15; 23-26; 34-36 75-21-W4: 4-9; 16-21; 28-32	8,960
9398030256	03-17-1998	03-17-2000	74-22-W4: 30 74-23-W4: 3-36	8,960
9398030257	03-17-1998	03-17-2000	74-24-W4: 1-36	9,216
9398030258	03-17-1998	03-17-2000	75-20-W4: 6; 7; 18; 19; 30; 31 76-20-W4: 6 75-21-W4: 1-3; 10-15; 22-27; 33-36 76-21-W4: 1-9	8,960
9398030259	03-17-1998	03-17-2000	76-20-W4: 7; 18; 19; 30; 31 76-21-W4: 10-36 76-22-W4: 25; 36 77-21-W4: 2W½; 3; 4E½	9,216
Sandy Lake Property				
9398080104	08-31-1998	08-31-2000	78-21-W4: 1-36	9,216
9398080105	08-31-1998	08-31-2000	78-22-W4: 1-36	9,216
			Total:	**167,795**

Immediately south of and contiguous with the Pelican Mountains Property, Buffalo Diamonds Ltd. (BDL) has reported the discovery of several sites containing highly anomalous concentrations of diamond indicator minerals from till, basal till, stream sediment, and beach sand samples. Select sites reportedly include one with over 100 diamond indicator minerals, another with a pale yellow macro diamond, and others with exceptional chemistry diamond stability field G10 garnets (BDL, 1999). The volume and variety of these diamond indicator mineral grains and a diamond collected within a basal till sample are suggestive of a local source. Several of the BDL sample sites and high priority aeromagnetic targets exist near the southern boundary of the Pelican Mountains

Property and the direction of glacially transported till in the region was from north to south.

4.3 EXPLORATION EXPENDITURES

MAIM permits issued under the Alberta Mines and Minerals Act grant the right to explore for metallic and industrial minerals for terms of up to 10 years. Individual permits may not be less than 16 ha nor greater than 9,216 ha. Assessment work requirements are $5/ha for the period of years 1 and 2, $10/ha for the period of years 3 and 4, $10/ha for the period of years 5 and 6, $15/ha for the period of years 7 and 8, and $15/ha for the period of years 9 and 10.

During 1998 to 2000, exploration expenditures on the Pelican Mountains Property totaled $294,855.26 (Appendix 1A). Allocation of expenditures, and amendments and cancellations are in Appendix 1B and 1C respectively.

5. REGIONAL GEOLOGY

5.1 BASEMENT GEOLOGY

The Pelican Mountains Property lies in the Western Canadian Sedimentary basin along the south flank of the Peace River Arch (PRA). The basement underlying the Pelican Mountains Property comprises the southeast portion of the Buffalo Head Terrane (BHT) and borders the Taltson Magmatic Zone (TMZ) to the east (Fig. 5.1). The BHT is characterized by a northwest trending curvilinear belt of positive aeromagnetic relief and is thought to be a continental margin magmatic arc of calc-alkaline affinity with ages of 2.0 to 2.32 Ga (Villeneuve et al, 1993). Ashton Mining of Canada Inc.'s diamondiferous kimberlites are underlain by basement of the BHT. The TMZ is a 1.8 to 2.0 Ga aged terrane that represents a magmatic arc related to collisional orogeny during the Proterozoic. It is unclear whether the TMZ represents a deep-seated thermal welt between two distinct protocontinents or a discrete thin-skinned thrust slice that has been emplaced over the top of the basement of the Rae Subprovince. Villeneuve et al (1993) indicate that the western boundary of the TMZ is not obvious based upon geophysical data and has been placed using zircon ages from basement drill cores.

Seismic refraction and reflection studies indicate that the crust in the Pelican region is likely between 35 to 40 km thick, a trait favourable for the formation and preservation of diamonds in the upper mantle (Dufresne et al, 1996).

5.2 STRUCTURAL GEOLOGY

The Pelican Mountains Property is located approximately 110 km south of the axial trace of the northeast trending PRA and less than 50 km north of the trace of the Snowbird Tectonic Zone (STZ) (Fig. 5.1). The PRA, an area of cratonic uplift where the basement is up to 800 to 1,000 m above the regional basement elevation (Cant, 1988), has a complex history of uplift and subsidence that extends from the late Proterozoic until at least late Cretaceous. This pattern of long-lived, periodic uplift and subsidence has imposed a structural control on the deposition patterns of overlying Phanerozoic rocks in northern Alberta and generated a zone of structural disturbance up to 140 km wide. In addition, this periodic movement has resulted in a rectilinear pattern of faults which are not only responsible for structurally controlled oil and gas pools, but may have provided potential pathways for later deep-seated intrusive kimberlitic magmas.

5.3 PROPERTY GEOLOGY

Hydrocarbon exploration wells in the area of the Pelican Mountians Property indicate the top of the Precambrian basement to be about 1,300 to 1,500 m below surface. Overlying the basement, a thick sequence of Phanerozoic rocks comprised mainly of Cretaceous sandstones and shales near surface and Mississippian to Devonian carbonates, calcareous shales, and salt horizons at depth (Glass, 1990); information on the regional stratigraphy is in Table 5.1.

Regional mapping by Green et al. (1970) show the bedrock geology on the property to consist of strata of upper Cretaceous aged Wapiti Formation (Fig. 5.2). Non-marine in origin, the Wapiti Formation is comprised of thinly bedded to massive sandstone, bentonitic mudstone, bentonite, and scattered coal beds. The upper surface of the Wapiti Formation is erosional and thickness of the unit may exceed 100 m (Glass, 1990).

Glacial deposits on the Pelican Mountains Property are widespread and bedrock exposure sparse; outcrop is generally restricted to banks of incised river valleys, along scarp and slumping features, and scattered outcroppings at higher elevations on Pelican Mountain. The majority of the property is covered by drift of variable thickness, ranging from less than 15 m at Pelican Mountains to greater than 100 m in the southern lowlands. Dominant ice flow direction was from north to south as evidenced by glacial fluting in upland regions of Pelican Mountains.

TABLE 5.1 TABLE OF FORMATIONS

Period or Epoch	Group	Formation	Lithology	Age (Ma)
Pleistocene			Glacial till and associated sediments	recent
Tertiary			Preglacial sand and gravels	6.5 - recent
Upper Cretaceous	Smoky	Wapiti	Sandstone, bentonitic mudstone, coal seams, bentonite	70 - 80
		Puskwaskau	Shale, silty-shale, ironstone, First White Specks	75 - 86
		Badheart	Sandstone	86 – 88
		Kaskapau	Shale, silty-shale, ironstone, Second White Specks	88 – 92
		Dunvegan	Sandstone, siltstone	92 – 95
	Fort St. John	Shaftesbury	Shale, bentonites, Fish Scale Member	95 – 98
Lower Cretaceous	Colorado	Pelican	Glauconitic sands, siltstone, mudstone, conglomerate	98 - 100
		Joli Fou	Shale, glauconitic sandstone, bentonite	100 - 103

6. 1998 THROUGH 2000 EXPLORATION

6.1 AIRBORNE GEOPHYSICAL SURVEY

During May, 1999 Terraquest Ltd. (Terraquest) of Toronto, Ontario was contracted to fly a high-resolution aeromagnetic survey (HRAM) over the Pelican Mountains Property. The fixed wing survey totaled 10,200 line-kilometers, was drape flown at 60 m terrain clearance along north-south trending traverse lines spaced at 200 m intervals. The total magnetic field data collected was leveled, processed, and edited for cultural noise by Terraquest and subsequently reviewed by Dahrouge and Intrepid Geophysics Ltd. Total magnetic intensity (Fig's. 6.1 and 6.2), calculated magnetic vertical gradient, and other filtered maps were examined for discrete geophysical anomalies of limited areal extent. On the basis of magnetic intensity, size, shape, interpreted depth, and relation to present day or paleodrainage, anomalies were identified which are magnetically mafic in character and may represent kimberlitic intrusives. In total, 1 magnetic low and 10 positive magnetic geophysical targets were identified which possess characteristics of possible intrusive origin (Appendix 3). In addition to potential kimberlite targets, numerous strong linear magnetic trends are apparent on the airborne data; one linear trend corresponds to a recently discovered heavy mineral sand occurrence (Sand Grid, Fig. 6.1).

6.2 DIAMOND INDICATOR MINERAL SAMPLING

During October, 1998, 10 glacial till (14029, 14030, 10851 to 10857, 10863), 6 stream sediment (14031, 10858 to 10862), and 1 rock sample (14033) were collected from the Pelican Mountains Property and submitted to the Saskatchewan Research Council (SRC) in Saskatoon, Saskatchewan for diamond indicator mineral grain analysis (Fig's. 6.3 and 6.4). For an individual till sample, enough material was collected at a sample site from a depth of 1.0 – 1.5 m to fill a 20 litre pail. Stream sediment samples comprised the fines remaining in a gold pan after washing and sieving a 20 litre volume of fluvial material. Sample processing and optical analysis performed by the SRC focused on the recovery of select mineral grains including pyrope and eclogitic garnet, olivine, chrome diopside, chromite, and picroilmenite mineral grains. Of the 17 samples submitted, 6 yielded translucent indicator mineral grains including 14 possible pyrope garnets, 1 possible uvarovite garnet, and 2 possible chrome diopside grains while 10 samples yielded a total of 50 oxide mineral grains including 48 possible picroilmenites and 2 possible chromites (Appendix 4).

Electron microprobing of select mineral grains was completed by the SRC to determine the quantitative major and trace element chemistry for accurate mineral identification and comparison to mineral compositions indicative of kimberlite and diamond inclusion chemistry. The most significant indicator grains identified were from stream sediment samples and consisted of G9 pyrope, G10 pyrope, uvarovite garnets and chrome diopsides; all possible picroilmenites were determined to be regional ilmenites. The highest yielding sample (10858) was collected from a drainage whose basin lies 80% within the Pelican Mountains Property (Fig. 6.3). This sample contained 4-G9 pyrope garnets, 1-G10 pyrope garnet, and 1 chrome diopside; the chemistry of the chrome diopside (<2% Cr_2O_3 and a ~1:1 Cr:Na) is considered to be indicative of a kimberlite source. Sample 10859 samples a drainage of which 65% lies within the property boundaries and this sample yielded 5-G9 pyrope garnets and 1 uvarovite garnet; uvarovite garnets are high Cr-Ca garnets which may have an ultramafic (kimberlitic) source. Sample 10860 was collected from a stream with a very limited drainage area 95% of which lies within the property. This sample yielded 1-G9 pyrope garnet and 1 chrome diopside; the chemistry of the chrome diopside (1.2% Cr_2O_3) indicates a kimberlitic source. Sample 10862 collected from a localized drainage yielded 1-G9 pyrope garnet. Glacial till sample 10855 collected along the southern property boundary contained 1-G9 pyrope and 1 chrome diopside; the chrome diopside plotted

very close to the diamond inclusion field for wt% CaO vs Cr_2O_3 for chrome diopsides. Diamond indicator mineral grain microprobe analysis are given in Appendix 5.

During October, 1999, an additional 7 glacial till (14034 to 14040), 6 stream sediment (10865 to 10870), and 1 beach sand sample (10864) were collected from the Pelican Mountains Property (Fig's. 6.3 and 6.4). The glacial till samples were collected from sample sites located about 1 km down ice from a specific airborne magnetic anomaly and till and stream sediment sampling procedures were as described above. Of the 14 samples submitted, 6 yielded indicator mineral grains including 8 possible pyrope garnets, 1 possible chrome diopside, and 1 possible uvarovite garnet and 3 samples yielded a total of 9 oxide mineral grains including 7 possible picroilmenites and 2 possible chromites (Appendix 4). Electron microprobing of mineral grains has not been performed to date.

6.3 GROUND GEOPHYSICAL SURVEYS

During October, 1999 and January, 2000, ground magnetometer geophysical surveys were completed over 7 airborne magnetic anomalies and the heavy mineral sand occurrence. After a baseline was surveyed on a particular grid, grid cross-lines were established at 100 m intervals and on each cross-line, stations were chained by topofil and marked with flagging at 25 m intervals. At 12.5 m stations along each cross-line, a magnetometer reading was collected using a GEM System GSM-19 integrated Overhauser effect proton precession magnetometer. The magnetic readings were corrected for terrestrial field magnetic variation using a stationary GSM-19 basestation. The corrected magnetometer data was processed, gridded, contoured, and used to generate Figures 6.5 through 6.12.

6.4 DIAMOND DRILLING

A total of 491.33 m of diamond drilling in 11 drill holes (PM99-01 to PM99-03, PM00-04 to PM00-07, BA00-01 to BA00-02, and BU00-01 to BU00-02) was completed on the Pelican Mountains Property between December, 1999 and February, 2000. Diamond drilling was performed by Aggressive Diamond Drilling Ltd. of Kelowna, B.C. The NQ core was logged on site by personnel under contract to Dahrouge. Subsequently, the core was transported to the Mineral Core Research Facility in Edmonton, re-logged and sampled. A summary of drill holes is provided in Table 6.1. Documentation of drilling and lithologic descriptions is provided in Appendix 6.

TABLE 6.1 DIAMOND DRILL HOLE SUMMARY

Drill Hole Identifier	UTM Coordinate (NAD 27) Easting	Northing	Ground Geophysical Grid	Orientation	Depth To Bedrock (m)	Drill Hole Depth (m)
PM99-01	347964	6168130	Sand: 5800N/5325E	-90	6.71	87.78
PM99-02	348141	6167677	Sand: 5300N/5275E	-90	0.91	48.16
PM99-03	348111	6168435	Sand: 6000N/5600E	-90	4.27	48.16
PM00-04	348091	6168886	Sand: 6400N/5875E	-90	4.57	24.38
PM00-05	347644	6168641	Sand: 6400N/5350E	-90	12.19	50.29
PM00-06	347749	6168001	Sand: 5800N/5075E	-90	3.66	25.91
PM00-07	348408	6168006	Sand: 5450N/5650E	-90	6.66	25.91
BA00-01	346462	6149573	Bait: 5200E/5325N	-90	57.91	65.53
BA00-02	345904	6149565	Bait: 4700E/5330N	-90	36.35	38.10
BU00-01	361713	6147507	Bou: 6100N/5340E	-90	n/a	32.00
BU00-02	361147	6146979	Bou: 5375N/5180E	-90	n/a	45.11
					Total	491.33

6.4.1 Drill Core Sampling And Analysis

In total, 84 drill core samples were selected from holes PM99-01 to PM99-03 and PM00-04 to PM00-07 and 1 sample from hole BU00-01 for geochemical analysis (Appendix 6); samples were selected based on lithology, opaque mineral content, and/or visible mineralization. For individual samples, the drill core was split with one-half sent for analysis and the other half retained as a permanent record. Drill core samples were submitted to Activation Laboratories Ltd. (Activation) of Ancaster, Ontario for analysis by fusion ICP which provided whole rock geochemical data plus trace element analysis and by INAA for Au + 34 elements (Appendix 7A).

7. HEAVY MINERAL SAND OCCURRENCE

7.1 EXPLORATION

In addition to circular shaped magnetic anomalies identified on the aeromagnetic geophysical survey, Dahrouge identified several distinct, close spaced, linear magnetic anomalies on the property. During August, 1999, field investigation including prospecting and hand trenching of one such anomaly identified in-situ occurrences of black, massive, indurated heavy mineral sand; the Pelican Mountain Heavy Mineral Occurrence (PMHMO).

During October, 1999 a 12.4 line-km ground geophysical survey was completed over the PMHMO which defined a strong magnetic anomaly about 1,800 m long by 200 to 250 m wide with magnetic signatures in excess of 120 nT (Fig. 6.9). The southern portion of the anomaly displays the strongest magnetic response where indurated heavy

mineral sands are exposed at surface. The irregularity of the magnetic signature near the southern end of the PMHMO may be due to lenses of argillaceous sandstone or variable depths of burial.

A total of 310.59 m of diamond drilling in seven drill holes (PM99-01 to PM99-03, PM00-04 to PM00-07) was completed on the PMHMO between December, 1999 and February, 2000. Drilling lithologic descriptions are provided in Appendix 6, drill hole locations are on Fig's. 6.9 and 7.2.

7.2 SAMPLING AND ANALYSIS

7.2.1 Sampling and Geochemical Analysis

Prospecting and hand trenching from 2 sample pits dug on the southern flank of the PMHMO (Fig 6.9) identified both transported and in-situ occurrences of black, massive, indurated heavy mineral sand. Indurated material exposed within the sample pits was analyzed for both diamond indicator minerals and heavy mineral content. In total, 2 pit till samples (14029 and 14030), 1 heavy mineral rock sample (14033), and 1 stream sediment sample (14031) were submitted to the SRC for diamond indicator mineral analysis (Appendix 4) and 3 pit heavy mineral rock samples (14026 to 14028) submitted to Acme Analytical Laboratories Ltd. (Acme) of Vancouver, B.C. for whole rock ICP analysis (Appendix 7B).

In total, 84 drill core samples were selected for analysis; see Section 6.4.1, Appendix 6, and 7A. Subsequently, samples elevated in TiO_2 were analyzed by X-ray diffraction by Activation and optical examination performed to determine qualitative mineral percentages.

7.2.2 Specific Gravity Determinations

Several samples elevated in TiO_2, Fe_2O_3, or both were screened to determine specific gravity (Appendix 7C) and grain size parameters (Appendix 7D) by Activation. These determinations were for both indurated and unconsolidated sands. The specific gravity determinations were conducted on sample pulps, which may result in minor errors of specific gravity estimation (Hoffman, 2000). By using the displacement method, a specific gravity of 2.85 g/cc was determined for the black sandstone and 2.55 g/cc for the unconsolidated sand. Given the known specific gravities for the contained minerals, both results appear to slightly underestimate their true values.

7.2.3 Mineralogical Determinations

Initial examination by X-Ray diffraction produced inconclusive results due to the overlapping structures of the minerals present (Appendix 7E). As such, polished thin sections prepared from 43 drill core samples were examined visually and percentages of mineral phases estimated (Appendix 8). Mineralogical examinations were completed at the University of Alberta (Barnes, 2000) and by Cosmic Ventures of Spruce Grove, Alberta (Johnston, 2000). This petrographic work indicates titanium bearing rocks vary from indurated sandstone with fresh clasts of feldspar, pyroxene, and amphibole in a carbonate matrix to poorly consolidated sand composed of clasts of highly altered mineral, rock fragments, and chert. Heavy minerals including magnetite, hematite, ilmenite and rutile tend to segregate into layers with greatest concentrations contained in the black sandstone. Titanium is present in the form of ilmenite, free rutile and grains with lamellar hematite intergrowths and alteration rims. X-ray mapping indicates the presence of some calcium titanium oxide (perovskite) and secondary leucoxene within the rock matrix (Johnston, 2000). Visually, ilmenite grains range in size from 50 to 400 microns, rutile from 50 to 250 microns and magnetite grains from 50 to 300 microns.

7.3 GEOLOGY AND RESOURCES

7.3.1 Depositional Model

Modern day and fossil marine beach placers are sources of heavy minerals including magnetite (Fe_3O_4), ilmenite ($FeTiO_3$), rutile (TiO_2), and zircon ($ZrSiO_4$). These minerals are referred to as heavy minerals as their densities (between 3.5 and 19.6 g/cc) are greater than quartz (2.6 g/cc), the main constituent of most sands.

Beach placer deposits are natural concentrations of heavy minerals formed by wave action causing differential erosion of larger, light mineral grains leaving behind a residue of heavy minerals. These deposits generally form in the upper swash zone during storms and/or as the result of the combined effects of long-shore currents and on-shore wave action. The heavy mineral sand may be further concentrated by a natural jigging action of sand on the beach and subjecting the rising light grains to erosion.

Deposits are fundamentally stratiform and consist of slightly offset, superimposed ribbons or elongate crescents of moderately well sorted heavy minerals within quartz-carbonate sands. Individual ribbons are generally 1 or 2 m thick, 10 to tens of meters wide, and hundreds to thousands of metres long parallel to the coastline (Guilbet and Park, 1986). According to Llynd (1985, p. 865):

"Approximate minimum requirements for an economic deposit of titanium minerals in the Southeastern United States are reserves of 1 million tons of TiO_2, average grade of raw ore of 1% TiO_2, and 3% to 4% heavy mineral content, and average depth of ore about 15 feet. In eastern Australia, requirements are about 3 million tons reserves of heavy minerals and average heavy mineral content of about 5%."

A summary of comparable deposits is provided in Table 7.1.

TABLE 7.1 SUMMARY OF AVAILABLE INFORMATION ON SOME TITANIUM BEARING HEAVY MINERAL DEPOSITS

Location	Tonnage (million)	Grade (TiO_2 %)	Primary Commodity(s)	Comments
Florida[1]	721	1.4	Ilmenite	Recent Placers; 3 active producers
Florida[1]	114.6	0.5 - 1.5	Rutile	Recent Placers; 2 active producers
Virginia[1]	46	7 - 19.2	Ilmenite	Nelsonite and Saprolite Deposits; 2 active producers
Virginia[1]	5.3	3	Rutile	Saprolitic Anorthosite(?); 1 active producer

[1] Peterson (1966, p. 8 - 9); all tonnages are short tons

7.3.2 Geology

The base of the Wapiti Formation is stratigraphically correlative with the Belly River Formation, which hosts the Burmis and Dunvegan paleoplacer magnetite deposits (Mellon, 1961 and Ross, 1969). The Burmis and Dunvegan magnetite deposits contain significant amounts of titanium (up to 10% TiO_2) in the form of ilmenite, titaniferous magnetite and rutile. Visual estimates of magnetite within these deposits range from 30 to 50 per cent by volume.

The PMHMO is considered a northwest-trending fossil marine beach placer. Based upon the ground magnetic survey (Fig. 6.9) the main, northwest-trending mineralized beach strand is approximately 200 to 250 m wide and is in excess of 1,400 m along trend. The higher grades and continuity of the main beach strand (ilmenite, magnetite and rutile bearing) is clearly evidenced in three NQ cores holes (PM99-01, PM99-02, PM00-05; Table 7.2). Columnar sections of the drill holes are shown in Fig. 7.1 and summary of results in Appendix 9.

Core hole PM99-03 tested the stratigraphic sequence east of the main beach strand. It demonstrated that the titanium (rutile) bearing sequence continued beyond the limits of the magnetic anomaly to the east. Holes PM99-04 and PM99-07 were located along the eastern subcrop edge. For PM99-04 the upper part of the hole was cased and mineralization observed within the recovered cuttings had not been cored; however the drill cuttings were analyzed (sample PM00-04-001, Appendix 6). It is probable that the

reported results for the interval 0.00 to 3.05 m underestimate both grade and thickness. Hole PM99-06 to the southwest intersected lower grade material over approximately 2¼ m, and likely lies along the western edge of the deposit.

TABLE 7.2 SUMMARY OF PERTINENT DRILL HOLE INFORMATION FOR THE 1999 - 2000 CORE HOLES

Drill Hole	From (m)	To (m)	Thick. (m)	Grade (%) TiO_2	Grade (%) Fe_2O_3	Comments
PM99-01	11.58	15.90	4.32	7.97	31.47	
	15.90	17.20	1.30	1.90	11.42	
PM99-02	0.91	1.62	0.71	4.34	38.31	Upper 0.91 m not cored
	1.62	4.04	2.42	-	-	Lost Core
	4.04	6.00	1.96	2.03	8.44	
PM99-03	8.53	10.75	2.22	4.24	13.90	
	10.75	13.00	2.25	2.70	16.08	
	13.00	19.00	6.00	1.11	6.65	
PM00-04	0.00	3.05	3.05	1.09	34.18	Poor recovery and lost core from 3.05 to 4.57
PM00-05	36.00	39.50	3.50	9.26	33.47	
	39.50	40.10	0.60	3.16	12.35	
	40.10	42.57	2.47	1.65	12.90	
PM00-06	11.76	14.00	2.24	0.93	4.07	
PM00-07	6.66	8.25	1.59	2.25	15.00	
	8.25	10.25	2.00	0.93	7.33	

The following generalized stratigraphic sequence was noted from drill holes:

Formation	Strat. Position	Lithology
	Uppermost	**Coal**, thin, black, crumbly, friable
	-	**Sand**, black, magnetic, predominately indurated with lesser semi-consolidated intervals
	-	**Sand**, weakly magnetic to magnetic, brown, unconsolidated to semi-consolidated; lesser amounts of black, indurated material
	-	**Sand**, limonitic, brown, unconsolidated to semi-consolidated; often with thin intervals of bleached, indurated sand
Wapiti (non-marine)	-	**Sand**, brown, unconsolidated to semi-consolidated; well-sorted, up to 25 to 30 m thick, rare intervals of bleached, indurated sand
La Biche (marine)	Lowermost	**Mudstone**, with thin interbeds of coal and sandstone

The mudstone - sandstone within the lower part of the stratigraphic sequence may represent the contact between the La Biche and Wapiti Formations. This transition from the dominantly marine conditions of the La Biche Formation to the overlying eastward thinning progradational sequence of mainly fluvial to deltaic sediments of the

Horseshoe Canyon Formation (and laterally equivalent Wapiti Formation) is well documented in central Alberta.

Correlation of the generalized chemical - stratigraphic sequence indicates that the heavy mineral bearing units are fundamentally flat-lying or posses a very shallow easterly dip (Fig. 7.1). The mineralized sand has a maximum thickness of about 10½ m (PM99-03) and occurs beneath glacial drift, unconsolidated, semi-consolidated and consolidated bedrock overburden. The bedrock overburden varies in thickness from nil along the southern and eastern flanks to maximum of 36 m (PM00-05) within the north-central portion of the occurrence. The PMHMO has a surface expression of about 1.3 square kilometers and is open to the northwest, primarily beyond the property boundaries.

7.3.3 Commodities And Potential Markets

Modern day and fossil marine beach placers are sources of heavy minerals including magnetite, ilmenite, hematite, rutile and zircon. Other possible constituents include, amongst others: anatase, garnet, gemstones, gold and platinoids. Primary constituents of economic consequence at the PMHMO are magnetite, ilmenite and rutile (Section 7.3) with insignificant amounts zircon and hematite. A summary of recent prices of these commodities is provided in Table 7.3.

TABLE 7.3 AVERAGE PRICES FOR HEAVY MINERAL PRODUCTS FOR THE YEARS 1995 TO 1999

Commodity	Approximate Price (US $)				
	1995	1996	1997	1998	1999
Bulk Rutile, f.o.b. Australian Ports[1]	600	563	530	500	485
Bulk Ilmenite, 54% TiO_2, f.o.b. Australian Ports[1]	83	87	83	77	91
Titanium Sponge Metal[2]	4.4	4.4	4.4	4.4	4.25
Rutile (Pigment Grade), f.o.b. US Plants[2]	1.01	1.09	1.05	0.98	1
Anatase (Pigment Grade) f.o.b. US Plants[3]	0.99	-	-	-	-
Magnetite[4]	88.44	-	-	-	-

[1] Gambogi, J. (2000a); prices are per tonne.
[2] Gambogi, J. (2000b); prices are per pound.
[3] Gambogi, J. (1998); prices are per pound; quotes price is for year-end 1990.
[4] Micrex Development Corporation (2000); prices are per tonne and were originally quoted in Canadian dollars, they are converted to US dollars using a conversion factor of 0.67; prices are as delivered.

Within Western Canada, the primary demand for magnetite is from the coal and potash industries which use the magnetite as a dense media separate. According to Grant and Trigg (1983, p. 2):

> "Magnetite is a preferred separating medium because it has high specific gravity and because it can be recovered from waste material by magnetic separators, and reused. Because of its high specific gravity, magnetite must be of very fine grain size to remain in suspension in a separating medium; typical commercial coal preparation magnetite concentrate contains at least 85 weight per cent grains of less than 0.045 mm (325 mesh) diameter."

Primary demand is by coal mines within Foothills from southwest to north-central Alberta. Current demand is estimated at 80,000 tonnes per year (Micrex Development Corp., 2000).

According to Gambogi (1997):

> "Titanium occurs primarily in the minerals anatase, brookite, ilmenite, leucoxene, rutile, and sphene. Of these minerals, only ilmenite, leucoxene, and rutile have significant economic importance. ... approximately 95% of titanium is consumed in the form of titanium dioxide (TiO_2), a white pigment in paints, paper, and plastics."

Detailed accounts of uses, demand and processing of ilmenite, rutile and anatase are provided by Hamilton (1993), Lynd (1985) and Gambogi (1997).

According to Duchesne (1995):

> "Although Canada is not a producer of titanium metal, its many ilmenite deposits in Manitoba, Alberta and Quebec have attracted growing interest and are currently the target of extensive exploration programs."

In 1972 Mellon and Hamilton reviewed industrial and metallic minerals of Alberta with potential for development, processing, use by local industries, and/or export and from this review both the Burmis Ilmenite-Magnetite Deposits of southwest, Alberta (Mellon, 1961; and Rose, 1969) and the titanium and zircon constituents of the Athabasca Oil Sands were considered potential candidates. A review of local mineral resources for the pulp and paper industry in Alberta was conducted by Hamilton (1993). The projected demand in Western Canada for anatase and rutile as a filler or as pigment within the pulp and paper industry for 1995 was 1,700 tonnes, with demand considered "High-Growth" (Hamilton, 1993, p. 13). Both ilmenite and rutile are considered high demand commodities on a world wide basis. Gambogi (1998, 2000a, 2000b) provides detailed information on global demand.

7.4 RESOURCE DETERMINATIONS

Estimation of potential resources at the PMHMO were, in part, based upon the classification scheme and definitions of Vallee (1999, p. 153):

> "A mineral resource consists of a deposit of concentration of a solid, inorganic, fossilized substance of potential economic interest, accessible from the surface of the earth."

Although, NBL's PMHMO is best quantified by Vallee's (1999, p. 154) description of an Indicated Mineral Resource:

> "An indicated mineral resource is the portion of a deposit whose mass (tonnes), form, limits and grade/quality are known by surveys and a broad sampling/drilling grid compared to deposit parameters. In practice, continuity is measured only in the sampling axis. Consequently, the overall estimate carries a relatively large margin of error and the local estimates (restricted blocks of estimates) an excessive margin of error."

The more conservative description of an Inferred Mineral resource was used (p. 154):

> "An inferred mineral resource is based on apparent geologic continuity in two or three dimensions of mineral concentrations of interest, supported by samples which are too very few and too widely spaced to allow delimiting a mineral-bearing zone and establishing its continuity in three dimensions. In these circumstances, the estimate must depend on reasonable projections, based on the sparse information available."

These definitions, in general, concur with those of the Committee on Reserve Definitions (CIM, 1996, p. 41):

> "Inferred Resources is the estimated quantity and grade of a deposit, or a part thereof, that is determined on the basis of limited sampling, but for which there is sufficient sampling, geological information and a reasonable understanding of the continuity and distribution of metal values to outline a deposit of potential economic merit."

Further (p. 42);

> "For an industrial mineral deposit to be classified as a resource there must be a credible market and feasible transportation system available for the deposit."

7.4.1 Sample Density, Survey Information and Topography

The PMHMO in north-central Alberta is situated within a flat-lying stratigraphic succession of sands, silts, mudstones and coals of the lower Wapiti Formation. The environment is considered of low geologic complexity with little structural disturbance. For the laterally equivalent Horseshoe Canyon Formation of central Alberta Hughes et al. (1989) based, in part, a standardized set of definitions and guidelines for the reporting of coal resources and reserves. Criteria for determining surface minable reserves of coal within this environment include (Hughes et al., 1989; pg. 10 - 13):

a) Minimum Thickness: 0.60 meters;
b) Maximum Depth: 20:1 (depth; bank cubic meters/tonne);
c) Drill Hole or Data Point Spacing*: 0 - 450 m Measured Resource
450 - 900 m Indicated Resource
900 - 2400 m Inferred Resource

* Criteria based upon the Lower Horseshoe Canyon Formation (Hughes et al., p. 5)

According to Llynd (1985; p. 864) for hard-rock ilmenite deposits:

> "If initial diamond drilling indicates an economic deposit, development drilling proceeds on a set grid pattern of 200 or 300 feet *(about 60 to 90 m)*."

Further, for heavy mineral sand deposits drilling should continue to a preferred depth of at least 30 m.

At the PMHMO seven NQ core-holes were completed within an area of approximately 1200 m by 800 m to depths of between 25 and 90 m with an approximate spacing between drill holes of 300 to 500 m.

All holes were surveyed using a differential Global Positioning System (Table 6.1). In addition, digital topographic data was obtained from AltaLis of Calgary, Alberta for use in constructing a detailed geologic model.

7.4.2 Transportation and Infrastructure

The PMHMO is well situated with respect to road and rail transportation. A bush-trail, less than 2 km long, leads to the south end of the deposit from provincial highway 813. It is about 220 km north of the City of Edmonton and about 65 km directly northeast of a spur of the CNR rail-line at Smith, Alberta.

As a very general rule of thumb, trucking and transportation costs in Alberta, amount to approximately 7¢ per tonne-km (Wedman, 2000). For example, at 100 tonne shipment for a distance of 220 km would cost approximately:

> 7¢ x 100 tonne x 220 km = $1540
> or approximately $15.40 per tonne of material.

Provincial Highway 813, which also acts as a power line corridor, continues north from the community of Calling Lake for approximately 50 km to the PMHMO and continues north to Wabasca. Limited supplies and accommodations are available at Calling Lake and Wabasca.

7.4.3 Resource Estimates

The PMHMO is defined by a ground magnetic survey and seven drill holes. Higher-grade drill intercepts correspond to a distinct, linear, magnetic anomaly that is approximately 200 to 250 m wide and more than 1,400 m along trend. Although core holes demonstrate that the deposit continues to the east and south the appropriate stratigraphic sequence is eroded and digital topographic data were used to provide limits to the deposit.

As shown in Table 7.1, a grade of 0.5 to 1.5 percent TiO_2 for a dominantly rutile mineral deposit has proven economic for recent placer deposits along the Florida coast

line. For purposes of resource estimation for the PMHMO contained herein, the following cutoffs were based upon correlatable chemical-stratigraphic intervals. Cutoffs employed are as follows:

TiO_2 (%)	Lithology	Mineralogy
>4 ± 0.10	**Sand**, magnetic, black, predominately indurated with lesser semi-consolidated intervals	predominately rutile, ilmenite, with lesser magnetite
>2 ± 0.10	**Sand**, weakly magnetic to magnetic, brown, unconsolidated to semi-consolidated; lesser amounts of black, indurated material	predominately ilmenite, rutile, with lesser magnetite
>1 ± 0.10	**Sand**, limonitic, brown, unconsolidated to semi-consolidated; often with thin intervals of bleached, indurated sand	predominately ilmenite, with lesser rutile and magnetite

In preparation of resource determinations each drill hole was composited, based in part upon the following guidelines and limitations:

a) grade cutoffs were strictly employed; average grades were determined by weighting thickness for both chemistry and mineralogy;
b) although specific gravity determinations were shown to be in slight error; the error was likely that of underestimation and therefore considered acceptable;
c) a minimum thickness of 0.60 m was used;
d) a reasonable ratio of 20:1 overburden to thickness (BCM : tonne) was used.

Similar guidelines (c and d above) are well documented for active, open-pit mining operations within the laterally equivalent Horseshoe Canyon Formation of central Alberta.

The polygonal method of resource determinations was employed to estimate resources within the laterally continuous, flat-lying, PMHMO (Fig. 7.2; Appendix 10). The polygonal method for estimating resources assumes constituent concentrations and thicknesses of material are constant over an area of influence centred upon the core hole. Modification of this method, with the use of appropriate three dimensional resource modelling software allowed for the creation of up to three separate polygons (solids) for each location. These models were based upon the chemical-stratigraphic cutoffs described above. Hence, the appropriate interval was correlated between adjacent holes, and variable thickness were allowed for each polygon (solid). Once each polygon (solid) was created, it was trimmed against topography, thereby reducing volume and providing limits to the east and south.

Tonnages were determined for the different stratigraphic units by multiplying volume by specific gravity. For each of the three different stratigraphic intervals, these were estimated as follows:

Unit	Strat. Position	Specific Gravity	TiO_2 (%)
A	Upper	2.80	>4 ± 0.10
B	Middle	2.65	>2 ± 0.10
C	Lower	2.50	>1 ± 0.10

A summary of results is provided in Table 7.4 with additional details provided in Appendix 10.

TABLE 7.4 ESTIMATED INFERRED RESOURCES OF HEAVY MINERALS FOR THE PELICAN MOUNTAINS HEAVY MINERAL SAND OCCURRENCE

Note: Total Heavy Minerals are expressed as a percentage of total rock; while the individual constituents are expressed as a percentage of total heavy minerals. The following specific gravities were utilized: Zone A - 2.8, Zone B - 2.65 and Zone C - 2.5.
Possible Zone C listed below, is for material identified in holes PM99-02, PM00-06 and 07; as it is of obvious lower grade and approaching the presumed limits of the PMHMO it can not be considered a resource without further definition.

Unit	Tonnage	TiO_2 (%)	Mineralogy (%)				
			Total Heavies	Rutile	Ilmenite	Magnetite	Hematite
Total Zone A:	4,560,000	6.76	10.9 - 15.6	21 - 24	36 - 40	14 - 16	22 - 26
Total Zone B:	3,650,000	2.35	6.8 - 10.3	17 - 19	38 - 45	12 - 18	23 - 28
Total Zone C:	5,510,000	1.14	2.9 - 3.9	25 - 28	28 - 29	16 - 20	24- 30
Totals:	13,720,000	3.33	6.4 - 9.3	21 - 24	33 - 37	14 - 18	23 - 28
Possible Zone C:	1,830,000	0.96	1.9 - 4.0	25 - 26	25 - 26	22 - 25	25 - 26

8. CONCLUSIONS AND RECOMMENDATIONS

Estimated inferred resources of the Pelican Mountains heavy mineral sand occurrence total about 13.72 mt with 3.33 per cent TiO_2. Based, in part, on a detailed ground magnetic survey the PMHMO is about 1,400 m along trend and 200 to 250 m across. Analysis from seven drill holes indicates that the main occurrence is about 6 m thick and is flanked to the east by an 11 m thick stratigraphic succession with low-magnetics but elevated concentrations of TiO_2. A short distance to the southeast a similar succession is about 2½ m thick and near the cutoff grades contained herein. The occurrence is open to the northwest, mostly beyond the property boundaries, is cutoff by grade along its western flank, and is likely eroded to the east and south. The stratigraphy

of the occurrence is flat lying and undisturbed except along its eastern and southern margins where it has been eroded, and geologic complexity is considered low. Additionally, access and infrastructure at the PMHMO is considered excellent, as it is within 2 km by bush road of Provincial Highway 813, which also acts as a powerline corridor, and is about 65 km northeast of the CNR rail-line at Smith.

Based upon the regional geological setting in conjunction with positive exploration results to date, there is potential for development of the PMHMO and discovery of additional heavy mineral sand occurrences on the Pelican Mountains Property.

Local (Western Canadian) markets for the rutile and magnetite fractions of the PMHMO are publicly documented (Section 7.3.3). Due to the inherently high transportation costs associated with industrial minerals, it is important that NBL establish a credible local market for the ilmenite fraction of the deposit and/or investigate the costs associated with shipping ilmenite concentrate to more distant markets throughout North America.

Potential errors of estimation of heavy mineral constituents by visual examination of polished sections are considered significant at lower levels of concentration (less than 1 to 12 per cent). As such, future exploration of the deposit should include:

a) processing of a small bulk sample, about 100 to 200 kg of material, to determine the concentrations of heavy minerals that may be extracted; and
b) these extracted heavy minerals should be examined with respect to chemistry and grain size to better determine mineralogy and quality.

The foregoing should be conducted prior to any future definition of the PMHMO through drilling. If the extraction of a reasonable quality product is demonstrated, future definition of the PMHMO should include:

a) expansion of the ground magnetic grid to the east and southwest to determine if additional, potentially stacked, higher-grade beach strands are present beyond the current limits of investigation;
b) variograms should be constructed around the current data set to better define the distribution of the heavy minerals;
c) larger diameter drilling with closer spacing is required to better define the extent of the main high-grade beach strand and the eastern limits of the PMHMO; and
d) given the relatively shallow depth of much of the PMHMO, future drill work should employ a top-drive or similar equipment that is capable of coring from surface.

In addition, the potential for discovery of kimberlitic or related intrusives remains favourable. Continued exploration for diamondiferous kimberlites and associated intrusives should include:

a) re-evaluation of existing airborne geophysical data with emphasis on subtle magnetic signatures; and
b) detailed till and stream sediment sampling to properly assess the source of recovered diamond indicator minerals.

Costs of the foregoing recommendations are not estimated in this report.

[redacted]

T. Faragher, B.Sc. (Geol.)

[redacted]

J. Dahrouge, P.Geol.

Edmonton, Alberta
2000 06 30

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APPENDIX 1A: STATEMENT OF EXPENDITURES
METALLIC AND INDUSTRIAL MINERAL PERMITS
9398030175-180, 9398030193, 9398030254-259, 9398080104-105
9398100053-54, 9398100120, and 9398100121

a) Personnel

J. Dahrouge, B.Sc., P.Geol.						
46.55	days		senior supervision, data review and compilation, field work, reporting, travel			
46.55	days	@	$ [redacted]			[redacted]
L. Kryska, B.Eng.						
7.50	days		project supervision			
7.50	days	@	[redacted]			[redacted]
D. Pana, Ph.D. (Geologist)						
29.85	days		data review and compilation, field work			
29.85	days	@	[redacted]			[redacted]
P. Kleespies, M.Sc. (Geologist)						
20.30	days		field work (diamond indicator sampling, trenching), preparing samples, other			
20.30	days	@	[redacted]			[redacted]
T. Faragher, B.Sc. (Geologist)						
67.10	days		field work (diamond indicator sampling, supervising drill program), logging drill core, preparing samples, reporting			
67.10	days	@	[redacted]			[redacted]
R. Hardy, M.Sc., P. Geol.						
4.83	days		compiling information			
4.83	days	@	[redacted]			[redacted]
W. McGuire, (Draftsman)						
21.40	days		drafting figures and maps			
21.40	days	@	[redacted]			[redacted]

		$ 79,266.14

b) Food and Accommodation

Accommodations and Meals	$ 10,298.58	
		$ 10,298.54

c) Transportation

Fuel	$ 1,910.36	
Truck Rentals (10,561 km @ 0.38)	$ 4,013.18	
		$ 5,923.54

d) Equipment and Instrument Rental

ATV and Trailer Rental	$ 3,348.41	
Magnetometer Rental	$ 1,947.50	
Differential GPS Rental	$ 258.94	
Laptop Computer Rental	$ 364.83	
Chainsaw Rental	$ 107.00	
Hand Held Radio Rental	$ 374.29	
		$ 6,400.97

e) Drilling

Aggressive Diamond Drilling Ltd.	$ 60,171.45	
Geleta Water Hauling	$ 8,300.00	
Freight - drill core	$ 420.06	
Lornell Consultants - Drill Permitting	$ 3,468.25	
		$ 72,359.76

f) Subcontractors

Geolink Exploration Ltd.	$ 7,039.13	
Pac Construction	$ 3,262.00	
[redacted]	[redacted]	
Terraquest Ltd. - High Resolution Aeromagnetic Survey	$ 70,956.00	
Whalen Resources Ltd.	$ 9,255.00	
		$ 91,692.13

g) Analyses

Saskatchewan Research Council	$ 7,509.38	
Acme Analytical Laboratories Ltd.	$ 183.91	
Activation Laboratories Ltd.	$ 8,837.73	
University of Alberta, [redacted]	[redacted]	
[redacted] - Cosmic Ventures	$ [redacted]	
		$ 19,937.07

h) Report

Reproduction and assembly	$ 161.90	
		$ 161.90

I) Other

Air Photos, Digital Base Maps, Maps, and Map Reproductions	$ 4,813.78	
Office and overhead	$ 450.00	
Courier and Shipping	$ 753.58	
Field Supplies	$ 905.68	
Long distance telephone	$ 498.40	
Publications and Reports	$ 287.67	
Airfare - Edmonton/Wabasca - forestry meeting	$ 712.38	
Miscellaneous Expenses	$ 393.69	
		$ 8,815.18

Total **$ 294,855.26**

I, Larry Kryska, hereby certify that costs outlined above were expended on exploration of metallic and industrial minerals permits 9398030175-180, 9398030193, 9398030254-259, 9398080104-105, 9398100053-54, 9398100120, and 9398100121.

[redacted]

Larry Kryska, B.Eng.
New Blue Ribbon Resources Ltd.

notary public

APPENDIX 1B: ALLOCATION OF EXPENDITURES
METALLIC AND INDUSTRIAL MINERAL PERMITS
9398030175-180, 9398030193, 9398030254-259, 9398080104-105
9398100053-54, 9398100120, and 9398100121

Permit Number	Permit Area (ha)	Required Expenditures ($)	Assigned Expenditures ($)	Monies to Carry Forward ($)
9398030175	9,152	45,760.00	20,480.00	
9398030176	9,139	45,695.00	37,120.00	12,800.00
9398030177	9,216	46,080.00	7,680.00	
9398030178	9,216	46,080.00		
9398030179	9,216	46,080.00	3,840.00	
9398030180	7,936	39,680.00		
9398030193	9,216	46,080.00	46,080.00	17,920.00
9398030254	9,216	46,080.00	7,680.00	
9398030255	8,960	44,800.00	20,480.00	
9398030256	8,960	44,800.00	15,360.00	
9398030257	9,216	46,080.00		
9398030258	8,960	44,800.00	15,360.00	
9398030259	9,216	46,080.00	19,200.00	
9398080104	9,216	46,080.00		
9398080105	9,216	46,080.00	5,120.00	
9398100053	8,704	43,520.00	10,240.00	
9398100054	7,680	38,400.00	25,600.00	25,600.00
9398100120	9,216	46,080.00		
9398100121	6,144	30,720.00	3,840.00	
Total	**167,795**	**$ 838,975.00**	**$ 238,080.00**	**$ 56,320.00**
			Total	**$ 294,400.00**

APPENDIX 1C: AMENDMENTS AND CANCELLATIONS
METALLIC AND INDUSTRIAL MINERAL PERMITS
9398030175-180, 9398030193, 9398030254-259, 9398080104-105
9398100053-54, 9398100120, and 9398100121

Permit Number	Land Retained	Area Retained (ha)
9398030175	75-22-W4: 1; 4-9; 23-27; 33-36	4,096
9398030176	75-23-W4: 1; 2; 11-16; 21; 23-26; 28; 29; 32; 35; 36 76-23-W4: 1; 2; 10-15; 24; 25; 36	7,424
9398030177	75-23-W4: 17; 20; 30; 31 75-24-W4: 25; 36	1,536
9398030178	none	n/a
9398030179	76-25-W4: 31-33	768
9398030180	none	n/a
9398030193	76-22-W4: 1-24; 26-35 77-22-W4: 2; 3	9,216
9398030254	74-21-W4: 28-33	1,536
9398030255	74-22-W4: 25; 26; 35; 36 75-21-W4: 4-9; 16-21	4,096
9398030256	74-23-W4: 3-10; 15; 22; 27; 34	3,072
9398030257	none	n/a
9398030258	75-20-W4: 6; 7; 30 75-21-W4: 1-3; 10-15	3,072
9398030259	76-21-W4: 26-35 76-22-W4: 25; 36 77-21-W4: 2; 3; 4	3,840
9398080104	none	n/a
9398080105	78-22-W4: 6; 17; 18; 24	1,024
9398100053	77-21-W4: 4-11	2,048
9398100054	77-22-W4: 1; 4-6; 8-17; 19-24	5,120
9398100120	none	n/a
9398100121	77-25-W4: 4-6	768
	Total	**47,616**

APPENDIX 2: STATEMENT OF QUALIFICATIONS

T. Faragher obtained a degree in geology from the University of Alberta, Edmonton in 1988. He has more than 10 years of experience in mineral exploration.

The work described in the report was under the supervision of J.R. Dahrouge who obtained degrees in geology and computing science from the University of Alberta, Edmonton in 1988 and 1994 respectively. He has more than 10 years of experience in mineral exploration. He is a member of the Canadian Institute of Mining and Metallurgy and is registered as P.Geol. with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.

APPENDIX 3: SUMMARY OF AIRBORNE GEOPHYSICAL TARGETS

Target	Location		Amplitude	Diameter	Description	Field
	Easting	Northing	(nT)	(m)		Check
T1	348000	6168300	12	250	multiple strong, sharp, isolated anomalies within northwest trending magnetic linear	Sand Grid
T2	357050	6182750	10	300	circular, broad, isolated anomaly	Pel Grid
T3	349420	6181750	6	150	circular, isolated, anomaly	Triad Grid
T4	342900	6162180	14	150	strong, sharp, circular, isolated anomaly	well head
T5	333500	6141980	6	200	strong, sharp, circular, isolated anomaly	well head
T6	346300	6149700	8	200	2 strong circular anomalies within east trending magnetic linear	Bait Grid
T7	361600	6147400	8	350	multiple strong, sharp, isolated anomalies within southwest trending magnetic linear	Bou Grid
T8	344750	6146260	4	250	small circular anomaly within westerly trending magnetic linear	Toque Grid
T9	322000	6167840	4	350	large, broad anomaly within large northwest trending magnetic linear	Snag Grid
T10	356350	6171000	4	150	small circular anomaly within southerly trending magnetic linear	Quad Grid
T11	356000	6155000	negative	1,200	large, broad, regional magnetic low within northwest trending linear basement feature	magnetic profile, no culture observed

APPENDIX 4: DIAMOND INDICATOR MINERAL SAMPLES FROM SASKATCHEWAN RESEARCH COUNCIL

Sample Number	Sample Type	Location		Pyrope Gt.		Cr. Diop.		Eclog.	Olivine	Picked	Others	Picroilmenite		Chromite		%	Others
		Easting	Northing	Def	Pos	Def	Pos	Pos	Pos	%		Def	Pos	Def	Pos	Picked	
14029	till (pit 2)	348000	6168000	0	0	0	0	0	0	100	0	0	0	0	0	25	0
14030	till (pit 1)	348150	6167700	0	0	0	0	0	0	100	0	0	0	0	0	8	0
14031	stream	348426	6167430	0	1	0	2	2	0	100	1	0	12	0	0	14	1
14033	rock	348150	6167700	0	0	0	0	0	0	100	0	0	0	0	0	5	0
14034	till	349615	6180650	0	0	0	0	0	0	100	0	0	0	0	0	15	0
14035	till	344750	6145150	0	0	0	0	0	0	100	0	0	0	0	0	50	0
14036	till	355970	6169900	1	0	0	0	0	0	100	0	0	0	0	0	20	0
14037	till	355450	6153600	1	0	0	0	0	0	100	1	0	0	0	0	75	0
14038	till	346850	6148250	0	0	0	0	0	0	100	0	0	0	0	0	80	0
14039	till	333050	6140750	0	1	0	0	0	0	100	0	0	0	0	0	10	0
14040	till	322125	6167300	0	0	0	0	0	0	100	0	0	0	0	0	11	0
10851	till	346812	6156212	0	0	0	0	0	0	100	0	0	0	0	0	16	0
10852	till	344709	6153217	0	0	0	0	0	0	100	0	0	6	0	0	16	0
10853	till	351850	6139610	0	0	0	0	0	0	100	0	0	5	0	0	10	0
10854	till	340320	6132908	0	1	0	0	0	0	100	0	0	3	0	0	6	0
10855	till	351457	6141021	1	0	0	1	0	0	100	0	0	0	0	0	7	0
10856	till	358326	6135932	0	0	0	0	0	0	100	0	0	5	0	1	60	0
10857	till	354989	6133781	0	0	0	0	0	0	100	0	0	5	0	0	25	0
10858	stream	349216	6135865	4	1	1	0	0	0	100	0	0	8	0	0	2	0
10859	stream	344835	6154125	5	0	0	0	0	0	100	1	0	5	0	0	2	0
10860	stream	345663	6162106	1	0	0	1	0	0	100	0	0	5	0	0	5	0
10861	stream	346180	6162540	0	0	0	0	0	0	100	0	0	3	0	1	10	0
10862	stream	350510	6169995	1	0	0	0	0	0	100	0	0	2	0	0	5	0
10863	till	348620	6185710	0	0	0	0	0	0	100	1	0	0	0	0	4	0
10864	beach	343550	6139700	0	0	0	1	0	0	100	1	0	0	0	0	13	0
10865	stream	357050	6173200	1	0	0	0	0	0	100	0	0	0	0	0	95	0
10866	stream	321280	6163400	0	0	0	0	0	0	100	0	0	2	0	1	20	0
10867	stream	318340	6161750	1	0	0	0	0	0	100	0	0	0	0	1	40	0
10868	stream	320440	6156600	2	0	0	0	1	0	100	0	0	0	0	0	15	0
10869	stream	324000	6149300	2	1	0	0	0	0	100	0	0	5	0	0	8	0
10870	stream	333925	6145250	0	0	0	0	0	0	100	0	0	0	0	0	18	0

Diamond indicator mineral grains microprobed at SRC (Appendix 5).

APPENDIX 5: DIAMOND INDICATOR MINERAL GRAIN MICROPROBE ANALYSIS FROM SASKATCHEWAN RESEARCH COUNCIL

Sample Number	Mineral	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	FeO	MgO	MnO	CaO	Na_2O	K_2O	Total
14031	Cr.diop	38.27	0.3083	15.39	8.04	1.50	0.25	1.3499	34.44	0.0141	0.0767	99.63
14031	Cr.diop	51.80	0.4354	6.45	0.84	2.64	14.66	0.0695	21.59	1.5412	0.0000	100.03
14031	eclogite	37.25	0.0000	21.14	0.05	36.19	2.90	0.3952	2.20	0.0154	0.0000	100.13
14031	eclogite	36.68	0.0184	20.76	0.03	37.58	1.76	0.9628	2.18	0.0381	0.0000	100.02
14031	pyrope	40.31	0.0930	15.56	10.37	8.37	15.88	0.4409	8.23	0.0069	0.0000	99.26
14031	uvarovite	35.87	0.0148	4.09	21.56	5.54	0.14	0.8992	31.43	0.0495	0.0000	98.60
10854	pyrope	42.07	0.5633	21.55	2.82	7.47	21.22	0.3215	4.73	0.0991	0.0000	100.84
10855	pyrope	42.89	0.2076	22.00	2.94	7.52	20.64	0.2996	4.79	0.0528	0.0000	101.34
10855	Cr.diop	54.74	0.0000	4.23	1.12	2.69	20.70	0.0803	12.40	0.8816	0.3608	97.20
10858	Cr.diop	53.83	0.2583	3.70	2.14	2.22	15.58	0.1197	20.62	1.6859	0.0000	100.14
10858	pyrope	41.88	0.5184	20.40	3.51	7.49	20.52	0.2842	5.04	0.1806	0.0000	99.82
10858	pyrope	41.63	0.2720	17.87	7.73	6.54	19.75	0.4553	4.95	0.0873	0.0000	99.28
10858	pyrope	42.56	0.3961	20.61	4.41	7.18	20.58	0.3315	4.85	0.0325	0.0000	100.95
10858	pyrope	42.35	0.0744	20.23	5.25	7.15	19.17	0.4497	6.28	0.0478	0.0300	101.03
10858	pyrope	40.48	0.1556	18.77	5.35	6.87	18.70	0.4533	6.38	0.0038	0.0000	97.16
10859	pyrope	42.08	0.1415	20.42	3.34	7.54	20.00	0.3521	4.95	0.0599	0.0000	98.88
10859	pyrope	42.64	0.5526	21.09	3.27	6.66	21.31	0.2884	4.91	0.0436	0.0000	100.76
10859	pyrope	42.23	0.0923	20.98	3.21	7.27	19.71	0.4046	5.08	0.0250	0.0000	99.00
10859	pyrope	42.14	0.2163	21.04	2.87	7.80	20.01	0.3950	4.70	0.0128	0.0000	99.18
10859	pyrope	41.79	0.0382	22.79	1.95	10.39	17.15	0.6975	5.96	0.0000	0.0000	100.77
10859	uvarovite	37.18	0.1388	6.93	18.47	0.26	0.27	3.0800	31.75	0.0288	0.0328	98.14
10860	pyrope	41.24	0.0918	16.61	9.37	6.95	17.75	0.3618	7.75	0.0047	0.0408	100.17
10860	Cr.diop	52.73	0.5498	5.25	1.19	2.38	14.83	0.1369	21.92	1.2154	0.0000	100.20
10862	pyrope	41.18	0.1641	18.54	6.82	8.15	17.85	0.4855	6.72	0.0000	0.0000	99.91
10863	uvarovite	37.87	0.4647	11.98	9.92	3.95	0.16	1.5758	32.61	0.0121	0.0000	98.54

		SiO_2	TiO_2	ZrO_2	Nb_2O_5	Al_2O_3	Cr_2O_3	FeO	MgO	MnO	NiO	ZnO	Total
14031	ilmenite	0.00	52.7600	0.00	0.11	0.60	1.04	31.41	14.16	0.2096	0.0793	0.04	100.42
14031	ilmenite	0.07	53.1400	0.01	0.14	0.63	0.85	31.43	13.95	0.2071	0.0544	0.00	100.48
14031	other	0.05	0.0801	0.10	0.00	26.80	34.68	21.62	14.52	0.2852	0.1575	0.03	98.32

APPENDIX 6: LITHOLGICAL LOGS FOR DRILL HOLES PM99-01 TO PM99-03 AND PM00-04 TO PM00-07

PROSPECT	Pelican Mountains	HOLE NUMBER	PM99-01		Page 1 of 4
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	87.78 m (288')	Started:	Dec 13 / 99
LLD:	4-6-77-22-W4	Inclination:	-90	Completed:	Dec 14 / 99
UTM:	347964 E 6168130 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 5800 N / 5325 E	Core Size:	NQ	DIP TEST	
Elevation:	858.4 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	6.71 m (22')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	6.71	6.71	casing		
6.71	8.90	2.19	siltstone, grey/white, very-fine grained, powdery, hard and dense, massive to faintly laminated,		
			locally rich in grey clay in matrix and thin laminations, abundant carbonaceous debris, lower		
			contact gradational		
8.90	9.33	0.43	siltstone, grey/white, very-fine grained, powdery, hard and dense, laminated with thin black		
			clay and carbonaceous layers, laminations 090 to CA to weakly contorted		
9.33	9.94	0.61	siltstone, as 6.71 - 8.90, lower contact sharp 090 to CA		
9.94	10.23	0.29	mudstone, brown, hard and compact, silty in matrix and as thin laminations 090 to CA,		
			abundant carbonaceous fragments, lower contact sharp 090 to CA		
10.23	11.30	1.07	siltstone, as 6.71 - 8.90, 2 - 5 cm thick intervals of thinly laminated siltstone and carbonaceous		
			material, laminations 090 to CA, lower contact gradational		
11.30	11.70	0.40	carbonaceous material, black, brittle, sandy, friable, limonitic, weakly magnetic, lower	trace pyrite	
			contact sharp 090 to CA		
11.70	12.43	0.73	sand, grey/black, coarse-grained, unconsolidated, friable, massive, rare carbonaceous	pyrite	14351: 11.58-12.43
			fragment, local limonite stain, moderately magnetic, small fresh pyrite crystals scattered		
			throughout, small spots black mung from weathered pyrite, lower contact sharp 090 to CA		

APPENDIX 6: CONTINUED

PROSPECT Pelican Mountains HOLE NUMBER PM99-01 Page 2 of 4

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
12.43	13.15	0.72	sand, grey/black, medium-grained, indurated, hard, strongly magnetic, faintly laminated	trace pyrite	14352: 12.43 - 13.15
			with darker opaque layers to 2 mm thick 090 to CA, small limonitic patches throughout,		
			rare fresh pyrite crystal, abundant green/black pyrite altered mung, lower contact sharp 090 to CA		
13.15	13.23	0.08	sand, rusty red, medium-grained, unconsolidated and friable, strong limonite stain, strongly	pyrite	14353: 13.15 - 14.00 14354: 14.00 - 14.87
			magnetic, fine pyrite disseminations throughout, lower contact sharp 090 to CA		
13.23	14.87	1.64	sand, as 12.43 - 13.15, lower contact sharp 090 to CA	trace pyrite	
14.87	15.90	1.03	sand, brown/black/green, medium-grained, unconsolidated and friable, massive, strong	pyrite	14355: 14.87 - 15.90
			limonite stain, weakly magnetic, fine pyrite disseminations throughout, lower contact		
			sharp 090 to CA with strong limonite stain		
15.90	16.12	0.22	sand, grey/black, medium-grained, indurated, weakly magnetic, faintly laminated 090 to CA,		14356: 15.90 - 16.12
			lower contact sharp 090 to CA with strong limonite stain		
16.12	17.20	1.08	sand, brown, medium-grained, unconsolidated, friable, massive, strong limonite stain, local		14357: 16.12 - 17.20
			maganese stain, lower contact sharp 090 to CA		
17.20	17.82	0.62	sand, white/grey, coarse-grained, indurated, hard, massive, matrix supported, calcareous		14358: 17.20 - 17.82
			cement, lower contact sharp 090 to CA		
17.82	24.05	6.23	sand, brown, coarse-grained, unconsolidated, friable, massive, local weak limonite stain, lower		14359: 17.82 - 20.73 14360: 20.73 - 22.05 14361: 22.05 - 24.05
			contact gradational		
24.05	24.66	0.61	carbonaceous material, black, brittle, weakly laminated 090 to CA, sandy, limonitic, micaceous,		14362: 24.05 - 24.66
			lower contact sharp 090 to CA		

APPENDIX 6: CONTINUED

PROSPECT Pelican Mountains HOLE NUMBER PM99-01 Page 3 of 4

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
24.66	45.00	20.34	sand, brown, medium-grained, unconsolidated, friable, massive to faintly bedded 090 to CA, rare		14363: 24.66 - 26.82 14364: 26.82 - 28.82 14365: 28.82 - 30.82 14366: 30.82 - 32.92 14367: 32.92 - 34.92 14368: 34.92 - 36.92 14369: 36.92 - 38.92 14370: 38.92 - 40.92 14371: 40.92 - 42.92 14372: 42.92 - 45.00
			carbonaceous fragment, strong limonite stain contained within 10 cm thick intervals, lower		
			contact sharp 090 to CA		
45.00	49.12	4.12	siltstone, grey/white, very fine-grained, powdery, abundant grey interstitial clay and as thin		
			laminations 090 to CA, local limonite stain along fracture planes, locally indurated and		
			calcareous, lower contact sharp 090 to CA		
49.12	55.22	6.10	mudstone, grey/black, dense and compact, massive, interstitial sand and as lenses, whispers,		
			and layers to 15 cm thick, sand grey, coarse-grained, massive, lower contact sharp 090 to CA		
55.22	58.25	3.03	mudstone, grey/brown, dense and compact, massive, silty in matrix and as thin laminations,		
			abundant carbonaceous debris, lower contact sharp 090 to CA		
58.25	58.51	0.26	sand, grey, coarse-grained, unconsolidated, massive, lower contact sharp 090 to CA		
58.51	59.42	0.91	mudstone, as 55.22 - 58.25, lower contact gradational		
59.42	59.62	0.20	carbonaceous material, black, brittle, sandy, weak limonite stain, lower contact sharp 090 to CA		
59.62	66.45	6.83	sand, grey, coarse-grained, unconsolidated, massive, salt & pepper texture, lower contact		14373: 59.62 - 63.00 14374: 63.00 - 66.45
			sharp 090 to CA		
66.45	68.43	1.98	mudstone, brown, massive, dense and compact, sandy in matrix and as thin laminations,		
			abundant carbonaceous material, lower contact gradational		
68.43	69.06	0.63	sand, as 59.62 - 66.45		

APPENDIX 6: CONTINUED

PROSPECT Pelican Mountains HOLE NUMBER PM99-01 Page 4 of 4

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
69.06	69.25	0.19	mudstone, as 66.45 - 68.43, lower contact sharp 090 to CA		
69.25	69.49	0.24	carbonaceous material, black, brittle, sandy, lower contact sharp 090 to CA		
69.49	70.42	0.93	mudstone, green, bentonitic, massive, dense and hard, sticky, lower contact gradational		
70.42	74.13	3.71	mudstone, as 66.45 - 68.43, lower contact gradational		
74.13	75.14	1.01	carbonaceous material, as 69.25 - 69.49, lower contact sharp 090 to CA		
75.14	76.16	1.02	mudstone, as 66.45 - 68.43, lower contact sharp 090 to CA		
76.16	78.64	2.48	sand, grey, medium-grained, unconsolidated, massive, muddy matrix, local fine laminations of		
			grey mud and carbonaceous layers 090 to CA, rare brown mud clump to 1 cm diameter, lower		
			contact broken		
78.64	79.15	0.51	mudstone, brown, massive, dense and compact, sandy, abundant carbonaceous debris and		
			fragments, lower contact sharp 090 to CA		
79.15	79.40	0.25	mudstone, green, bentonitic, massive, dense and hard, sticky, lower contact gradational		
79.40	84.43	5.03	mudstone, brown, massive, dense and compact, silty in matrix and thin laminations 090 to CA,		
			grey coarse-grained sand layers to 10 cm thick, abundant carbonaceous fragments, lower		
			contact gradational		
84.43	84.73	0.30	carbonaceous material, black/brown, sandy, brittle and friable, lower contact gradational		
84.73	87.32	2.59	mudstone, as 79.40 - 84.43, lower contact sharp 090 to CA		
87.32	87.78	0.46	sand, as 76.16 - 78.64		
87.78			EOH		

APPENDIX 6: CONTINUED

PROSPECT	Pelican Mountains	HOLE NUMBER	PM99-02		Page 1 of 2
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398030193	Hole Depth:	48.16 m (158')	Started:	Dec 15 / 99
LLD:	14-31-76-22-W4	Inclination:	-90	Completed:	Dec 15 / 99
UTM:	348141 E 6167677 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 5300 N / 5275 E	Core Size:	NQ	DIP TEST	
Elevation:	847.5 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	0.91 m (3')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	0.91	0.91	casing		
0.91	1.62	0.71	sand, black, hard and indurated, massive, strongly magnetic, local limonite stain, lower		14051: 0.91 - 1.62
			contact broken		
1.62	4.04	2.42	lost core		
4.04	34.58	30.54	sand, brown, medium-grained, unconsolidated, massive, local strong limonite stain,	pyrite	14052: 4.04 - 6.00 14053: 6.00 - 9.03 14054: 9.03 - 11.58 14055: 11.58 - 13.58 14056: 13.58 - 15.58 14057: 15.58 - 17.58 14058: 17.58 - 19.17 14059:19.17 - 20.35 14060: 20.35 - 21.09 14061: 21.09 - 23.77 14062: 23.77 - 25.77 14063: 25.77 - 27.77 14064: 27.77 - 29.77 14065: 29.77 - 31.77 14066: 31.77 - 34.58
			rare carbonaceous fragment, small fresh pyrite grains throughout and concentrated in		
			limonite stained intervals, lower contact sharp 090 to CA		
			6.00 - 9.03: 1.04 m lost core		
			9.03 - 11.58: 0.50 m lost core		
			19.17 - 20.35: sand as 4.04 - 34.58, strong limonite stain, abundant pyrite mineralization		
			20.35 - 21.09: sand, white, hard and indurated, limonite stained, non-magnetic		
			21.09 - 23.77: sand, as 19.17 - 20.35		

APPENDIX 6: CONTINUED

PROSPECT Pelican Mountains HOLE NUMBER PM99-02 Page 2 of 2

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
34.58	44.58	10.00	mudstone, grey, massive, hard and dense, sand in matrix and thin laminations, abundant		
			carbonaceous material, lower contact gradational		
44.58	45.06	0.48	sand, grey, coarse-grained, unconsolidated, massive, salt & pepper texture,		
			lower contact gradational		
45.06	48.16	3.10	mudstone, as 34.58 - 44.58		
48.16			EOH		

APPENDIX 6: CONTINUED

PROSPECT	Pelican Mountains	HOLE NUMBER	PM99-03		Page 1 of 2
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	48.16 m (158')	Started:	Dec 16 / 99
LLD:	6-6-77-22-W4	Inclination:	-90	Completed:	Dec 16 / 99
UTM:	348111 E 6168435 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 6000 N / 5600 E	Core Size:	NQ	DIP TEST	
Elevation:	856.7 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	4.27 m (14')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	4.27	4.27	casing		
4.27	8.00	3.73	siltstone, grey/white, very fine-grained, powdery, sandy, faintly laminated with thin grey/black		
			clay to carbonaceous layers 090 to CA, lower contact sharp 090 to CA		
8.00	8.53	0.53	carbonaceous material, black, brittle, friable, sandy, weakly limonite stained, lower contact		
			sharp 090 to CA		
8.53	13.00	4.47	sand, grey/black, coarse-grained, hard and indurated, massive to faintly laminated opaque	pyrite	
			layers 090 to CA, moderately magnetic within thin magnetite layers to 5 mm thick, locally		14067: 8.53 - 10.75
			calcareous, rare carbonaceous fragment, abundant black mung from weathered pyrite		14068: 10.75 - 13.00
			throughout interval, rare fresh pyrite grain, lower contact sharp 090 to CA		
13.00	21.55	8.55	sand, red/brown, medium-grained, unconsolidated, massive, heavy limonite stain		14069: 13.00 - 15.00
			throughout, rare fresh pyrite grain, rare carbonaceous fragment, lower contact gradational		14070: 15.00 - 17.00
			into sand containing thin layers mixed carbonaceous material and clay		14071: 17.00 - 19.00
					14072: 19.00 - 21.55

APPENDIX 6: CONTINUED

PROSPECT Pelican Mountains HOLE NUMBER PM99-03 Page 2 of 2

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
21.55	42.00	20.45	sand, brown, medium-grained, unconsolidated, massive, local weak limonite stain		14073: 21.55 - 24.00 14074: 24.00 - 26.00 14075: 26.00 - 28.00 14076: 28.00 - 30.00 14077: 30.00 - 32.00 14078: 32.00 - 34.00 14079: 34.00 - 36.00 14080: 36.00 - 38.00 14081: 38.00 - 40.00 14082: 40.00 - 42.00
			lower contact sharp 090 to CA		
			39.82 - 40.16: sand, grey, hard and indurated, massive, cement calcareous		
42.00	48.16	6.16	mudstone, grey, massive, dense and compact, sticky, silty, abundant carbonaceous debris	pyrite	
			and as thin layers, local weak limonite stain, trace fresh pyrite grains within limonite		
			stained intervals		
48.16			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	PM00 - 04		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	24.38 m (80')	Started:	Feb 3 / 00
LSD:	12-6-77-22-W4	Inclination:	-90	Completed:	Feb 3 / 00
UTM:	348091 E 6168886 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 6400 N / 5875 E	Core Size:	NQ	DIP TEST	
Elevation:	848.6 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	3.05 m (10')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	3.05	3.05	casing: shoe bit recovered fragments sand, black, medium-grained, indurated, magnetic,		PM00-04-001
			massive, opaque rich		
3.05	4.57	1.52	lost core		
4.57	5.64	1.07	sand, white/brown, coarse-grained, indurated, calcareous, massive, weak limonite stain,		PM00-04-002
			lower contact sharp 090 to CA		
5.64	9.75	4.11	sand, brown, coarse-grained, unconsolidated and friable, core broken, IR = 80%		PM00-04-003
9.75	11.05	1.30	sand, as 4.57 - 5.64		PM00-04-004
11.05	13.11	2.06	sand, red/brown, coarse-grained, massive, unconsolidated and friable, heavy limonite stain,		PM00-04-005
			local weak calcareous, lower contact sharp 090 to CA, lower contact indurated for 12 cm		
13.11	22.56	9.45	sand, brown, medium-grained, unconsolidated and friable, massive, local weak limonite		PM00-04-006 (18.00 - 20.00)
			stain, lower contact sharp 090 to CA		
22.56	22.94	0.38	sand, as 4.57 - 5.64		
22.94	24.38	1.44	sand, as 13.11 - 22.56, IR = 48%		
24.38			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	PM00 - 05		Page 1 of 2
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	50.29 m (165')	Started:	Feb 3 / 00
LSD:	5-6-77-22-W4	Inclination:	-90	Completed:	Feb 3 / 00
UTM:	347644 E 6168641 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 6400 N / 5350 E	Core Size:	NQ	DIP TEST	
Elevation:	881.9 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	12.19 m (40')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	12.19	12.19	casing		
12.19	13.72	1.53	siltstone, yellow/white, very fine-grained, sandy, weak laminations 090 to CA, frequent		
			1-3 cm diameter indurated tan clay balls, lower contact broken, IR = 73%		
13.72	20.84	7.12	mudstone, grey, dense and compact, massive, silty, frequent siltstone interlayers, rare		
			carbonaceous fragment, lower contact gradational, IR = 41%		
20.84	26.40	5.56	sand, grey, fine-grained, unconsolidated and friable, massive, silty, lower contact sharp,		
			IR = 40%		
26.40	32.12	5.72	siltstone, grey, very fine-grained, sharp laminations 090 to CA, mud rich matrix and as		
			thin interlayers, lower contact sharp 090 to CA, IR = 65%		
32.12	33.65	1.53	mudstone, brown, dense and compact, massive, silty, abundant carbonaceous fragments,		
			micaceous, lower contact gradational, IR = 98%		
33.65	36.00	2.35	mudstone, grey, dense and compact, massive, sandy, lower contact sharp 090 to CA,		
			35.43 - 35.67: concretion, tan, indurated, abundant carbonaceous fragments, limonitic		
36.00	36.11	0.11	carbonaceous material, black, powdery and friable, massive, strongly magnetic, frequent		PM00-05-001
			round quartz grains, lower contact sharp 090 to CA		

APPENDIX 6: CONTINUED

PROJECT Pelican Mountain HOLE NUMBER PM00 - 05 Page 2 of 2

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
36.11	36.60	0.49	sand, grey/brown, coarse-grained, unconsolidated and friable, massive, strongly magnetic,		PM00-05-002
			strong limonite stain at lower contact, lower contact sharp 090 to CA		
36.60	39.50	2.90	sand, grey/black, medium-grained, indurated, opaque rich, massive to faint laminations 090 to CA		PM00-05-003 (36.60-38.25) PM00-05-004 (38.25-39.50)
			locally calcareous, local weak limonite stain, vertical root casts, strongly magnetic, lower contact		
			sharp 090 to CA, IR = 86%		
39.50	40.10	0.60	sand, red/brown, medium-grained, weakly indurated, strongly magnetic, massive, weak limonite		PM00-05-005
			stain, lower contact sharp 090 to CA		
40.10	40.78	0.68	sand, grey/white, coarse-grained, indurated, massive, weakly magnetic, lower contact sharp		PM00-05-006
			090 to CA		
40.78	42.57	1.79	sand, red/brown, medium-grained, unconsolidated and friable, massive, heavy limonite stain,		PM00-05-007
			lower contact gradational		
42.57	50.29	7.72	sand, brown, medium to coarse-grained, unconsolidated and friable, massive, local weak		PM00-05-008 (47.00-48.00)
			limonite stain		
50.29			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	PM00 - 06		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	25.91 m (85')	Started:	Feb 4 / 00
LSD:	4-6-77-22-W4	Inclination:	-90	Completed:	Feb 4 / 00
UTM:	347749 E 6168001 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 5800 N / 5075 E	Core Size:	NQ	DIP TEST	
Elevation:	861.9 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	3.66 m (12')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	3.66	3.66	casing		
3.66	5.94	2.28	sand, brown, medium-grained, unconsolidated and friable, massive, local strong limonite		
			stain, lower contact gradational, IR = 58%		
5.94	11.76	5.82	mudstone, brown/grey, dense, massive, silty, abundant carbonaceous debris, micaceous,		
			local weak limonite stain, 5-12 cm intervals siltstone weakly laminated 090 to CA, thin sand		
			interlayers, lower contact sharp 090 to CA		
11.76	16.24	4.48	sand, brown, coarse-grained, unconsolidated and friable, massive, local weak limonite		PM00-06-001 (11.76-14.00) PM00-06-002 (14.00-16.24)
			stain, lower contact sharp 090 to CA		
16.24	17.45	1.21	sand, white/grey, coarse-grained, indurated, calcareous, massive to faint opaque banding,		PM00-06-003
			locally weakly magnetic, local weak limonite stain, lower contact sharp 090 to CA		
17.45	19.50	2.05	sand, brown, coarse-grained, unconsolidated and friable, massive to faint opaque banding,		PM00-06-004
			local strong limonite stain, lower contact sharp 090 to CA		
19.50	20.40	0.90	sand, as 16.24-17.45, lower contact sharp 090 to CA		PM00-06-005
20.40	25.91	5.51	sand, brown, coarse-grained, unconsolidated and friable, massive, micaceous, local		PM00-06-006 (20.40-22.40)
			weak limonite stain		
25.91			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	PM00 - 07		Page 1 of 2
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398100054	Hole Depth:	25.91 m (85')	Started:	Feb 4 / 00
LSD:	3-6-77-22-W4	Inclination:	-90	Completed:	Feb 4 / 00
UTM:	348408 E 6168006 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Sand: L 5450 N / 5650 E	Core Size:	NQ	DIP TEST	
Elevation:	852.6 m	Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	3.66 m (12')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	3.66	3.66	casing		
3.66	6.66	3.00	till, brown, compact clay with small round granite pebbles, IR = 8%		
6.66	8.25	1.59	sand, brown/white, medium-grained, unconsolidated and friable, massive to weak opaque		PM00-07-001
			layering, opaque layers weakly magnetic, lower contact gradational		
			4.65-4.95: sand, white/brown, medium-grained, indurated, calcareous, magnetic		
			7.65-7.82: as 4.65-4.95		
8.25	15.30	7.05	sand, brown, medium-grained, unconsolidated and friable, massive, upper portion weak		PM00-07-002 (8.25-10.25) PM00-07-003 (10.25-12.25) PM00-07-004 (12.25-14.25) PM00-07-005 (14.25-15.30)
			limonite stain, lower portion silty with limonite stain silty layers 090 to CA, lower contact		
			gradational		
15.30	17.92	2.62	sand, brown, medium to coarse-grained, unconsolidated and friable, massive, silty,		PM00-07-006 (15.30-17.34)
			strong limonite stain, lower contact gradational		
			16.10-16.29: sand, brick red, indurated, micaceous, strong limonite stain, trace fine	pyrite	
			disseminated pyrite		
			17.06-17.28: as 16.10-16.29		

APPENDIX 6: CONTINUED

PROJECT Pelican Mountain HOLE NUMBER PM00 - 07 Page 2 of 2

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
17.92	22.18	4.26	sand, grey/brown, medium-grained, unconsolidated and friable, massive, lower contact		PM00-07-007 (17.92-20.00)
			gradational		
22.18	25.91	3.73	sand, red/brown, medium-grained, unconsolidated and friable, massive, weak limonite stain,		PM00-07-008 (22.18-24.50)
			local weak maganese stain		
25.91			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	BA00-01		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398030176	Hole Depth:	65.53 m (215')	Started:	Feb 5 / 00
LSD:	10-1-75-23-W4	Inclination:	-90	Completed:	Feb 7 / 00
UTM:	346462 E 6149573 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Bait: L 5200 E / 5325 N	Core Size:	NQ	DIP TEST	
Elevation:		Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	9.14 m (30')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	9.14	9.14	casing		
9.14	10.67	1.53	till, brown, dense clay with abundant small round quartzite cobbles, core and lower contact		
			broken, IR = 15%		
10.67	17.50	6.83	till, brown, thin plates clay tightly compressed and contorted, weakly laminated, rare small		
			round quartzite pebble, core and lower contact broken, IR = 25%		
17.50	19.81	2.31	gravel, grey, very coarse-grained, poorly sorted round to sub-angular grains, upper interval		
			rounded quartzite and granite cobbles, lower interval fine-grained black sand, lower		
			contact broken, IR = 35%		
19.81	27.43	7.62	cobbles, large round granite and quartzite cobbles, few cobbles weakly magnetic, no		
			matrix apparent, IR = 15%		
27.43	57.91	30.48	no core recovered		
57.91	65.53	7.62	mudstone, grey, dense and compact, silty, micaceous, massive, rare small carbonaceous		
			fragment, local weak limonite stain, IR = 100%		
65.53			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	BA00-02		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398030176	Hole Depth:	38.10 m (125')	Started:	Feb 7 / 00
LSD:	11-1-75-23-W4	Inclination:	-90	Completed:	Feb 7 / 00
UTM:	345904 E 6149565 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Bait: L 4700 E / 5330 N	Core Size:	NQ	DIP TEST	
Elevation:		Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	30.48 m (100')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	30.48	30.48	casing		
30.48	36.35	5.87	till, grey, clay, dense and compact, sandy, abundant round to sub-angular granite cobbles		
			and pebbles, lower contact sharp, IR = 85%		
36.35	38.10	1.75	mudstone, grey, dense and compact, massive, silty, abundant carbonaceous fragments,		
			IR = 95%		
38.10			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	BU00-01		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398030254	Hole Depth:	32.00 m (105')	Started:	Feb 8 / 00
LSD:	9-32-74-21-W4	Inclination:	-90	Completed:	Feb 11 / 00
UTM:	361713 E 6147507 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Bou: L 6100 N / 5340 E	Core Size:	NQ	DIP TEST	
Elevation:		Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	18.90 m (62')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	18.90	18.90	casing		
18.90	19.36	0.46	till, brown, clay, friable, very sandy, lower interval granite cobble, lower contact gradational		
19.36	32.00	12.64	sand, grey/black, very coarse-grained, unconsolidated, massive, well sorted round quartz		14101 (22.00-24.00)
			grains with silty matrix, strong magnetic component, rare large granite cobble, IR = 55%		
32.00			EOH		

APPENDIX 6: CONTINUED

PROJECT	Pelican Mountain	HOLE NUMBER	BU00-02		Page 1 of 1
LOCATION		DESCRIPTION		DATE	
Permit Number:	9398030254	Hole Depth:	45.11 m (148')	Started:	Feb 12 / 00
LSD:	7-32-74-21-W4	Inclination:	-90	Completed:	Feb 12 / 00
UTM:	361147 E 6146979 N	Azimuth:	n/a	Logged By:	Todd Faragher
Grid:	Bou: L 5375 N / 5180 E	Core Size:	NQ	DIP TEST	
Elevation:		Floor Height:		Type:	
		Stick-up:		Depth:	
CONTRACTOR	Aggressive	Casing:	27.43 m (90')	Angle:	

From (m)	To (m)	Interval (m)	Description	Mineralization	Sample Number
0.00	27.43	27.43	casing		
27.43	38.10	10.67	till, brown, clay, dense and compact, abundant large granite cobbles, 0.45 m indurated		
			mudstone interval, calcareous, abundant carbonaceous material, interval and lower		
			contact broken, IR = 20%		
38.10	45.11	7.01	sand, grey/brown, fine to medium-grained, unconsolidated and friable, silty, micaceous,		
			weak contorted silty laminations, IR = 85%		
45.11			EOH		

APPENDIX 7A: ANALYTICAL REPORT FOR ANALYSIS BY WHOLE ROCK FUSION ICP AND BY INAA FOR TRACE ELEMENTS FROM ACTIVATION LABORATORIES LTD.

Activation Laboratories Ltd. Work Order No. 19069 Report No. 18940B

SAMPLE	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	V
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
14051	25.48	4.42	38.31	0.371	4.53	5.49	0.84	0.30	4.338	0.37	14.94	99.39	480	170	18	23	757	-1	638
14052	65.65	11.14	8.44	0.084	3.26	3.92	2.02	0.93	2.027	0.14	2.77	100.38	747	359	23	26	299	-1	297
14053	75.40	12.00	2.95	0.032	1.20	2.96	2.45	1.22	0.405	0.08	1.75	100.45	963	436	13	11	86	-1	89
14054	77.08	11.78	2.20	0.019	0.86	2.49	2.37	1.40	0.299	0.07	1.79	100.36	921	400	12	7	79	-1	65
14055	75.57	12.51	2.36	0.019	0.94	2.58	2.43	1.48	0.317	0.10	2.16	100.47	1116	436	12	8	79	1	64
14056	71.72	14.07	2.92	0.042	1.35	3.31	2.64	1.39	0.484	0.11	2.42	100.45	1268	530	15	12	89	1	90
14057	70.79	13.91	3.86	0.054	1.35	3.24	2.62	1.47	0.446	0.12	2.60	100.48	1254	521	15	11	82	1	94
14058	71.33	13.87	3.44	0.041	1.35	3.31	2.65	1.43	0.461	0.12	2.27	100.27	1343	546	16	12	84	1	96
14059	70.71	13.89	3.78	0.048	1.39	3.35	2.60	1.47	0.489	0.13	2.55	100.40	1454	559	15	13	87	1	98
14060	38.59	7.92	10.93	0.551	1.33	18.43	1.49	0.82	0.294	0.17	18.73	99.25	776	360	14	8	53	1	81
14061	69.23	13.71	5.19	0.057	1.26	3.13	2.60	1.47	0.439	0.13	3.11	100.32	1364	529	16	12	86	-1	99
14062	71.28	14.17	3.51	0.036	1.06	3.00	2.70	1.52	0.395	0.12	2.52	100.32	1298	529	13	9	78	1	84
14063	68.02	13.61	7.04	0.065	1.00	2.74	2.58	1.48	0.381	0.14	3.36	100.42	1203	488	13	9	82	1	79
14064	70.43	14.37	3.28	0.025	1.08	2.61	2.54	1.58	0.434	0.11	3.12	99.57	1368	499	14	9	101	1	92
14065	70.35	14.37	3.59	0.029	1.13	2.49	2.47	1.72	0.468	0.12	3.52	100.25	1627	526	16	10	125	1	99
14066	70.44	14.51	3.32	0.023	1.16	2.45	2.46	1.65	0.574	0.14	3.60	100.32	1671	547	16	11	150	-1	106
14067	46.53	9.12	13.90	0.430	5.31	9.96	1.29	0.60	4.236	0.26	7.51	99.15	648	331	39	44	739	1	572
14068	47.54	7.16	16.08	0.444	8.07	8.71	0.84	0.42	2.698	0.22	7.42	99.59	300	253	34	41	455	1	391
14069	67.01	10.46	7.48	0.072	4.24	3.68	1.97	0.94	1.080	0.13	3.35	100.41	611	363	20	23	158	-1	165
14070	69.76	11.23	6.04	0.059	3.10	3.54	2.18	1.07	0.951	0.13	2.59	100.64	752	387	19	19	159	-1	148
14071	69.73	10.78	6.44	0.076	2.77	3.53	2.03	1.05	1.292	0.14	2.42	100.26	839	379	21	21	234	-1	174
14072	70.41	11.44	6.73	0.105	1.45	2.46	2.07	1.28	0.423	0.10	3.99	100.46	1084	410	13	9	79	1	81
14073	70.31	14.00	3.41	0.039	1.67	3.37	2.60	1.44	0.528	0.12	2.70	100.18	1286	545	15	13	83	-1	95
14074	70.70	13.91	3.55	0.037	1.65	3.25	2.61	1.43	0.456	0.12	2.57	100.27	1222	531	14	11	77	-1	96
14075	69.71	13.68	3.95	0.044	1.62	3.29	2.58	1.42	0.486	0.12	2.88	99.76	1291	545	15	13	85	1	99
14076	69.39	13.77	4.42	0.052	1.71	3.48	2.56	1.36	0.502	0.14	2.88	100.26	1312	548	16	13	90	-1	101
14077	70.68	14.02	3.86	0.049	1.44	3.35	2.64	1.46	0.439	0.11	2.93	100.98	1319	561	15	11	77	-1	94
14078	68.43	13.62	6.30	0.072	1.21	3.23	2.55	1.45	0.389	0.13	3.30	100.67	1161	516	13	9	75	-1	86
14079	71.18	14.22	3.15	0.034	1.18	2.93	2.58	1.57	0.396	0.09	2.75	100.09	1181	516	12	8	79	-1	77
14080	68.52	13.99	5.35	0.058	1.26	2.75	2.39	1.53	0.443	0.11	3.70	100.10	1350	516	15	10	102	-1	92
14081	67.08	13.77	5.97	0.061	1.34	2.94	2.28	1.56	0.527	0.16	4.76	100.43	1574	531	14	10	152	-1	100
14082	62.42	13.05	4.96	0.072	1.25	6.39	2.03	2.03	0.564	0.41	7.24	100.41	1365	524	20	12	139	1	118
14351	42.07	9.29	21.56	0.257	2.19	3.93	0.70	0.96	12.520	0.31	6.36	100.14	2120	489	44	52	9026	1	1260
14352	13.42	2.80	38.99	0.433	3.12	11.48	0.31	0.16	9.055	0.35	19.17	99.30	691	155	24	26	1603	1	1090
14353	16.59	2.80	45.57	0.447	4.35	5.71	0.30	0.15	8.118	0.38	15.18	99.59	350	110	23	26	1482	1	996
14354	22.89	3.48	39.91	0.416	5.58	5.19	0.28	0.24	6.283	0.24	14.27	98.77	390	140	25	29	1108	-1	760
14355	56.76	8.50	15.64	0.146	4.80	3.49	1.28	0.99	4.760	0.20	3.60	100.17	519	278	25	31	839	-1	579
14356	41.66	7.05	28.92	0.268	1.86	3.73	1.27	0.96	0.932	0.32	13.28	100.25	657	274	15	14	149	-1	247
14357	65.31	11.07	7.85	0.127	2.87	3.41	2.12	1.09	2.100	0.15	2.83	98.93	848	396	18	21	405	1	274

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Adrienne I. Rittau, B.Sc., C.Chem
ICP Technical Manager

Negative values indicate less than the detection limit
LOI values less than 0.01% represent a Gain on Ignition

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order No. 19069 Report No. 18940B

SAMPLE	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	V	
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
14358	43.70	7.55	7.21	0.528	1.19	16.33	1.59	0.80	0.256	0.15	17.64	98.95	699	356	13	7	58	-1	72	
14359	75.62	11.90	2.87	0.035	1.00	2.77	2.42	1.38	0.376	0.08	1.95	100.41	991	445	13	9	67	-1	79	
14360	76.88	11.65	2.23	0.020	0.89	2.40	2.34	1.40	0.306	0.06	1.87	100.06	980	401	13	6	62	1	60	
14361	75.68	12.19	2.57	0.024	1.03	2.54	2.38	1.44	0.338	0.08	2.17	100.44	999	416	13	7	67	1	66	
14362	58.05	13.54	8.50	0.047	3.07	2.66	1.02	0.82	0.399	0.11	10.36	98.57	654	289	19	9	115	2	109	
14363	70.88	14.03	3.54	0.044	1.45	3.26	2.65	1.49	0.513	0.14	2.49	100.49	1282	547	17	11	90	-1	94	
14364	70.86	13.89	3.48	0.040	1.40	3.16	2.63	1.43	0.443	0.11	2.49	99.93	1237	538	15	11	70	1	93	
14365	68.83	13.72	3.53	0.046	1.45	3.27	2.62	1.47	0.492	0.10	2.60	98.11	1278	546	16	13	74	1	100	
14366	69.81	13.94	4.06	0.053	1.48	3.28	2.66	1.58	0.497	0.12	2.64	100.13	1356	569	16	13	67	1	105	
14367	70.30	14.05	3.90	0.042	1.29	3.12	2.68	1.52	0.426	0.11	2.66	100.09	1393	578	15	11	74	-1	92	
14368	69.87	13.99	4.53	0.040	1.13	2.90	2.65	1.60	0.402	0.11	2.79	100.02	1302	549	15	8	82	1	82	
14369	68.90	13.96	5.01	0.040	1.11	2.75	2.54	1.63	0.396	0.11	3.23	99.67	1343	530	16	9	79	1	86	
14370	69.65	14.39	3.77	0.029	1.26	2.63	2.49	1.80	0.439	0.12	3.48	100.07	1490	538	16	9	91	1	94	
14371	70.09	14.35	3.43	0.027	1.24	2.58	2.47	1.81	0.485	0.12	3.89	100.49	1770	584	16	10	121	1	99	
14372	69.96	14.42	3.23	0.025	1.28	2.60	2.46	1.73	0.599	0.16	3.93	100.39	1895	624	16	10	155	1	111	
14373	77.96	10.83	2.27	0.022	0.78	1.29	1.77	1.58	0.388	0.10	3.33	100.31	879	271	14	8	106	1	79	
14374	79.61	10.38	1.80	0.015	0.73	1.27	1.82	1.64	0.302	0.09	2.57	100.22	925	279	12	5	61	1	66	
SY3 CERT	59.63	11.75	6.49	0.32	2.67	8.26	4.12	4.23	0.15	0.54	1.16		450	302	718	6.8	320	20	50	syenite
SY-3/B	59.56	11.60	6.44	0.328	2.62	8.23	3.96	4.21	0.141	0.56			469	306	722	9	326	21	47	
MRG-1 CERT	39.09	8.46	17.93	0.17	13.55	14.71	0.74	0.18	3.77	0.08	1.56		61	266	14	55	108	0.61	526	gabbro
MRG-1/B	38.89	8.46	17.89	0.173	13.58	14.66	0.65	0.16	3.773	0.06			53	274	12	55	82	1	526	
W-2 CERT	52.44	15.35	10.74	0.160	6.37	10.87	2.14	0.627	1.06	0.131	0.60		182	194	24	35	94	1.3	262	diabase
W-2/B	52.22	15.27	10.72	0.168	6.36	10.82	2.18	0.61	1.032	0.13			187	194	21	36	73	-1	264	
DNC-1 CERT	47.04	18.30	9.93	0.150	10.05	11.27	1.87	0.229	0.48	0.085	0.60		114	145	18	31	41	1	148	dolerite
DNC-1/B	47.26	18.63	9.95	0.148	10.20	11.35	1.92	0.26	0.466	0.07			115	144	18	31	32	-1	144	
BIR-1 CERT	47.77	15.35	11.26	0.170	9.68	13.24	1.75	0.027	0.96	0.05			7.7	108	16	44	22	0.58	313	basalt
BIR-1/D	47.76	15.62	11.36	0.174	9.61	13.23	1.79	0.02	0.940	0.03			10	108	15	44	11	-1	313	
G-2 CERT	69.08	15.35	2.66	0.030	0.75	1.96	4.08	4.48	0.48	0.14			1882	478	11	3.5	309	2.5	36	granite
G-2/B	70.79	15.39	2.65	0.033	0.75	1.95	3.97	4.57	0.471	0.15			1883	483	11	3	322	2	36	
NBS 1633a CE	48.78	27.02	13.44	0.020	0.75	1.55	0.23	2.26	1.330	0.38			1500	830	86	40	310	12	297	fly ash
NBS/D	48.97	27.01	13.36	0.023	0.75	1.57	0.24	2.11	1.343	0.38			1304	814	87	39	157	12	281	
STM-1 CERT	59.64	18.39	5.22	0.220	0.101	1.09	8.94	4.28	0.135	0.158			560	700	46	0.61	1210	9.6	(8.7	syenite
STM-1/B	59.63	18.12	5.19	0.223	0.10	1.13	9.04	3.95	0.127	0.17			631	701	45	-1	1219	8	-5	
IF-G CERT	41.20	0.15	55.85	0.042	1.89	1.55	0.032	0.012	0.014	0.063			1.5	3	9	0.38	2.4	4.7	4	iron form sample
IF-G/B	40.79	0.14	56.13	0.038	1.92	1.54	0.09	0.03	0.010	0.07			7	4	10	-1	-1	4	20	
AC-E CERT	70.35	14.70	2.53	0.058	0.03	0.34	6.54	4.49	0.110	0.014			55	3	184	0.11	780	12	3	granite
AC-E/B	71.20	14.62	2.49	0.058	0.02	0.34	6.71	4.53	0.100	0.02			66	2	179	1	777	11	-5	

Note: Certificate data underlined are recommended values; other values are proposed except those preceded by a "(" which are information values.

Negative values indicate less than the detection limit
LOI values less than 0.01% represent a Gain on Ignition

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order No. 19563 Report No. 19332

SAMPLE	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	V	
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
PMOO-04-001	29.06	5.24	34.18	0.310	5.34	5.67	0.82	0.32	1.089	0.33	16.51	98.88	287	194	22	25	100	-1	253	
PMOO-04-002	41.16	7.43	7.44	0.151	1.04	21.88	1.44	0.82	0.322	0.13	18.15	99.96	751	383	13	10	55	-1	92	
PMOO-05-003	15.82	3.18	37.80	0.411	3.38	10.59	0.37	0.18	8.981	0.40	17.15	98.26	664	173	21	28	1646	1	1060	
PMOO-05-004	25.86	4.53	34.72	0.378	4.65	5.43	0.60	0.29	9.315	0.31	12.70	98.79	386	161	25	32	1394	-1	1067	
PMOO-05-006	37.97	6.75	24.94	0.253	2.39	6.85	1.27	0.64	0.421	0.29	16.83	98.60	582	272	12	11	66	-1	137	
PMOO-06-003	37.34	7.17	6.56	0.414	1.75	23.57	1.43	0.63	0.545	0.14	19.93	99.48	577	362	16	14	102	-1	100	
PMOO-06-005	40.49	7.76	5.67	0.438	1.56	22.77	1.57	0.74	0.331	0.14	18.70	100.16	514	360	15	12	70	-1	76	
PMOO-07-001	40.62	7.55	15.00	0.585	4.58	12.72	1.07	0.52	2.248	0.21	13.91	99.01	347	275	32	38	278	1	335	
BU OO-01-001	90.69	3.79	1.68	0.025	0.29	0.47	0.52	0.80	0.133	0.12	2.18	100.69	401	84	8	3	66	-1	30	
BU OO-01-001 (PULP DUP)	90.94	3.82	1.65	0.025	0.30	0.47	0.52	0.82	0.133	0.05	2.20	100.93	406	85	9	4	60	-1	34	
SY3 CERT	59.62	11.75	6.49	0.32	2.67	8.26	4.12	4.23	0.15	0.54	1.16		450	302	718	6.8	320	20	50	syenite
SY-3/B3	59.61	11.70	6.55	0.328	2.58	8.15	4.20	4.24	0.139	0.56			485	310	718	9	339	20	48	
MRG-1 CERT	39.09	8.46	17.93	0.17	13.55	14.71	0.74	0.18	3.77	0.08	1.56		61	266	14	55	108	0.61	526	gabbro
MRG-1/E	38.72	8.50	17.85	0.169	13.63	14.49	0.74	0.19	3.783	0.06			55	274	13	56	86	-1	527	
W-2 CERT	52.44	15.35	10.74	0.160	6.37	10.87	2.14	0.627	1.06	0.131	0.60		182	194	24	35	94	1.3	262	diabase
W-2/39	52.10	15.35	10.90	0.168	6.37	10.89	2.21	0.62	1.055	0.13			188	195	22	37	85	-1	275	
BIR-1 CERT	47.77	15.35	11.26	0.170	9.68	13.24	1.75	0.027	0.96	0.05			7.7	108	16	44	22	0.58	313	basalt
BIR-1/B26	47.45	15.65	11.35	0.171	9.59	13.10	1.80	0.02	0.942	0.03			8	108	16	44	21	-1	326	
G-2 CERT	69.08	15.35	2.66	0.030	0.75	1.96	4.08	4.48	0.48	0.14			1882	478	11	3.5	309	2.5	36	granite
G-2/E	69.10	15.15	2.71	0.033	0.72	1.90	4.08	4.63	0.473	0.15			1843	476	10	4	333	2	36	
NBS 1633a CERT	48.78	27.02	13.44	0.020	0.75	1.55	0.23	2.26	1.330	0.38			1500	830	86	40	310	12	297	fly ash
NBS 1633A/B28	48.78	27.16	13.47	0.022	0.74	1.54	0.23	2.27	1.370	0.34			1334	810	86	40	187	12	282	
STM-1 CERT	59.64	18.39	5.22	0.220	0.101	1.09	8.94	4.28	0.135	0.158			560	700	46	0.61	1210	9.6	(8.7	syenite
STM-1/E	59.46	18.13	5.19	0.224	0.09	1.11	8.80	4.36	0.126	0.17			644	702	45	-1	1214	9	-5	
IF-G CERT	41.20	0.15	55.85	0.042	1.89	1.55	0.032	0.012	0.014	0.063			1.5	3	9	0.38	2.4	4.7	4	iron form sample
IF-G/166	40.51	0.17	53.13	0.037	1.87	1.50	0.03	0.03	0.004	0.07			7	5	10	-1	14	4	16	
FK-N	65.02	18.61	0.09	0.005	0.01	0.11	2.58	12.81	0.02	0.02			200	39	0.3	0.05	13	1	3	K-feldspar
FK-N/B17	65.12	18.26	0.18	0.002	0.02	0.10	2.40	12.80	0.004	-0.01			220	37	2	-1	14	-1	-5	

Note: Certificate data underlined are recommended values; other values are proposed except those preceded by a "(" which are information values.
Note: The Fe2O3 for the standards is Total Fe2O3 and has not been adjusted for the FeO.

[redacted]
Adrienne I. Rittau, B.Sc., C.Chem
ICP Technical Manager

Negative values indicate less than the detection limit
LOI values less than -0.01% represent a Gain on Ignition

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order No. 19564 Report No. 19363

SAMPLE	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	V	
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
PMOO-05-001	32.74	5.98	9.34	0.168	1.32	4.19	0.32	0.44	7.075	0.06	37.03	98.66	2512	591	27	32	1396	-1	631	
PMOO-05-002	43.45	9.42	21.10	0.255	2.27	3.91	1.20	0.70	10.529	0.29	5.75	98.88	2327	450	40	52	1884	2	1060	
PMOO-05-005	57.10	8.95	12.35	0.114	5.21	3.71	1.39	0.71	3.161	0.19	7.10	99.98	460	270	25	30	602	-1	409	
PMOO-06-001	68.43	12.61	4.07	0.066	1.80	3.77	2.09	1.11	0.930	0.13	4.15	99.15	1848	617	21	25	141	-1	159	
PMOO-06-002	68.69	13.00	3.88	0.066	1.84	4.22	2.32	1.11	0.780	0.11	3.40	99.41	1250	564	21	20	127	-1	144	
PMOO-07-002	65.52	10.39	7.33	0.090	3.65	3.88	1.80	0.92	0.930	0.14	5.47	100.11	597	364	22	23	147	-1	176	
MRG-1 CERT	39.09	8.46	17.93	0.17	13.55	14.71	0.74	0.18	3.77	0.08	1.56		61	266	14	55	108	0.61	526	gabbro
MRG-1/F	39.03	8.55	17.87	0.170	13.53	14.60	0.76	0.17	3.773	0.07			55	275	14	55	86	-1	530	
W-2 CERT	52.44	15.35	10.74	0.160	6.37	10.87	2.14	0.627	1.06	0.131	0.60		182	194	24	35	94	1.3	262	diabase
W-2/39	52.19	15.37	10.73	0.168	6.25	10.83	2.10	0.57	1.037	0.13			183	196	22	36	85	-1	268	
DNC-1 CERT	47.04	18.30	9.93	0.150	10.05	11.27	1.87	0.229	0.48	0.085	0.60		114	145	18	31	41	1	148	dolerite
DNC-1/F	47.28	18.83	9.94	0.148	10.05	11.29	1.85	0.22	0.464	0.07			112	144	18	31	44	-1	146	
BIR-1 CERT	47.77	15.35	11.26	0.170	9.68	13.24	1.75	0.027	0.96	0.05			7.7	108	16	44	22	0.58	313	basalt
BIR-1/B26	47.72	15.74	11.24	0.172	9.55	13.18	1.73	0.07	0.932	0.03			9	108	16	44	22	-1	316	
G-2 CERT	69.08	15.35	2.66	0.030	0.75	1.96	4.08	4.48	0.48	0.14			1882	478	11	3.5	309	2.5	36	granite
G-2/E	69.00	15.48	2.68	0.033	0.71	1.90	4.03	4.56	0.468	0.14			1845	471	10	4	332	2	37	
NBS 1633a CERT	48.78	27.02	13.44	0.020	0.75	1.55	0.23	2.26	1.330	0.38			1500	830	86	40	310	12	297	fly ash
NBS 1633a/B6	48.69	27.16	13.35	0.023	0.72	1.53	0.24	2.04	1.343	0.38			1330	811	86	38	204	12	280	
STM-1 CERT	59.64	18.39	5.22	0.220	0.101	1.09	8.94	4.28	0.135	0.158			560	700	46	0.61	1210	9.6	(8.7	syenite
STM-1/E	59.85	18.33	5.13	0.224	0.09	1.10	8.98	4.24	0.127	0.17			630	707	44	-1	1217	8	-5	
IF-G CERT	41.20	0.15	55.85	0.042	1.89	1.55	0.032	0.012	0.014	0.063			1.5	3	9	0.38	2.4	4.7	4	iron form sample
IF-G/B2	40.65	0.15	54.80	0.037	1.84	1.51	0.03	0.01	0.004	0.08			7	4	9	-1	14	4	12	
FK-N	65.02	18.61	0.09	0.005	0.01	0.11	2.58	12.81	0.02	0.02			200	39	0.3	0.05	13	1	3	K-feldspar
FK-N/B17	65.27	18.67	0.12	0.002	0.01	0.10	2.34	12.47	0.004	-0.01			218	38	-1	-1	11	-1	-5	

Note: Certificate data underlined are recommended values; other values are proposed except those preceded by a "(" which are information values.
Note: The Fe2O3 for the standards is Total Fe2O3 and has not been adjusted for the FeO.

[redacted]

Adrienne I. Rittau, B.Sc., C.Chem
ICP Technical Manager

Negative values indicate less than the detection limit
LOI values less than -0.01% represent a Gain on Ignition

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order No. 19564 Report No. 19363B

SAMPLE	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	V	
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
PMOO-04-003	72.36	11.66	3.58	0.042	1.51	3.29	2.20	1.30	0.545	0.10	3.19	99.77	938	431	14	12	89	-1	108	
PMOO-04-004	38.59	7.12	7.27	0.247	1.13	23.35	1.31	0.76	0.429	0.13	19.89	100.23	670	353	18	11	61	-1	85	
PMOO-04-005	66.13	11.16	8.51	0.228	1.03	2.97	1.96	1.31	0.386	0.13	5.38	99.20	931	384	15	10	93	1	104	
PMOO-04-006	69.68	13.84	3.47	0.040	1.47	3.34	2.49	1.54	0.483	0.13	3.91	100.39	940	475	14	12	81	1	98	
PMOO-04-006/R	69.62	13.92	3.49	0.040	1.49	3.35	2.51	1.49	0.484	0.12	3.91	100.41	954	479	15	12	101	-1	95	
PMOO-05-007	63.12	10.79	8.32	0.093	2.84	3.78	1.87	1.03	2.116	0.14	4.73	98.82	699	379	23	26	422	-1	294	
PM OO-05-008	76.62	11.06	2.17	0.023	0.94	2.22	2.05	1.56	0.290	0.09	3.19	100.21	962	372	11	6	72	-1	57	
14358	43.29	7.51	6.84	0.579	1.14	19.37	1.46	0.84	0.263	0.14	18.04	99.45	677	359	12	7	51	-1	69	
PMOO-06-004	65.52	11.87	6.46	0.091	2.90	4.35	2.13	0.98	1.072	0.15	4.01	99.53	700	428	23	25	169	-1	183	
PMOO-06-006	72.05	12.63	3.37	0.049	1.14	3.37	2.49	1.45	0.429	0.09	3.37	100.42	1069	490	13	11	85	-1	85	
PMOO-07-003	70.63	11.26	4.07	0.055	2.14	3.27	2.11	1.21	0.670	0.09	3.69	99.19	871	420	16	16	100	-1	124	
PMOO-07-004	73.62	11.29	3.59	0.049	1.48	2.65	2.07	1.34	0.498	0.11	3.80	100.48	950	405	14	11	91	-1	105	
PMOO-07-005	70.86	11.25	4.32	0.053	1.87	3.10	2.04	1.27	0.915	0.13	3.69	99.48	922	398	16	15	157	-1	133	
PMOO-07-006	60.07	10.10	11.47	0.271	1.11	4.80	1.61	1.15	0.342	0.14	8.39	99.46	967	339	18	10	72	1	101	
PMOO-07-007	68.51	13.55	3.90	0.057	1.50	3.30	2.36	1.39	0.513	0.13	4.01	99.23	1145	506	16	13	91	1	104	
PMOO-07-008	69.30	13.51	4.18	0.058	1.44	3.26	2.42	1.45	0.499	0.14	3.72	99.98	1276	523	15	13	91	-1	102	
PMOO-07-008(PULP DUP)	68.77	13.51	4.10	0.051	1.42	3.15	2.40	1.44	0.489	0.13	3.70	99.16	1226	517	15	13	93	1	101	
SY3 CERT	59.62	11.75	6.49	0.32	2.67	8.26	4.12	4.23	0.15	0.54	1.16		450	302	718	6.8	320	20	50	syenite
SY-3/C	59.75	11.78	6.53	0.332	2.65	8.22	4.07	4.24	0.143	0.56			458	306	719	9	340	20	50	
MRG-1 CERT	39.09	8.46	17.93	0.17	13.55	14.71	0.74	0.18	3.77	0.08	1.56		61	266	14	55	108	0.61	526	gabbro
MRG-1/B	38.82	8.44	17.82	0.170	13.56	14.53	0.77	0.18	3.705	0.07			52	270	13	55	99	-1	526	
DNC-1 CERT	47.04	18.30	9.93	0.150	10.05	11.27	1.87	0.229	0.48	0.085	0.60		114	145	18	31	41	1	148	dolerite
DNC-1/B	47.04	18.87	9.93	0.148	10.26	11.29	1.87	0.23	0.464	0.07			111	144	17	32	41	-1	147	
BIR-1 CERT	47.77	15.35	11.26	0.170	9.68	13.24	1.75	0.027	0.96	0.05			7.7	108	16	44	22	0.58	313	basalt
BIR-1/A	48.18	15.46	11.13	0.175	9.80	13.36	1.76	0.03	0.936	0.03			8	109	15	45	19	-1	320	
G-2 CERT	69.08	15.35	2.66	0.030	0.75	1.96	4.08	4.48	0.48	0.14			1882	478	11	3.5	309	2.5	36	granite
G-2/A	69.03	15.04	2.68	0.035	0.72	1.92	4.11	4.47	0.471	0.13			1847	474	10	3	315	2	35	
NBS 1633a CERT	48.78	27.02	13.44	0.020	0.75	1.55	0.23	2.26	1.330	0.38			1500	830	86	40	310	12	297	fly ash
NBS 1633a/A	48.83	27.06	13.49	0.025	0.73	1.56	0.23	2.34	1.357	0.38			1342	812	87	39	191	12	283	
STM-1 CERT	59.64	18.39	5.22	0.220	0.101	1.09	8.94	4.28	0.135	0.158			560	700	46	0.61	1210	9.6	(8.7	syenite
STM-1/A	59.69	18.16	5.36	0.230	0.09	1.13	8.90	4.18	0.127	0.17			619	702	44	-1	1214	8	-5	
IF-G CERT	41.20	0.15	55.85	0.042	1.89	1.55	0.032	0.012	0.014	0.063			1.5	3	9	0.38	2.4	4.7	4	iron form sample
IF-G/B	40.71	0.20	54.80	0.040	1.87	1.55	0.05	-0.01	0.003	0.08			8	6	9	-1	13	4	13	
FK-N CERT	65.02	18.61	0.09	0.005	0.01	0.11	2.58	12.81	0.02	0.02			200	39	0.3	0.05	13	1	3	K-feldspar
FK-N/A	65.08	18.35	0.11	0.005	-0.01	0.10	2.27	12.62	0.003	0.02			212	37	-1	-1	13	1	-5	

Note: Certificate data underlined are recommended values; other values are proposed except those preceded by a "(" which are information values.
Note: The Fe2O3 for the standards is Total Fe2O3 and has not been adjusted for the FeO.

[redacted]

Adrienne I. Rittau, B.Sc., C.Chem
ICP Technical Manager

Negative values indicate less than the detection limit
LOI values less than -0.01% represent a Gain on Ignition

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order: 19069 Report: 18940 Page: 1 of 4

Sample description	AU PPB	AG PPM	AS PPM	BA PPM	BR PPM	CA %	CO PPM	CR PPM	CS PPM	FE %	HF PPM	HG PPM	IR PPB	MO PPM	NA %	NI PPM	RB PPM	SB PPM	SC PPM	SE PPM	SN %	SR %	TA PPM	TH PPM
14051	6	<5	3	300	<1	4	57	674	<2	29.1	17	<1	<5	<5	0.56	<50	<30	0.5	25.9	<5	<0.05	<0.1	1	7.3
14052	<5	<5	7	610	<1	2	26	348	<2	6.41	8	<1	<5	<5	1.61	<50	52	0.7	28.7	<5	<0.05	<0.1	<1	6.0
14053	<5	<5	6	740	<1	2	22	58	<2	2.32	2	<1	<5	<5	1.97	<50	<30	0.5	11.5	<5	<0.05	<0.1	<1	2.5
14054	<5	<5	6	670	<1	3	9	30	<2	1.65	2	<1	<5	<5	1.80	<50	47	0.5	7.2	<5	<0.05	<0.1	<1	3.0
14055	<5	<5	13	930	<1	<1	8	26	<2	1.84	2	<1	<5	<5	1.92	<50	47	0.5	7.5	<5	<0.05	<0.1	<1	3.7
14056	<5	<5	4	880	<1	2	11	55	3	2.34	2	<1	<5	<5	2.09	<50	68	0.4	12.7	<5	<0.05	<0.1	<1	3.6
14057	<5	<5	6	890	<1	2	12	51	<2	2.86	2	<1	<5	<5	1.98	<50	<30	0.4	11.8	<5	<0.05	<0.1	<1	3.4
14058	<5	<5	6	1100	<1	<1	11	55	<2	2.53	2	<1	<5	<5	2.03	<50	52	0.6	12.4	<5	<0.05	<0.1	<1	3.2
14059	<5	<5	6	1300	<1	2	21	68	<2	3.15	2	<1	<5	<5	2.27	<50	60	0.6	15.5	<5	<0.05	<0.1	<1	3.7
14060	7	<5	3	580	<1	14	10	39	<2	8.55	1	<1	<5	<5	1.21	<50	36	0.4	9.2	<5	<0.05	<0.1	<1	2.2
14061	<5	<5	6	1200	<1	2	13	51	<2	3.94	2	<1	<5	<5	2.03	<50	49	0.4	12.6	<5	<0.05	<0.1	<1	3.1
14062	<5	<5	4	1000	<1	2	12	44	<2	2.71	2	<1	<5	<5	2.15	<50	35	0.6	10.1	<5	<0.05	0.1	<1	3.5
14063	<5	<5	3	910	<1	1	9	44	<2	5.19	2	<1	<5	<5	1.98	<50	<30	0.4	9.4	<5	<0.05	<0.1	<1	3.0
14064	<5	<5	5	1000	<1	2	10	48	2	2.54	2	<1	<5	<5	1.95	<50	66	0.4	9.5	<5	<0.05	<0.1	1	3.5
14065	<5	<5	5	1300	<1	2	12	59	<2	2.67	3	<1	<5	<5	1.89	<50	90	0.7	10.3	<5	<0.05	0.1	<1	3.9
14066	<5	<5	8	1300	<1	<1	12	83	2	2.54	4	<1	<5	<5	1.91	<50	46	0.5	12.6	<5	<0.05	0.1	<1	4.4
14067	<5	<5	7	450	<1	6	44	734	<2	10.2	15	<1	<5	<5	0.96	<50	36	1.0	51.1	<5	<0.05	<0.1	<1	10.3
14068	<5	<5	3	240	<1	5	42	480	<2	11.6	8	<1	<5	<5	0.67	<50	<30	0.7	44.3	<5	<0.05	<0.1	<1	8.8
14069	<5	<5	5	410	<1	2	21	182	<2	5.55	3	<1	<5	<5	1.48	<50	31	0.6	24.8	<5	<0.05	<0.1	<1	4.5
14070	<5	<5	4	580	<1	3	19	158	2	4.54	4	<1	<5	<5	1.70	<50	<30	0.7	21.1	<5	<0.05	<0.1	<1	4.2
14071	<5	<5	6	600	<1	2	30	209	<2	4.66	5	<1	<5	<5	1.53	<50	33	0.7	22.9	<5	<0.05	<0.1	1	4.6
14072	<5	<5	18	800	<1	1	14	47	<2	5.52	2	<1	<5	<5	1.56	<50	44	0.6	9.8	<5	<0.05	<0.1	<1	3.7
14073	<5	<5	4	1000	<1	2	10	65	<2	2.56	2	<1	<5	<5	2.09	<50	33	0.4	14.0	<5	<0.05	<0.1	1	3.3
14074	<5	<5	5	1000	<1	2	11	52	<2	2.72	2	<1	<5	<5	2.09	<50	32	0.6	13.0	<5	<0.05	<0.1	<1	3.3
14075	<5	<5	5	1000	<1	2	11	59	<2	2.97	2	<1	<5	<5	2.02	<50	59	0.5	13.2	<5	<0.05	<0.1	<1	3.3
14076	<5	<5	4	980	<1	3	11	55	<2	3.02	2	<1	<5	<5	1.86	<50	36	0.4	13.3	<5	<0.05	<0.1	<1	2.8
14077	<5	<5	5	1100	<1	3	11	48	<2	2.95	2	<1	<5	<5	2.10	<50	59	0.6	12.3	<5	<0.05	<0.1	<1	3.1
14078	5	<5	5	920	<1	2	12	41	2	4.63	2	<1	<5	<5	2.03	<50	<30	0.5	10.3	<5	<0.05	<0.1	1	2.8
14079	<5	<5	5	980	<1	3	11	45	2	2.64	2	<1	<5	<5	2.03	<50	46	0.5	9.2	<5	<0.05	<0.1	<1	3.4
14080	<5	<5	4	1100	<1	2	13	52	3	4.01	2	<1	<5	<5	1.81	<50	40	0.6	10.1	<5	<0.05	<0.1	<1	3.5
14081	<5	<5	11	1300	<1	2	12	78	2	4.46	4	<1	<5	<5	1.78	<50	47	0.7	11.0	<5	<0.05	<0.1	<1	4.4
14082	5	<5	21	1200	<1	4	11	91	2	3.72	3	<1	<5	<5	1.70	<50	60	0.6	12.5	<5	<0.05	<0.1	<1	4.3
14351	<5	<5	15	1600	<1	1	52	1520	<2	13.6	35	<1	<5	<5	0.68	<50	<30	5.2	53.0	<5	<0.05	<0.1	4	15.5
14352	<5	<5	3	440	<1	8	59	1060	<2	27.9	32	<1	<5	<5	0.23	<50	37	0.4	28.7	<5	<0.05	<0.1	3	8.8
14353	<5	<5	2	290	<1	3	59	1010	<2	30.3	26	<1	<5	<5	0.20	<50	<30	0.5	27.9	<5	<0.05	<0.1	2	10.2
14354	<5	<5	2	280	<1	3	52	808	<2	27.5	19	<1	<5	<5	0.29	<50	<30	0.5	30.1	<5	<0.05	<0.1	2	8.9
14355	<5	<5	4	390	<1	2	37	655	<2	11.1	16	<1	<5	<5	1.03	<50	30	0.6	32.9	<5	<0.05	<0.1	<1	8.7
14356	<5	<5	3	510	<1	2	34	153	<2	21.6	3	<1	<5	<5	1.06	<50	<30	0.4	14.4	<5	<0.05	<0.1	<1	3.2
14357	<5	<5	3	580	<1	2	27	347	<2	6.04	8	<1	<5	<5	1.66	<50	40	0.6	24.6	<5	<0.05	<0.1	1	5.7
14358	<5	<5	3	530	<1	14	11	34	<2	5.45	1	<1	<5	<5	1.20	<50	<30	0.3	8.1	<5	<0.05	<0.1	<1	1.7
14359	<5	<5	4	830	<1	2	13	45	<2	2.14	1	<1	<5	<5	1.84	<50	48	0.4	9.4	<5	<0.05	<0.1	<1	2.9
14360	<5	<5	4	790	<1	2	9	37	<2	1.86	2	<1	<5	<5	1.95	<50	57	0.7	8.0	<5	<0.05	<0.1	<1	3.4
14361	<5	<5	8	760	<1	2	10	38	<2	2.09	2	<1	<5	<5	1.92	<50	48	0.6	8.4	<5	<0.05	<0.1	<1	3.0
14362	5	<5	70	570	<1	2	25	50	<2	7.80	3	<1	<5	<5	0.92	<50	49	1.5	11.1	<5	<0.05	<0.1	<1	8.3
14363	<5	<5	6	1000	<1	2	10	57	<2	2.59	2	<1	<5	<5	2.02	119	55	0.5	13.0	<5	<0.05	<0.1	1	3.4

APPENDIX 7A: CONTINUED

Sample description	AU PPB	AG PPM	AS PPM	BA PPM	BR PPM	CA %	CO PPM	CR PPM	CS PPM	FE %	HF PPM	HG PPM	IR PPB	MO PPM	NA %	NI PPM	RB PPM	SB PPM	SC PPM	SE PPM	SN %	SR %	TA PPM	TH PPM
14364	<5	<5	4	930	<1	2	10	52	<2	2.61	2	<1	<5	<5	2.02	<50	58	0.6	11.9	<5	<0.05	<0.1	<1	3.4
14365	<5	<5	4	910	<1	2	10	54	<2	2.69	2	<1	<5	<5	1.88	<50	<30	0.4	12.6	<5	<0.05	<0.1	<1	2.8
14366	<5	<5	5	1000	<1	2	11	53	2	2.75	2	<1	<5	<5	1.88	<50	<30	0.5	12.8	<5	<0.05	<0.1	<1	3.2
14367	<5	<5	5	1100	<1	<1	10	45	<2	2.76	2	<1	<5	<5	1.96	<50	<30	0.5	11.3	<5	<0.05	<0.1	1	2.8
14368	<5	<5	6	940	<1	2	9	42	2	3.28	2	<1	<5	<5	1.98	<50	<30	0.5	9.3	<5	<0.05	<0.1	<1	3.2
14369	<5	<5	5	1000	<1	2	13	44	2	3.62	2	<1	<5	<5	1.86	<50	44	0.5	9.0	<5	<0.05	<0.1	<1	3.2
14370	<5	<5	5	1100	<1	<1	9	43	2	2.51	2	<1	<5	<5	1.75	<50	48	0.6	9.2	<5	<0.05	<0.1	<1	3.8
14371	<5	<5	6	1400	<1	1	12	61	<2	2.48	3	<1	<5	<5	1.88	<50	38	0.6	10.3	<5	<0.05	<0.1	2	4.3
14372	<5	<5	8	1500	<1	1	12	84	<2	2.32	4	<1	<5	<5	1.84	<50	52	0.7	12.0	<5	<0.05	<0.1	<1	4.3
14373	<5	<5	14	720	<1	<1	10	66	<2	1.71	2	<1	<5	<5	1.34	<50	53	0.5	7.9	<5	<0.05	<0.1	<1	3.0
14374	<5	<5	13	870	<1	<1	9	49	<2	1.57	2	<1	<5	<5	1.55	132	54	0.6	7.2	<5	<0.05	<0.1	<1	2.8

APPENDIX 7A: CONTINUED

Sample description	U PPM	W PPM	ZN PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	TB PPM	YB PPM	LU PPM	Mass g
14051	1.4	<4	198	41	61	20	4.1	1.0	<0.5	2.2	0.34	28.31
14052	<0.5	20	164	37	56	20	4.8	1.3	<0.5	2.2	0.32	27.38
14053	<0.5	<4	<50	16	28	10	2.8	0.9	<0.5	1.3	0.19	21.90
14054	1.0	<4	<50	15	24	10	2.3	0.7	<0.5	1.2	0.16	26.16
14055	1.1	<4	51	16	27	15	2.4	0.8	<0.5	1.1	0.17	26.26
14056	1.5	<4	<50	17	29	12	2.8	0.9	<0.5	1.4	0.21	27.92
14057	1.6	<4	<50	16	27	7	2.7	0.9	<0.5	1.6	0.20	25.91
14058	<0.5	<4	<50	16	29	<5	2.9	0.8	<0.5	1.5	0.21	24.51
14059	1.5	<4	<50	19	35	15	3.4	1.1	<0.5	1.7	0.23	22.51
14060	1.4	<4	<50	11	19	7	2.0	0.7	<0.5	1.4	0.20	27.38
14061	1.0	<4	<50	16	28	7	2.8	0.9	<0.5	1.5	0.21	26.00
14062	1.0	<4	<50	16	28	8	2.5	0.9	<0.5	1.4	0.18	24.62
14063	1.4	<4	<50	15	24	10	2.3	0.8	<0.5	1.3	0.18	25.91
14064	1.3	<4	<50	17	29	9	2.5	0.8	<0.5	1.4	0.19	25.07
14065	1.3	<4	<50	17	29	10	2.8	0.9	<0.5	1.5	0.22	23.49
14066	1.2	<4	86	20	33	14	3.2	0.9	<0.5	1.5	0.22	23.62
14067	2.6	<4	334	67	114	37	8.4	1.9	0.9	4.1	0.58	25.94
14068	1.6	<4	261	51	86	29	6.9	1.4	1.0	3.1	0.44	25.42
14069	1.2	<4	125	28	48	16	4.3	1.1	<0.5	2.0	0.31	23.64
14070	1.1	<4	83	25	43	17	3.9	1.0	<0.5	1.9	0.27	25.04
14071	<0.5	<4	123	28	46	18	4.1	1.1	0.7	1.9	0.28	28.15
14072	1.1	<4	<50	17	29	10	2.7	0.8	<0.5	1.3	0.21	26.27
14073	<0.5	<4	<50	18	30	11	3.0	0.9	<0.5	1.5	0.21	28.45
14074	1.1	<4	93	16	29	11	2.9	0.9	<0.5	1.5	0.20	24.89
14075	0.9	<4	88	17	28	13	3.0	1.0	<0.5	1.5	0.20	24.52
14076	0.9	<4	<50	16	29	11	2.9	0.9	<0.5	1.3	0.20	28.59
14077	1.4	<4	<50	17	27	10	2.8	0.9	<0.5	1.4	0.21	25.23
14078	1.8	<4	<50	15	25	8	2.4	0.8	<0.5	1.3	0.20	27.98
14079	1.3	<4	<50	15	27	10	2.5	0.8	<0.5	1.4	0.17	23.95
14080	1.5	<4	67	16	27	13	2.6	0.8	<0.5	1.4	0.22	25.90
14081	1.0	<4	<50	18	30	13	2.9	0.9	<0.5	1.4	0.20	23.73
14082	2.0	<4	61	19	34	19	3.3	1.0	<0.5	1.9	0.25	24.96
14351	2.9	<4	389	94	145	41	8.2	1.6	<0.5	4.5	0.69	30.98
14352	2.5	<4	352	56	75	22	4.2	0.8	<0.5	2.8	0.49	34.08
14353	2.0	<4	289	59	84	23	4.3	0.9	<0.5	2.6	0.44	37.98
14354	2.0	<4	239	55	76	21	4.3	0.9	<0.5	2.5	0.41	38.96
14355	2.2	<4	258	51	83	26	5.6	1.3	<0.5	2.8	0.46	25.39
14356	1.3	<4	94	19	28	11	2.5	0.7	<0.5	1.4	0.20	26.85
14357	1.5	<4	166	35	58	18	4.4	1.2	0.5	2.0	0.30	26.81
14358	0.7	<4	<50	11	19	7	1.9	0.6	<0.5	1.2	0.18	26.36
14359	0.8	<4	<50	15	26	9	2.5	0.8	<0.5	1.3	0.19	25.25
14360	1.0	<4	66	16	27	11	2.7	0.8	<0.5	1.1	0.19	23.05
14361	1.4	<4	<50	17	31	10	2.8	0.9	<0.5	1.4	0.20	24.72
14362	2.3	<4	81	25	45	17	4.2	1.1	<0.5	2.3	0.33	22.39
14363	1.3	<4	55	17	29	11	3.0	0.9	<0.5	1.4	0.20	25.74

APPENDIX 7A: CONTINUED

Sample description	U PPM	W PPM	ZN PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	TB PPM	YB PPM	LU PPM	Mass g
14364	1.3	<4	<50	15	28	11	2.8	0.9	<0.5	1.4	0.20	26.16
14365	1.0	<4	<50	16	26	9	2.8	0.9	<0.5	1.5	0.21	30.33
14366	1.6	<4	<50	16	28	12	2.8	0.9	<0.5	1.4	0.20	27.65
14367	0.9	<4	<50	15	26	9	2.7	0.9	<0.5	1.4	0.20	27.69
14368	1.1	<4	<50	15	24	5	2.4	0.8	<0.5	1.1	0.18	27.45
14369	1.5	<4	72	16	29	11	2.6	0.9	<0.5	1.4	0.22	25.24
14370	1.1	<4	72	16	27	9	2.4	0.8	<0.5	1.3	0.19	28.67
14371	1.1	<4	77	18	30	13	2.9	0.9	<0.5	1.4	0.22	23.75
14372	1.9	<4	<50	20	34	11	3.2	0.9	<0.5	1.5	0.21	26.03
14373	1.1	<4	<50	17	32	12	2.8	0.8	<0.5	1.3	0.19	26.02
14374	<0.5	<4	<50	17	34	16	2.8	0.9	<0.5	1.2	0.16	23.31

APPENDIX 7A: CONTINUED

Activation Laboratories Ltd. Work Order: 19329 Report: 19187 Page: 1 of 2

Sample description	AU PPB	AG PPM	AS PPM	BA PPM	BR PPM	CA %	CO PPM	CR PPM	CS PPM	FE %	HF PPM	HG PPM	IR PPB	MO PPM	NA %	NI PPM	RB PPM	SB PPM	SC PPM	SE PPM	SN %	SR %	TA PPM	TH PPM
14101	<5	<5	10	250	2	<1	21	25	<2	1.42	2	<1	<5	<5	0.40	<50	<30	0.6	3.6	<5	<0.05	<0.1	<1	2.6
14101(PULP DUP)	<5	<5	10	270	2	<1	21	24	<2	1.40	2	<1	<5	<5	0.40	<50	<30	0.6	3.6	<5	<0.05	<0.1	<1	2.6

Activation Laboratories Ltd. Work Order: 19329 Report: 19187 Page: 2 of 2

Sample description	U PPM	W PPM	ZN PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	TB PPM	YB PPM	LU PPM	Mass g
14101	0.9	12	61	11	21	7	1.8	0.5	<0.5	0.8	0.11	27.25
14101(PULP DUP)	1.0	12	51	11	22	9	1.7	0.5	<0.5	0.8	0.12	27.90

Activation Laboratories Ltd. Work Order No. 19329 Report No. 19187B

SAMPLE	SiO2 %	Al2O3 %	Fe2O3 %	MnO %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	LOI %	TOTAL %	Ba ppm	Sr ppm	Y ppm	Sc ppm	Zr ppm	Be ppm	V ppm	
14101	90.55	3.82	1.81	0.024	0.31	0.44	0.50	0.79	0.135	0.05	1.95	100.38	393	82	8	4	65	-1	33	
14101(PULP DUP)	90.69	3.77	1.79	0.024	0.30	0.43	0.49	0.80	0.131	0.05	2.02	100.51	391	81	8	3	56	-1	31	
SY3 CERT	59.62	11.75	6.49	0.32	2.67	8.26	4.12	4.23	0.15	0.54	1.16		450	302	718	6.8	320	20	50	syenite
SY-3/125	59.79	11.76	6.12	0.332	2.60	8.29	4.18	4.22	0.138	0.52			493	310	713	9	335	20	51	
MRG-1 CERT	39.09	8.46	17.93	0.17	13.55	14.71	0.74	0.18	3.77	0.08	1.56		61	266	14	55	108	0.61	526	gabbro
MRG-1/161	38.49	8.45	17.82	0.170	13.61	14.55	0.69	0.21	3.796	0.07			54	269	13	55	99	-1	523	
W-2 CERT	52.44	15.35	10.74	0.160	6.37	10.87	2.14	0.627	1.06	0.131	0.60		182	194	24	35	94	1.3	262	diabase
W-2/B8	51.95	15.06	10.77	0.166	6.32	10.85	2.08	0.59	1.016	0.13			186	190	21	36	78	-1	262	
DNC-1 CERT	47.04	18.30	9.93	0.150	10.05	11.27	1.87	0.229	0.48	0.085	0.60		114	145	18	31	41	1	148	dolerite
DNC-1/29	46.57	18.41	10.03	0.148	10.15	11.28	1.83	0.25	0.465	0.08			111	140	17	32	42	-1	145	
BIR-1 CERT	47.77	15.35	11.26	0.170	9.68	13.24	1.75	0.027	0.96	0.05			7.7	108	16	44	22	0.58	313	basalt
BIR-1/24	47.71	15.75	11.35	0.172	9.61	13.19	1.77	0.02	0.933	0.03			8	108	16	45	19	-1	314	
G-2 CERT	69.08	15.35	2.66	0.030	0.75	1.96	4.08	4.48	0.48	0.14			1882	478	11	3.5	309	2.5	36	granite
G-2/8	70.03	15.07	2.67	0.033	0.72	1.94	4.00	4.41	0.464	0.14			1836	471	10	4	323	2	38	
NBS 1633a CERT	48.78	27.02	13.44	0.020	0.75	1.55	0.23	2.26	1.330	0.38			1500	830	86	40	310	12	297	fly ash
NBS/34	48.63	27.40	13.56	0.024	0.72	1.54	0.22	2.29	1.357	0.39			1372	828	86	40	223	12	282	
STM-1 CERT	59.64	18.39	5.22	0.220	0.101	1.09	8.94	4.28	0.135	0.158			560	700	46	0.61	1210	9.6	(8.7	syenite
STM-1/103	60.47	18.44	5.29	0.223	0.09	1.13	9.01	4.29	0.124	0.17			659	714	43	1	1211	8	-5	
IF-G CERT	41.20	0.15	55.85	0.042	1.89	1.55	0.032	0.012	0.014	0.063			1.5	3	9	0.38	2.4	4.7	4	iron form sample
IF-G/B38	40.61	0.23	55.30	0.038	1.88	1.54	0.02	0.04	0.007	0.07			7	5	10	-1	9	4	18	
AC-E CERT	70.35	14.70	2.53	0.058	0.03	0.34	6.54	4.49	0.110	0.014			55	3	184	0.11	780	12	3	granite
AC-E/179	71.21	14.70	2.53	0.057	0.03	0.35	6.58	4.46	0.099	0.02			62	2	176	-1	760	11	-5	

Note: Certificate data underlined are recommended values; other values are proposed except those preceded by a "(" which are information values.

APPENDIX 7B: ANALYTICAL REPORT FOR ANALYSIS BY WHOLE ROCK ICP FROM ACME LABORATORIES LTD.

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

WHOLE ROCK ICP ANALYSIS

Dahrough Geological Consulting File # 9902951
18 - 10509 - 81 Ave, Edmonton AB T6E 1T7 Submitted by: Peter Kleespies

	SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sr ppm	Zr ppm	Y ppm	Nb ppm	Sc ppm	LOI %	C/TOT %	S/TOT %	SUM %
Pd - HM	14026	20.41	3.88	42.17	4.44	5.27	.56	.16	4.75	.27	.41	.089	244	49	143	682	22	<10	11	17.3	5.11	.02	99.86
Pd HM	14027	24.95	4.38	38.71	5.31	5.16	.64	.37	3.24	.28	.36	.066	274	41	162	305	21	<10	12	16.3	4.75	.01	99.87
	RE 14027	25.29	4.42	38.37	5.37	5.25	.66	.28	3.19	.30	.37	.065	272	70	164	407	22	<10	12	16.2	4.89	<.01	99.88
Pd TRACE	14028	63.56	14.19	4.14	2.11	1.33	1.47	1.48	.70	.09	.03	.023	771	72	231	105	21	<10	6	10.7	1.29	.07	99.96
	STANDARD SO-15/CSB	48.40	13.07	7.48	7.37	5.93	2.46	2.14	1.68	2.74	1.39	1.086	1974	80	405	800	23	<10	6	5.9	2.55	5.18	100.04

.200 GRAM SAMPLES ARE FUSED WITH 1.5 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3. OTHER METALS ARE SUM AS OXIDES.
TOTAL C & S BY LECO (NOT INCLUDED IN THE SUM).
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 18 1999 DATE REPORT MAILED: Aug 25/99 SIGNED BY [redacted] D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data___ FA ____

ACME ANALYTICAL LABORATORIES LTD. (ISO 9002 Accredited Co.) 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

Dahrough Geological Consulting File # 9902951 (a)

18 - 10509 - 81 Ave, Edmonton AB T6E 1T7 Submitted by: Peter Kleespies

SAMPLE#	Bi ppm	Co ppm	Cs ppm	Ga ppm	Hf ppm	Nb ppm	Rb ppm	Sn ppm	Sr ppm	Ta ppm	Th ppm	Tl ppm	U ppm	V ppm	W ppm	Zr ppm	Y ppm	La ppm	Ce ppm	Pr ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm
14026	.1	53.6	.3	14.1	19.3	26.29	4.91	2.9	124.8	3.4	8.9	<.1	1.9	617	2.3	784.4	19.6	44.5	76.7	8.34	29.4	5.5	1.04	5.09	.80	2.97	.79	2.25	.36	2.23	.43
14027	.1	52.4	.3	12.2	9.1	37.27	6.28	2.7	150.6	24.9	9.5	<.1	1.5	501	2.3	368.3	20.3	47.9	83.6	9.51	33.2	6.5	1.15	5.85	.89	3.18	.84	2.21	.34	2.10	.38
RE 14027	.1	52.8	.3	12.1	12.0	36.30	6.34	2.4	154.2	24.5	7.8	<.1	1.6	507	2.3	481.5	20.5	41.8	74.7	8.29	29.1	6.0	1.05	5.31	.83	3.12	.84	2.23	.34	2.18	.39

REE - LiBO2 FUSION, ICP/MS FINISHED.
- SAMPLE TYPE: ROCK
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 18 1999 DATE REPORT MAILED: Aug 31/99 SIGNED BY [redacted]. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data _ FA ___

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEM PRECIOUS METALS ANALYSIS

Dahrough Geological Consulting File # 9902951
18 - 10509 - 81 Ave, Edmonton AB T6E 1T7 Submitted by: Peter Kleespies

SAMPLE#	Au** ppb	Pt** ppb	Pd** ppb
14026	<1	<1	4
14027	3	3	2
RE 14027	3	1	2

30 GRAM SAMPLE FIRE ASSAY AND ANALYSIS BY ULTRA/ICP.
- SAMPLE TYPE: ROCK
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 18 1999 DATE REPORT MAILED: Aug 25/99 SIGNED BY. [redacted]. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

Data___ FA ___

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Dahrough Geological Consulting File # 9902951 (b)
18 - 10509 - 81 Ave, Edmonton AB T6E 1T7 Submitted by: Peter Kleespies

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	As ppm	Cd ppm	Sb ppm
14026	<1	7	<3	128	13	5	2.8	3.0
14027	<1	7	<3	122	10	4	.2	2.3
RE 14027	<1	7	5	127	11	4	.8	2.4

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR MASSIVE SULFIDE AND LIMITED FOR NA K AND AL.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 18 1999 DATE REPORT MAILED: Aug 31/99 SIGNED BY [redacted] D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

APPENDIX 7C: SPECIFIC GRAVITY DETERMINATIONS BY DISPLACEMENT METHOD FROM ACTIVATION LABORATORIES LTD.

Activation Laboratories Ltd. Work Order: 19630 Report: 19395

SPECIFIC GRAVITIES - Displacement Method

Sample ID	Mass g	Hi=initial height of DI water ml	Hf=final hieght of DI water ml	Specific Gravity Mass/(Hf-Hi) g/cc
PM00-05-001	48.46	70	92	2.2
PM00-05-002	50.21	50	70	2.5
PM00-05-003	50.13	50.5	67.5	2.9
PM00-05-004	50.29	50	68	2.8
PM00-05-005	50.30	50	70	2.5
PM00-07-001	50.44	50	69	2.7
PM00-07-002	50.40	50	70	2.5
PM00-07-002 repeat	51.32	50	70.5	2.5

APPENDIX 7D: ANALYTICAL REPORT FOR WET SIEVE ANALYSES AND MAGNETIC SEPARATION FROM ACTIVATION LABORATORIES LTD.

Activation Laboratories Ltd. Work Order: 19347 Report: 19153

	Rec'd Material (g)					0.044 to 1.0 mm Fraction Heavy Liquid Separation S.G. 3.3 (g)												
		Wet Sieve				Ferromagnetic					<2.4 Amp paramagnetic				>2.4 Amp nonparamagnetic			
Sample Number	Bulk Received	+1.0 mm *	<0.044 mm	Total	MI Lights	Total	+35 mesh	+80-35 mesh	-80 mesh	Total nonmag	Total	+35 mesh	+80-35 mesh	-80 mesh	Total	+35 mesh	+80-35 mesh	-80 mesh
14051	554.7	172.3	68.9	313.5	125.8	53.2	20.7	15.9	16.6	134.5	133.8	19.6	29.5	84.7	0.7	0.1	0.1	0.5
14052	1007.8	3.3	215.3	789.2	753.4	15.3	0.1	0.6	14.6	20.5	19.3	0.1	2.9	16.3	1.2	0.0	0.2	1.0
14067	1000.2	68.1	165.2	766.9	700.3	23.4	0.1	0.8	22.5	43.2	41.2	0.1	3.0	38.1	2.0	0.0	0.4	1.6
14068	1045.7	77.0	119.0	849.7	794.5	15.1	0.1	1.0	14.0	40.1	38.7	1.2	8.8	28.7	1.4	0.0	0.4	1.0
14069	1001.1	0.5	215.9	784.7	771.6	3.8	0.0	0.3	3.5	9.3	8.6	0.0	2.7	5.9	0.7	0.0	0.2	0.5
14070	1000.0	0.1	189.0	810.9	803.1	2.3	0.0	0.1	2.2	5.5	5.0	0.0	0.5	4.5	0.5	0.0	0.1	0.4
14071	1003.8	0.0	159.4	844.4	837.3	2.8	0.0	0.2	2.6	4.3	3.8	0.1	0.8	2.9	0.5	0.0	0.1	0.4
14351	487.0	5.2	122.8	359.0	252.5	49.8	0.1	1.4	48.3	56.7	53.8	0.1	2.2	51.5	2.9	0.0	0.5	2.4
14352	792.8	247.0	132.8	413.0	81.4	116.8	35.5	32.7	48.6	214.8	212.8	33.1	39.8	139.9	2.0	0.0	0.3	1.7
14353	999.4	318.7	184.0	496.7	47.2	197.1	71.4	51.4	74.3	252.4	250.9	30.9	44.5	175.5	1.5	0.0	0.2	1.3
14354	847.3	246.3	144.5	456.5	84.0	100.3	34.6	27.8	37.9	272.2	271.0	49.1	60.5	161.4	1.2	0.1	0.1	1.0
14355	700.6	1.7	152.9	546.0	482.1	29.7	0.1	2.1	27.5	34.2	32.6	0.2	4.7	27.7	1.6	0.0	0.2	1.4
14356	152.9	40.3	14.7	97.9	87.9	1.8	0.4	0.5	0.9	8.2	7.9	0.1	1.3	6.5	0.3	0.0	0.1	0.2
14357	918.7	2.2	155.0	761.5	737.4	11.4	0.1	1.6	9.7	12.7	11.5	0.1	2.2	9.2	1.2	0.0	0.1	1.1

* Values greater than 0.1 g were weighed only to one decimal place; the zero was added in the second decimal position to facilitate column alignment.

0.5 to 1.0 kg bulk samples.
Wet seive at 44u to wash our fines.
Heavy liquid separation S.G. 3.3.
HMC Mag and Nonmag seived to 30 and 80 mesh.
All sample fractions saved.

APPENDIX 7E: X-RAY DIFFRACTION RESULTS FOR SELECT SAMPLES FROM ACTIVATION LABORATORIES LTD.

Activation Laboratories Ltd. Work Order: 19347 Report: 19153B

These samples are multiphase and all of the minerals present have structures that overlap. In addition, any solid solution samples are complex due to shifting peaks with shifting chemistry. For example, NiTiO3 overlaps completely with hematite; there is only one peak which is present in the Ti-rich sample that does not overlap with hematite. Therefore, when these phases are present it is difficult to say whether or not hematite is present.

Furthermore, all of the quantities of these phases are also questionable due to considerable overlaps :

- Quartz, Feldspar with rutile dominant peaks;
- Hematite, illmenite, rutile, zircon and pseudorutile overlap eachother.

Below are the best estimate of the mineral phases present in each sample: -

Sample : 14352 > 2.4 Amp	Quartz	15-50%
	Feldspar	15-50%
	Rutile	0-15%
	Amphibole	0-15%
	Zircon	0-15%
Sample : 14352 < 2.4 Amp	Siderite	15-50%
	Hematite	15-50%
	Rutile	0-15%
	Illmenite	15-50%
	Goethite	0-15%
	Spinel	0-15%
	Zircon	0-15%
Sample : 14352 MAGNETIC	NiTiO3	15-50%
	FeCO3	15-50%
	Hematite	0-15%
	Zircon	0-15%
	Rutile	trace
	Spinel	trace
	Unknown	15-50%
Sample : 14351 > 2.4 Amp	Feldspar	15-50%
	TiO2 (Brookite)	0-15%
	Rutile	15-50%
	Quartz	0-15%
	Zircon	0-15%
	Amphibole	0-15%
	Pyrite	trace
	Ilmenorutile	trace
Sample : 14351 < 2.4 Amp	Pseudorutile	15-50%
	Hematite	0-15%
	Illmenite 0-15%	
	Rutile	0-15%
	Feldspar0-15%	
	Unknown	15-50%
Sample : 14351 MAGNETIC	NiTiO3	> 50%
	Hematite	> 50% (?)

APPENDIX 8: POLISHED SECTION RESULTS

Notes: Polished section analysis modified after Johnston (2000) and Barnes (2000) are expressed as a percentage of whole rock. Estimations of < 1 % are expressed as 0.50 %; those of << 1 % are expressed as 0.25 %; and those of trace are expressed as 0.10 %

Geochemical analysis by Activation Laboratories (Appendix 2A)

Sample Number	From (m)	To (m)	Geochemical Analysis (%)		Polished Section Analysis (%)									
			TiO_2 (%)	Fe_2O_3 (%)	Rutile		Ilmenite		Magnetite		Hematite		Total(s)	
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Drillhole PM99-01														
14351	11.58	12.43	**12.52**	21.56	3.00	8.00	2.00	3.00	1.50	2.00	0.50	1.00	7.00	14.00
14352	12.43	13.15	**9.06**	38.99	8.00	9.00	7.00	8.00	1.00	2.00	1.00	2.00	17.00	21.00
14353	13.15	14.00	**8.12**	45.57	0.50	1.00	5.00	7.00	2.00	2.00	0.50	1.00	8.00	11.00
14354	14.00	14.87	**6.28**	39.91	3.00	3.00	8.00	10.00	1.00	2.00	0.50	1.00	12.50	16.00
14355	14.87	15.90	**4.76**	15.64	0.50	1.00	3.00	5.00	0.50	1.00	1.00	1.00	5.00	8.00
14356	15.90	16.12	0.93	28.92	1.00	2.00	0.50	1.00	0.50	1.00	1.00	1.00	3.00	5.00
14357	16.12	17.20	**2.10**	7.85	0.50	1.00	1.00	2.00	0.00	0.00	0.50	1.00	2.00	4.00
14358	17.20	17.82	0.26	7.21	0.50	1.00	0.00	0.00	0.10	0.10	0.10	0.10	0.70	1.20
Drillhole PM99-02														
14051	0.91	1.62	**4.34**	38.31	1.00	1.00	6.00	6.00	2.00	3.00	0.50	1.00	9.50	11.00
-	1.62	4.04	-	-	-	-	-	-	-	-	-	-	-	-
14052	4.04	6.00	2.03	8.44	1.00	1.50	2.00	2.00	0.50	1.00	0.50	1.00	4.00	5.50
Drillhole PM99-03														
14067	8.53	10.75	**4.24**	13.90	3.00	4.00	2.00	3.00	0.50	1.00	5.00	10.00	10.50	18.00
14068	10.75	13.00	**2.70**	16.08	0.50	1.00	1.00	2.00	1.00	1.00	0.50	1.00	3.00	5.00
14069	13.00	15.00	**1.08**	7.48	0.50	1.00	1.00	1.00	0.50	1.00	1.00	1.00	3.00	4.00
14070	15.00	17.00	0.95	6.04	0.50	1.00	0.50	1.00	0.00	0.00	0.50	1.00	1.50	3.00
14071	17.00	19.00	**1.29**	6.44	0.50	1.00	0.50	1.00	0.50	1.00	0.25	0.00	1.75	3.00

APPENDIX 8: CONTINUED

Sample Number	From (m)	To (m)	Geochemical Analysis (%)		Polished Section Analysis (%)									
			TiO_2 (%)	Fe_2O_3 (%)	Rutile		Ilmenite		Magnetite		Hematite		Total(s)	
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Drillhole PM99-04														
PM00-04-001	0.00	3.05	1.09	34.18	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	5.00	5.00
-	3.05	4.57	-	-	-	-	-	-	-	-	-	-	-	-
PM00-04-002	4.57	5.64	0.32	7.44	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.20	0.20
PM00-04-003	5.64	9.75	0.55	3.58	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
PM00-04-004	9.75	11.05	0.43	7.27	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00	2.00
PM00-04-005	11.05	13.11	0.39	8.51	0.10	0.10	0.00	0.00	0.10	0.10	10.00	10.00	10.20	10.20
PM00-04-006	18.00	20.00	0.48	3.47	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
Drillhole PM99-05														
PM00-05-001	36.00	36.11	7.08	9.34	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.40	0.40
PM00-05-002	36.11	36.60	10.53	21.10	1.00	1.00	0.10	0.10	0.10	0.10	10.00	10.00	11.20	11.20
PM00-05-003	36.60	38.25	8.98	37.80	5.00	5.00	5.00	5.00	3.00	3.00	5.00	5.00	18.00	18.00
PM00-05-004	38.25	39.50	9.32	34.72	5.00	10.00	0.00	5.00	5.00	15.00	5.00	5.00	15.00	35.00
PM00-05-005	39.50	40.10	3.16	12.35	2.00	2.00	2.00	2.00	3.00	3.00	2.00	2.00	9.00	9.00
PM00-05-006	40.10	40.78	0.42	24.94	1.00	1.00	0.10	0.10	0.10	0.10	0.00	0.00	1.20	1.20
PM00-05-007	40.78	42.57	2.12	8.32	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	8.00	8.00
PM00-05-008	47.00	48.00	0.29	2.17	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.20	0.20
Drillhole PM99-06														
PM00-06-001	11.76	14.00	0.93	4.07	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	2.00	4.00
PM00-06-002	14.00	16.24	0.78	3.88	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	2.00	4.00
PM00-06-003	16.24	17.45	0.55	6.56	0.50	1.00	0.50	1.00	0.00	0.00	2.00	3.00	3.00	5.00
PM00-06-004	17.45	19.50	1.07	6.46	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	2.00	4.00
PM00-06-005	19.50	20.40	0.33	5.67	0.50	1.00	0.50	1.00	0.00	0.00	1.00	2.00	2.00	4.00
PM00-06-006	20.40	22.40	0.43	3.37	0.50	1.00	0.50	1.00	0.00	0.00	1.00	2.00		

APPENDIX 8: CONTINUED

Sample Number	From (m)	To (m)	Geochemical Analysis (%)		Polished Section Analysis (%)									
			TiO_2 (%)	Fe_2O_3 (%)	Rutile		Ilmenite		Magnetite		Hematite		Total(s)	
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Drillhole PM99-07														
PM00-07-001	6.66	8.25	**2.25**	15.00	1.00	2.00	8.00	10.00	1.00	1.00	5.00	10.00	15.00	23.00
PM00-07-002	8.25	10.25	0.93	7.33	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	2.00	4.00
PM00-07-003	10.25	12.25	0.67	4.07	1.00	1.00	0.50	1.00	0.50	1.00	1.00	2.00	3.00	5.00
PM00-07-004	12.25	14.25	0.50	3.59	0.50	1.00	0.50	1.00	0.50	1.00	1.00	2.00	2.50	5.00
PM00-07-005	14.25	15.30	0.92	4.32	1.00	2.00	0.00	0.00	0.50	1.00	1.00	2.00	2.50	5.00
PM00-07-006	15.30	17.34	0.34	11.47	0.50	1.00	0.50	1.00	0.00	0.00	0.50	1.00	1.50	3.00
PM00-07-007	17.92	20.00	0.51	3.90	1.00	2.00	0.50	1.00	0.50	1.00	0.50	1.00	2.50	5.00
PM00-07-008	22.18	24.50	0.50	4.18	0.50	1.00	0.50	1.00	0.00	0.00	0.50	1.00	1.50	3.00

APPENDIX 9: SUMMARY OF GEOCHEMICAL RESULTS BY DRILL HOLE

Notes: Geochemical analysis by Activation Laboratories (Appendix 2A)

Sample Number	Metrage	Sample Interval	Lithologic Description	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	TiO_2 %	P_2O_5 %	LOI %	TOTAL %
Drillhole PM99-01															
14351	11.58 - 12.43	0.85	sand, magnetic, carbonaceous	42.07	9.29	21.56	0.26	2.19	3.93	0.70	0.96	12.52	0.31	6.36	100.14
14352	12.43 - 13.15	0.72	sand, indurated, strong magnetic, pyritic	13.42	2.80	38.99	0.43	3.12	11.48	0.31	0.16	9.06	0.35	19.17	99.30
14353	13.15 - 14.00	0.85	sand, strong magnetic, limonitic	16.59	2.80	45.57	0.45	4.35	5.71	0.30	0.15	8.12	0.38	15.18	99.59
14354	14.00 - 14.87	0.87	sand, strong magnetic, limonitic	22.89	3.48	39.91	0.42	5.58	5.19	0.28	0.24	6.28	0.24	14.27	98.77
14355	14.87 - 15.90	1.03	sand, weakly magnetic, limonitic	56.76	8.50	15.64	0.15	4.80	3.49	1.29	0.99	4.76	0.20	3.60	100.17
14356	15.90 - 16.12	0.22	sand, indurated, weakly magnetic	41.66	7.05	28.92	0.27	1.86	3.73	1.27	0.96	0.93	0.32	13.28	100.25
14357	16.12 - 17.20	1.08	sand, limonitic	65.31	11.07	7.85	0.13	2.87	3.41	2.12	1.09	2.10	0.15	2.83	98.93
14358	17.20 - 17.82	0.62	sand, indurated, calcareous	43.70	7.55	7.21	0.53	1.19	18.33	1.59	0.80	0.26	0.15	17.64	98.95
14359	17.82 - 20.73	2.91	sand, brown	75.62	11.90	2.87	0.04	1.00	2.77	2.42	1.38	0.38	0.08	1.95	100.41
14360	20.73 - 22.05	1.32	sand, brown	76.88	11.65	2.23	0.02	0.89	2.40	2.34	1.40	0.31	0.06	1.87	100.06
14361	22.05 - 24.05	2.00	sand, brown	75.68	12.19	2.57	0.02	1.03	2.54	2.38	1.44	0.34	0.08	2.17	100.44
14362	24.05 - 24.66	0.61	carbonaceous material, limonitic	58.05	13.54	8.50	0.05	3.07	2.66	1.02	0.82	0.40	0.11	10.36	98.57
14363	24.66 - 26.82	2.16	sand, brown, massive	70.88	14.03	3.54	0.04	1.45	3.26	2.65	1.49	0.51	0.14	2.49	100.49
14364	26.82 - 28.82	2.00	sand, brown, massive	70.86	13.89	3.48	0.04	1.40	3.16	2.63	1.43	0.44	0.11	2.49	99.93
14365	28.82 - 30.82	2.00	sand, brown, massive	68.83	13.72	3.53	0.05	1.45	3.27	2.62	1.47	0.49	0.10	2.60	98.11
14366	30.82 - 32.92	2.10	sand, brown, massive	69.81	13.94	4.06	0.05	1.48	3.28	2.66	1.58	0.50	0.12	2.64	100.13
14367	32.92 - 34.92	2.00	sand, brown, massive	70.30	14.05	3.90	0.04	1.29	3.12	2.68	1.52	0.43	0.11	2.66	100.09
14368	34.92 - 36.92	2.00	sand, brown, massive	69.87	13.99	4.53	0.04	1.13	2.90	2.65	1.60	0.40	0.11	2.79	100.02
14369	36.92 - 38.92	2.00	sand, brown, massive	68.90	13.96	5.01	0.04	1.11	2.75	2.54	1.63	0.40	0.11	3.23	99.67
14370	38.92 - 40.92	2.00	sand, brown, massive	69.65	14.39	3.77	0.03	1.26	2.63	2.49	1.80	0.44	0.12	3.48	100.07
14371	40.92 - 42.92	2.00	sand, brown, massive	70.09	14.35	3.43	0.03	1.24	2.58	2.47	1.81	0.49	0.12	3.89	100.49
14372	42.92 - 45.00	2.08	sand, brown, massive	69.96	14.42	3.23	0.03	1.28	2.60	2.46	1.73	0.60	0.16	3.93	100.39
14373	59.62 - 63.00	3.38	sand, grey, S & P texture	77.96	10.83	2.27	0.02	0.78	1.29	1.77	1.58	0.39	0.10	3.33	100.31
14374	63.00 - 66.45	3.45	sand, grey, S & P texture	79.61	10.38	1.80	0.02	0.73	1.27	1.82	1.64	0.30	0.09	2.57	100.22

APPENDIX 9: CONTINUED

Sample Number	Metrage	Sample Interval	Lithologic Description	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	TiO_2 %	P_2O_5 %	LOI %	TOTAL %
Drillhole PM99-02															
14051	0.91 - 1.62	0.71	sand, indurated, strong magnetic, limonitic	25.48	4.42	38.31	0.37	4.53	5.49	0.84	0.30	4.34	0.37	14.94	99.39
14052	4.04 - 6.00	1.96	sand, limonitic, pyritic	65.65	11.14	8.44	0.08	3.26	3.92	2.02	0.93	2.03	0.14	2.77	100.38
14053	6.00 - 9.03	1.99*	sand, limonitic, pyritic	75.40	12.00	2.95	0.03	1.20	2.96	2.45	1.22	0.41	0.08	1.75	100.45
14054	9.03 - 11.58	2.05*	sand, limonitic, pyritic	77.08	11.78	2.20	0.02	0.86	2.49	2.37	1.40	0.30	0.07	1.79	100.36
14055	11.58 - 13.58	2.00	sand, limonitic, pyritic	75.57	12.51	2.36	0.02	0.94	2.58	2.43	1.48	0.32	0.10	2.16	100.47
14056	13.58 - 15.58	2.00	sand, limonitic, pyritic	71.72	14.07	2.92	0.04	1.35	3.31	2.64	1.39	0.48	0.11	2.42	100.45
14057	15.58 - 17.58	2.00	sand, limonitic, pyritic	70.79	13.91	3.86	0.05	1.35	3.24	2.62	1.47	0.45	0.12	2.60	100.48
14058	17.58 - 19.17	1.59	sand, limonitic, pyritic	71.33	13.87	3.44	0.04	1.35	3.31	2.65	1.43	0.46	0.12	2.27	100.27
14059	19.17 - 20.35	1.18	sand, strongly limonitic, pyritic	70.71	13.89	3.78	0.05	1.39	3.35	2.60	1.47	0.49	0.13	2.55	100.40
14060	20.35 - 21.09	0.74	sand, indurated, white, weakly calcareous	38.59	7.92	10.93	0.55	1.33	18.43	1.49	0.82	0.29	0.17	18.73	99.25
14061	21.09 - 23.77	2.68	sand, strongly limonitic, pyritic	69.23	13.71	5.19	0.06	1.26	3.13	2.60	1.47	0.44	0.13	3.11	100.32
14062	23.77 - 25.77	2.00	sand, limonitic, pyritic	71.28	14.17	3.51	0.04	1.06	3.00	2.70	1.52	0.40	0.12	2.52	100.32
14063	25.77 - 27.77	2.00	sand, limonitic, pyritic	68.02	13.61	7.04	0.07	1.00	2.74	2.58	1.48	0.38	0.14	3.36	100.42
14064	27.77 - 29.77	2.00	sand, limonitic, pyritic	70.43	14.37	3.28	0.03	1.08	2.61	2.54	1.58	0.43	0.11	3.12	99.57
14065	29.77 - 31.77	2.00	sand, limonitic, pyritic	70.35	14.37	3.59	0.03	1.13	2.49	2.47	1.72	0.47	0.12	3.52	100.25
14066	31.77 - 34.58	2.81	sand, limonitic, pyritic	70.44	14.51	3.32	0.02	1.16	2.45	2.46	1.65	0.57	0.14	3.60	100.32
Drillhole PM99-03															
14067	8.53 - 10.75	2.22	sand, indurated, moderately magnetic, pyritic	46.53	9.12	13.90	0.43	5.31	9.96	1.29	0.60	4.24	0.26	7.51	99.15
14068	10.75 - 13.00	2.25	sand, indurated, moderately magnetic, pyritic	47.54	7.16	16.08	0.44	8.07	8.71	0.84	0.42	2.70	0.22	7.42	99.59
14069	13.00 - 15.00	2.00	sand, limonitic, pyritic	67.01	10.46	7.48	0.07	4.24	3.68	1.97	0.94	1.08	0.13	3.35	100.41
14070	15.00 - 17.00	2.00	sand, limonitic, pyritic	69.76	11.23	6.04	0.06	3.10	3.54	2.18	1.07	0.95	0.13	2.59	100.64
14071	17.00 - 19.00	2.00	sand, limonitic, pyritic	69.73	10.78	6.44	0.08	2.77	3.53	2.03	1.05	1.29	0.14	2.42	100.26
14072	19.00 - 21.55	2.55	sand, limonitic, pyritic	70.41	11.44	6.73	0.11	1.45	2.46	2.07	1.28	0.42	0.10	3.99	100.46
14073	21.55 - 24.00	2.45	sand, brown, massive	70.31	14.00	3.41	0.04	1.67	3.37	2.60	1.44	0.53	0.12	2.70	100.18
14074	24.00 - 26.00	2.00	sand, brown, massive	70.70	13.91	3.55	0.04	1.65	3.25	2.61	1.43	0.46	0.12	2.57	100.27
14075	26.00 - 28.00	2.00	sand, brown, massive	69.71	13.68	3.95	0.04	1.62	3.29	2.56	1.42	0.49	0.12	2.88	99.76
14076	28.00 - 30.00	2.00	sand, brown, massive	69.39	13.77	4.42	0.05	1.71	3.48	2.56	1.36	0.50	0.14	2.88	100.26
14077	30.00 - 32.00	2.00	sand, brown, massive	70.68	14.02	3.86	0.05	1.44	3.35	2.64	1.46	0.44	0.11	2.93	100.98
14078	32.00 - 34.00	2.00	sand, brown, massive	68.43	13.62	6.30	0.07	1.21	3.23	2.55	1.45	0.39	0.13	3.30	100.67
14079	34.00 - 36.00	2.00	sand, brown, massive	71.18	14.22	3.15	0.03	1.18	2.93	2.58	1.57	0.40	0.09	2.75	100.09
14080	36.00 - 38.00	2.00	sand, brown, massive	68.52	13.99	5.35	0.06	1.26	2.75	2.39	1.53	0.44	0.11	3.70	100.10
14081	38.00 - 40.00	2.00	sand, indurated, calcareous	67.08	13.77	5.97	0.06	1.34	2.94	2.28	1.56	0.53	0.16	4.76	100.43
14082	40.00 - 42.00	2.00	sand, brown, massive	62.42	13.05	4.96	0.07	1.25	6.39	2.03	2.03	0.56	0.41	7.24	100.41

APPENDIX 9: CONTINUED

Sample Number	Metrage	Sample Interval	Lithologic Description	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	TiO_2 %	P_2O_5 %	LOI %	TOTAL %
Drillhole PM00-04															
PM00-04-001	0.00 - 3.05	casing	sand, black, indurated, magnetic	29.06	5.24	34.18	0.31	5.34	5.67	0.82	0.32	1.09	0.33	16.51	98.88
PM00-04-002	4.57 - 5.64	1.07	sand, white, indurated, calcareous	41.16	7.43	7.44	0.15	1.04	21.88	1.44	0.82	0.32	0.13	18.15	99.96
PM00-04-003	5.64 - 9.75	3.29*	sand, brown, massive	72.36	11.66	3.58	0.04	1.51	3.29	2.20	1.30	0.55	0.10		
PM00-04-004	9.75 - 11.05	1.30	sand, white, indurated, calcareous	38.59	7.12	7.27	0.25	1.13	23.35	1.31	0.76	0.43	0.13		
PM00-04-005	11.05 - 13.11	2.06	sand, red, limonitic, pyritic	66.13	11.16	8.51	0.23	1.03	2.97	1.96	1.31	0.39	0.13		
PM00-04-006	18.00 - 20.00	2.00	sand, brown, massive	69.68	13.84	3.47	0.04	1.47	3.34	2.49	1.54	0.48	0.13		
Drillhole PM00-05															
PM00-05-001	36.00 - 36.11	0.11	sand, magnetic, carbonaceous	32.74	5.98	9.34	0.17	1.32	4.19	0.32	0.44	7.08	0.06	37.03	98.66
PM00-05-002	36.11 - 36.60	0.49	sand, brown, magnetic	43.45	9.42	21.10	0.26	2.27	3.91	1.20	0.70	10.53	0.29	5.75	98.88
PM00-05-003	36.60 - 38.25	1.42*	sand, black, indurated, magnetic	15.82	3.18	37.80	0.41	3.38	10.59	0.37	0.18	8.98	0.40	17.15	98.26
PM00-05-004	38.25 - 39.50	1.08*	sand, black, indurated, magnetic	25.86	4.53	34.72	0.38	4.65	5.43	0.60	0.29	9.32	0.31	12.70	98.79
PM00-05-005	39.50 - 40.10	0.60	sand, red, limonitic, pyritic, magnetic	57.10	8.95	12.35	0.11	5.21	3.71	1.39	0.71	3.16	0.19	7.10	99.98
PM00-05-006	40.10 - 40.78	0.68	sand, white, indurated, calcareous	37.97	6.75	24.94	0.25	2.39	6.85	1.27	0.64	0.42	0.29	16.83	98.60
PM00-05-007	40.78 - 42.57	1.79	sand, brown, massive	63.12	10.79	8.32	0.09	2.84	3.78	1.87	1.03	2.12	0.14		
PM00-05-008	47.00 - 48.00	1.00	sand, brown, massive	76.62	11.06	2.17	0.02	0.94	2.22	2.05	1.56	0.29	0.09		
Drillhole PM00-06															
PM00-06-001	11.76 - 14.00	2.24	sand, brown, massive	68.43	12.61	4.07	0.07	1.80	3.77	2.09	1.11	0.93	0.13	4.15	99.15
PM00-06-002	14.00 - 16.24	2.24	sand, brown, massive	68.69	13.00	3.88	0.07	1.84	4.22	2.32	1.11	0.78	0.11	3.40	99.41
PM00-06-003	16.24 - 17.45	1.21	sand, white, indurated, calcareous	37.34	7.17	6.56	0.41	1.75	23.57	1.43	0.63	0.55	0.14	19.93	99.48
PM00-06-004	17.45 - 19.50	2.05	sand, brown, massive	65.52	11.87	6.46	0.09	2.90	4.35	2.13	0.98	1.07	0.15		
PM00-06-005	19.50 - 20.40	0.90	sand, white, indurated, calcareous	40.49	7.76	5.67	0.44	1.56	22.77	1.57	0.74	0.33	0.14	18.70	100.16
PM00-06-006	20.40 - 22.40	2.00	sand, brown, massive	72.05	12.63	3.37	0.05	1.14	3.37	2.49	1.45	0.43	0.09		
Drillhole PM00-07															
PM00-07-001	6.66 - 8.25	1.59	sand, brown, magnetic layers	40.62	7.55	15.00	0.59	4.58	12.72	1.07	0.52	2.25	0.21	13.91	99.01
PM00-07-002	8.25 - 10.25	2.00	sand, brown, massive	65.52	10.39	7.33	0.09	3.65	3.88	1.80	0.92	0.93	0.14	5.47	100.11
PM00-07-003	10.25 - 12.25	2.00	sand, brown, massive	70.63	11.26	4.07	0.06	2.14	3.27	2.11	1.21	0.67	0.09		
PM00-07-004	12.25 - 14.25	2.00	sand, brown, massive	73.62	11.29	3.59	0.05	1.48	2.65	2.07	1.34	0.50	0.11		
PM00-07-005	14.25 - 15.30	1.05	sand, brown, massive	70.86	11.25	4.32	0.05	1.87	3.10	2.04	1.27	0.92	0.13		
PM00-07-006	15.30 - 17.34	2.04	sand, red, limonitic, pyritic	60.07	10.10	11.47	0.27	1.11	4.80	1.61	1.15	0.34	0.14		
PM00-07-007	17.92 - 20.00	2.08	sand, brown, massive	68.51	13.55	3.90	0.06	1.50	3.30	2.36	1.39	0.51	0.13		
PM00-07-008	22.18 - 24.50	2.32	sand, red, limonitic, pyritic	69.30	13.51	4.18	0.06	1.44	3.26	2.42	1.45	0.50	0.14		

* Sample length less than sample interval because of lost core

APPENDIX 10: ESTIMATIONS OF TONNAGE, VOLUME AND GRADE

Notes: For solids 1C and 5C grades from 3C were used; for solid 2C grades from 7C were used; for solid 4B grades from 3B were used; for solid 4A grades from 3A were used; for solid 6A grades from 1A were used; and for solid 6B grades from 1B were used.

All solids are considered inferred resources except for solids 2C, 6C and 7C which are speculative due to lower grades. Specific Gravities are approximate: Zone A - 2.8; Zone B - 2.65; Zone C - 2.5 (Appendix 2B). Intervals for Holes PM99-02 and PM99-04 include lost core.

Heavy mineral constituents are expressed as a percentage of total heavy minerals.

Drillhole	Solid	Cutoff	Volume	S.G.	Tonnes	TiO_2	Rutile		Ilmenite		Magnetite		Hematite		Total H.M. (%)	
		(±0.10%)	(m^3)	(g/cm3)		(%)	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
PM99-01	1A	4%	477,650	2.80	1,337,420	7.97	22%	25%	52%	53%	14%	15%	9%	10%	9.49	12.56
PM99-01	1B	2%	187,460	2.65	496,769	1.90	26%	28%	44%	45%	3%	3%	24%	26%	2.17	4.17
PM99-01	1C	1%	156,552	2.50	391,380	1.11	26%	31%	31%	32%	15%	19%	19%	27%	2.08	3.33
PM99-02	2A	4%	251,780	2.80	704,984	4.34	9%	11%	55%	63%	21%	27%	5%	9%	9.50	11.00
PM99-02	2B	2%	200,986	2.65	532,613	2.03	25%	27%	36%	50%	13%	18%	13%	18%	4.00	5.50
PM99-02	2C	1%	93,594	2.50	233,985	0.93	25%	25%	25%	25%	25%	25%	25%	25%	2.00	4.00
PM99-03	3A	4%	204,337	2.80	572,144	4.24	22%	29%	17%	19%	5%	6%	48%	56%	10.50	18.00
PM99-03	3B	2%	389,286	2.65	1,031,608	2.70	17%	20%	33%	40%	20%	33%	17%	20%	3.00	5.00
PM99-03	3C	1%	1,152,817	2.50	2,882,043	1.11	26%	31%	31%	32%	15%	19%	19%	27%	2.08	3.33
PM00-04	4A	4%	73,296	2.80	205,229	4.24	22%	29%	17%	19%	5%	6%	48%	56%	10.50	18.00
PM00-04	4B	2%	47,814	2.65	126,707	2.70	17%	20%	33%	40%	20%	33%	17%	20%	3.00	5.00
PM00-04	4C	1%	527,686	2.50	1,319,215	1.09	20%	20%	20%	20%	20%	20%	40%	40%	5.00	5.00
PM00-05	5A	4%	324,665	2.80	909,062	9.26	25%	27%	14%	19%	21%	24%	31%	38%	15.42	22.57
PM00-05	5B	2%	82,920	2.65	219,738	3.16	22%	22%	22%	22%	33%	33%	22%	22%	9.00	9.00
PM00-05	5C	1%	368,534	2.50	921,335	1.11	26%	31%	31%	32%	15%	19%	19%	27%	2.08	3.33
PM00-06	6A	4%	180,011	2.80	504,031	7.97	22%	25%	52%	53%	14%	15%	9%	10%	9.49	12.56
PM00-06	6B	2%	74,836	2.65	198,315	1.90	26%	28%	44%	45%	3%	3%	24%	26%	2.17	4.17
PM00-06	6C	1%	155,967	2.50	389,918	1.07	25%	29%	25%	29%	14%	25%	25%	29%	1.75	4.00
PM00-07	7A	4%	115,736	2.80	324,061	4.24	22%	29%	17%	19%	5%	6%	48%	56%	10.50	18.00
PM00-07	7B	2%	394,078	2.65	1,044,307	2.25	7%	9%	43%	53%	4%	7%	33%	43%	15.00	23.00
PM00-07	7C	1%	481,313	2.50	1,203,283	0.93	25%	25%	25%	25%	25%	25%	25%	25%	2.00	4.00
			Total Inferred Zone A:		4,556,930	6.76	21%	24%	36%	40%	14%	16%	22%	26%	10.92	15.63
			Total Inferred Zone B:		3,650,057	2.35	17%	19%	38%	45%	12%	18%	23%	28%	6.78	10.31
			Total Inferred Zone C:		5,513,973	1.14	25%	28%	28%	29%	16%	20%	24%	30%	2.87	3.90
			Total Inferred Resources:		13,720,960	3.33	21%	24%	33%	37%	14%	18%	23%	28%	6.58	9.50
			Total Speculative Zone C:		1,827,185	0.96	25%	26%	25%	26%	23%	25%	25%	26%	1.95	4.00

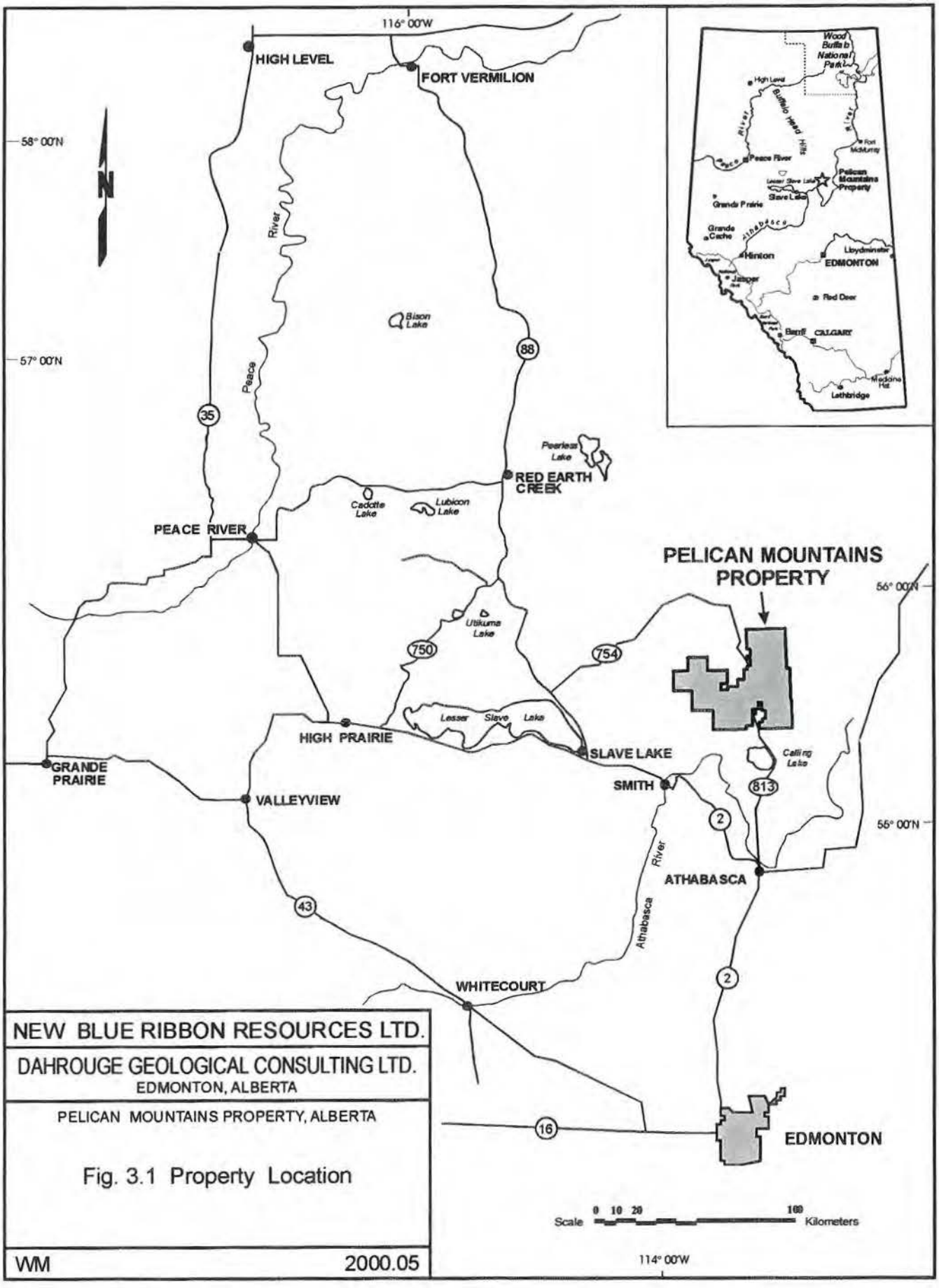

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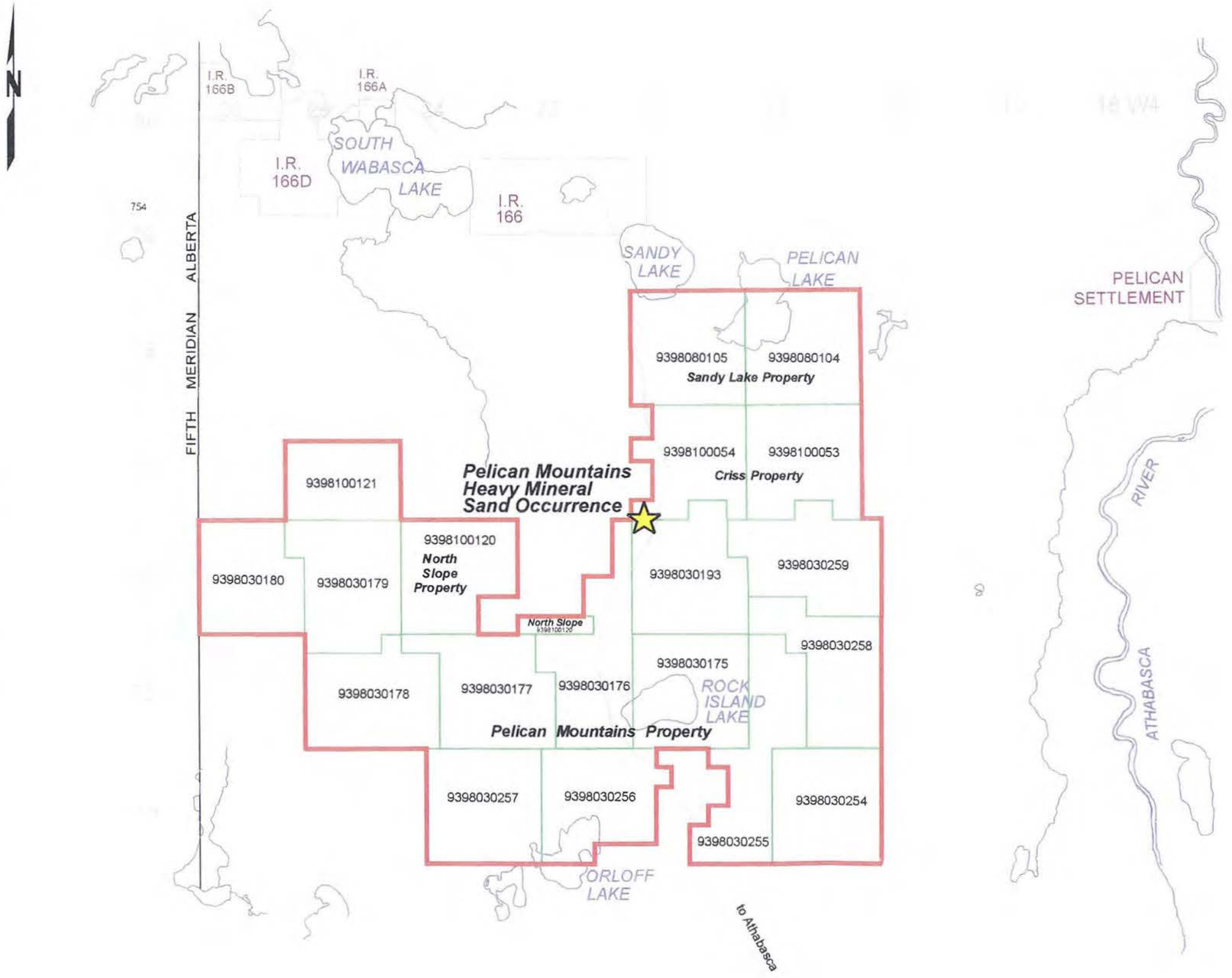
Fig. 3.1 Property Location

WM 2000.05



SYMBOLS

- Pelican Mountains Heavy Mineral Deposit
- Pelican Mountains Property Boundary
- 9398030254 — Metallic and Industrial Minerals Permit

Scale 0 10 20 Kilometers

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Fig. 4.1 Property Map

WM 2000.05

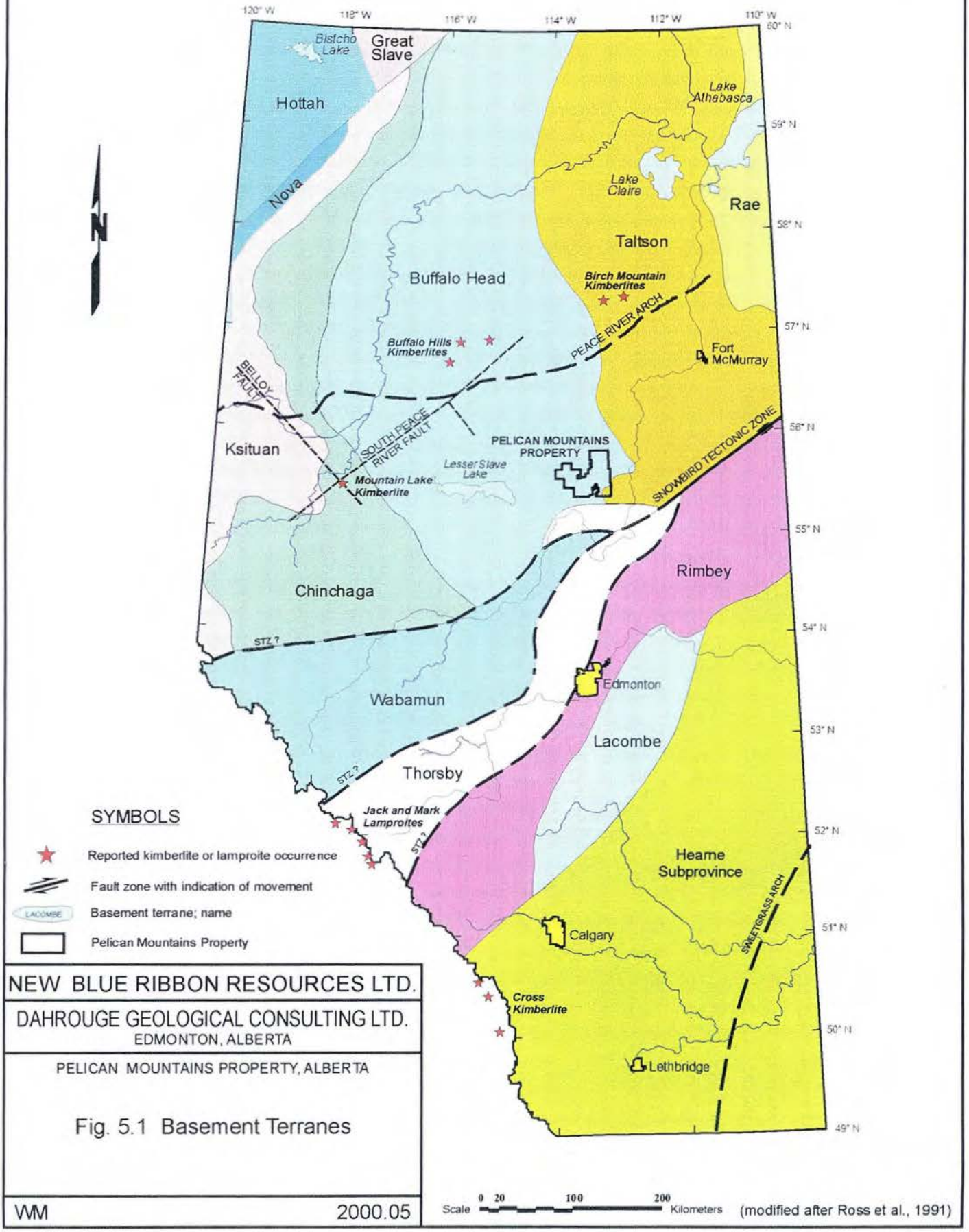

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Fig. 5.1 Basement Terranes

WM 2000.05

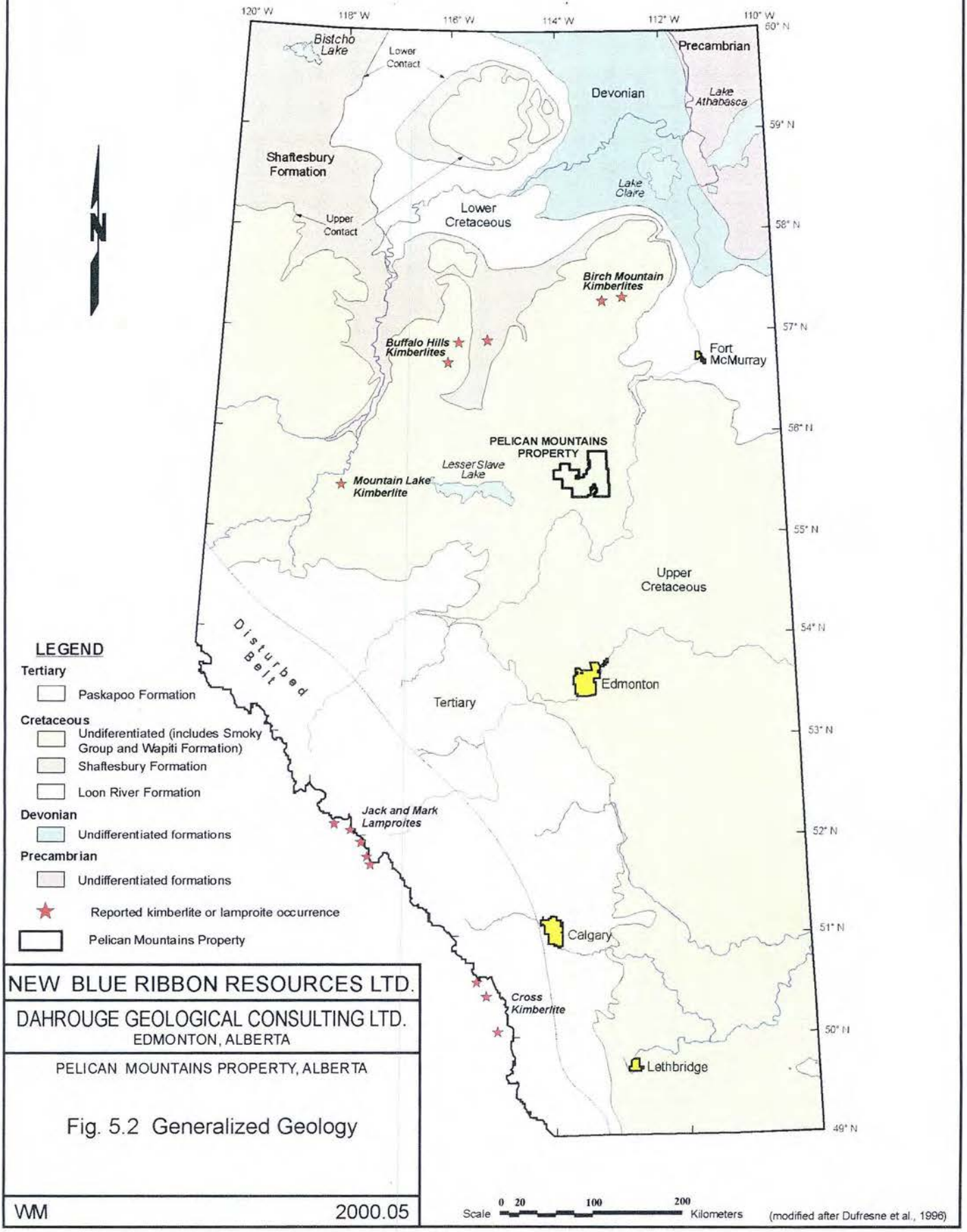

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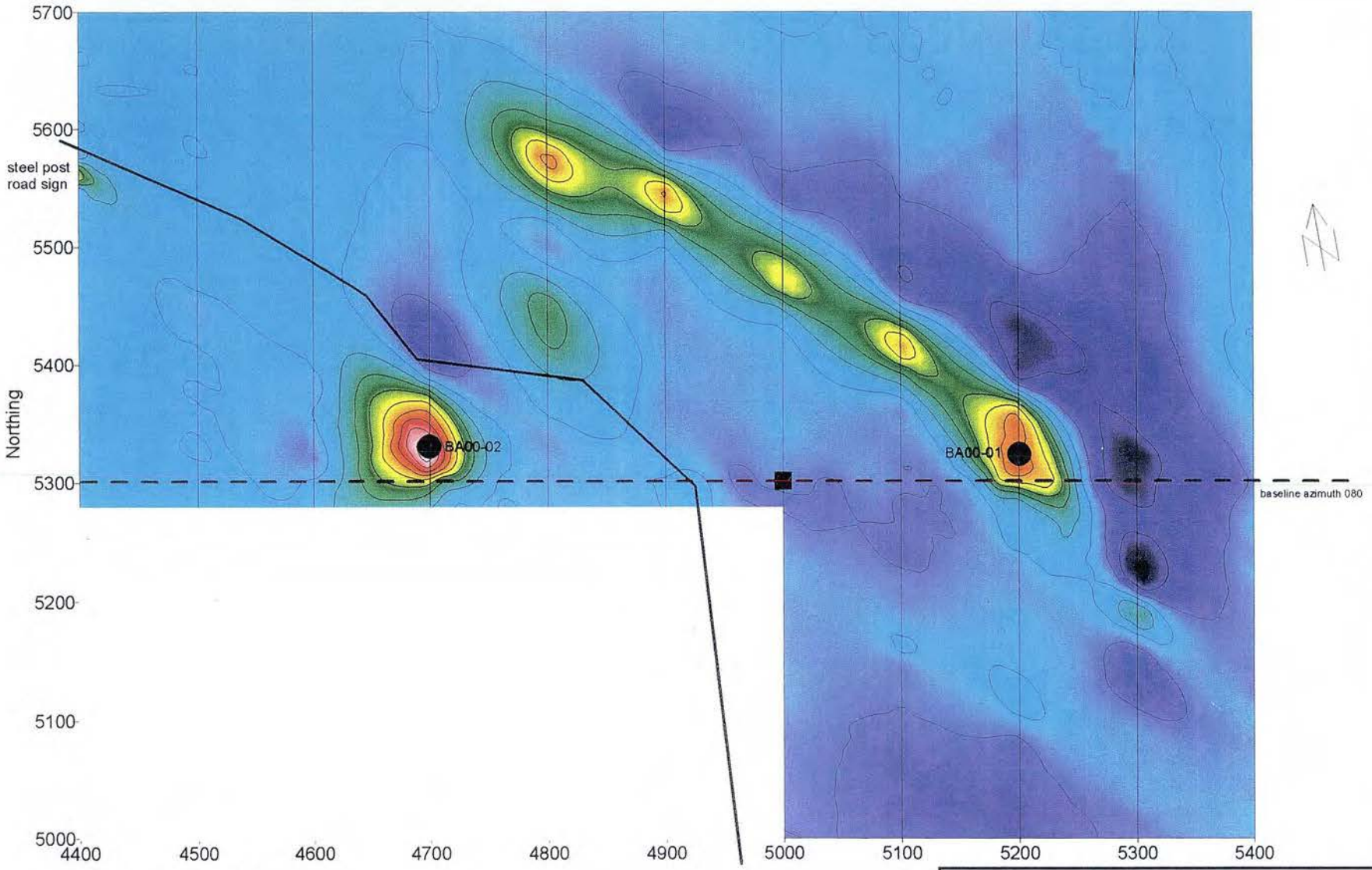
Fig. 5.2 Generalized Geology

WM 2000.05



SYMBOLS

- Seismic line
- Highway 813
- Isomagnetic contour; contour interval 10 nT
- Reference UTM co-ordinate 346185 E 6149550 N
- BA00-01 — Diamond drill hole; identifier

Scale 0 100 200 Metres

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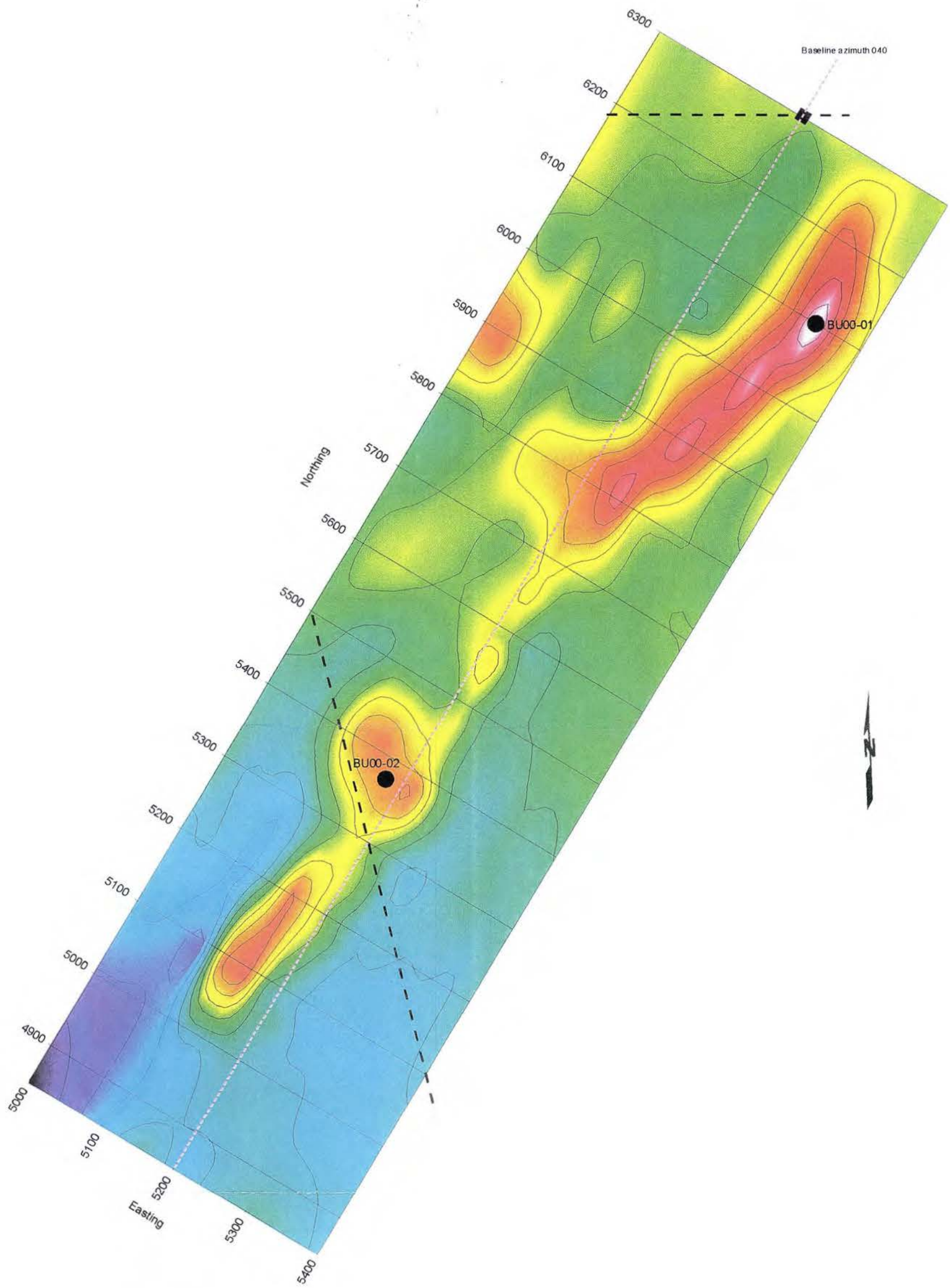
Fig. 6.5
Bait Grid
Ground Magnetic Survey
Total Magnetic Field

TF 2000.05

F5



SYMBOLS

- Seismic line
- Magnetic grid base line
- Magnetic contour line (interval = 10 nT)
- Reference UTM co-ordinate 361740 E 6147650 N
- BU00-01 Diamond drill hole; identifier

Scale 0 50 100 200 Metres

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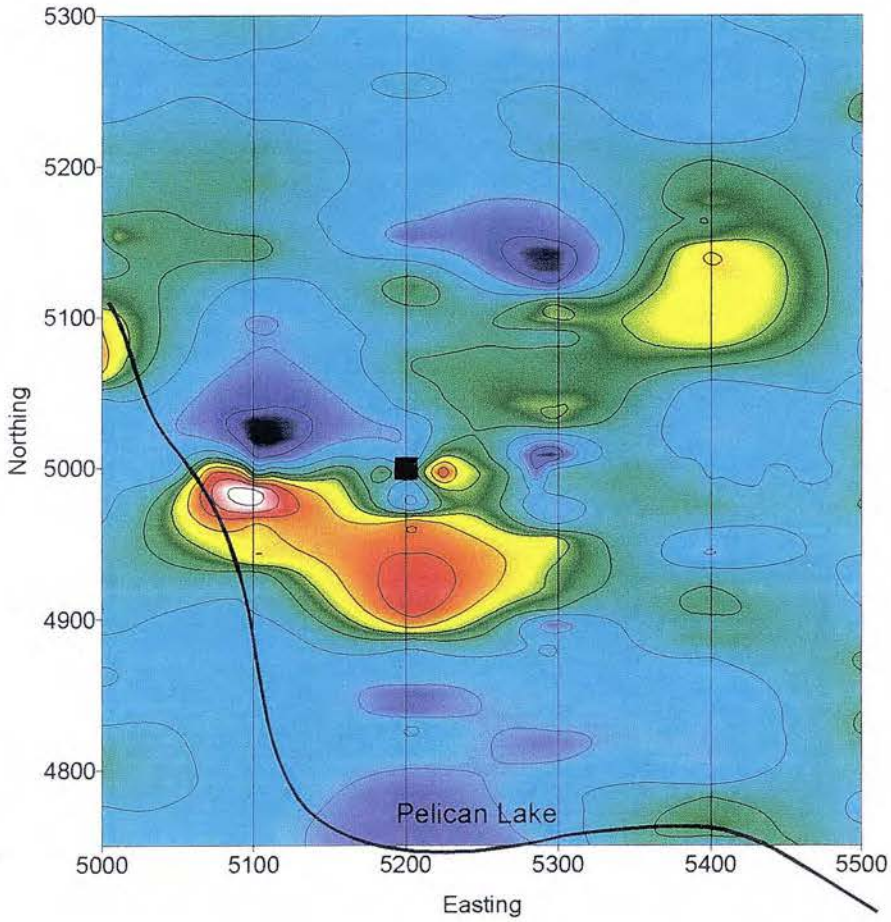
Fig. 6.6
Bou Grid
Ground Magnetic Survey
Total Magnetic Field

TF 2000.05

F6



Scale 0 50 100 200 Metres

SYMBOLS

Lake shore

Isomagnetic contour;
contour interval 20 nT

Reference UTM co-ordinate
357075 E 6182750 N

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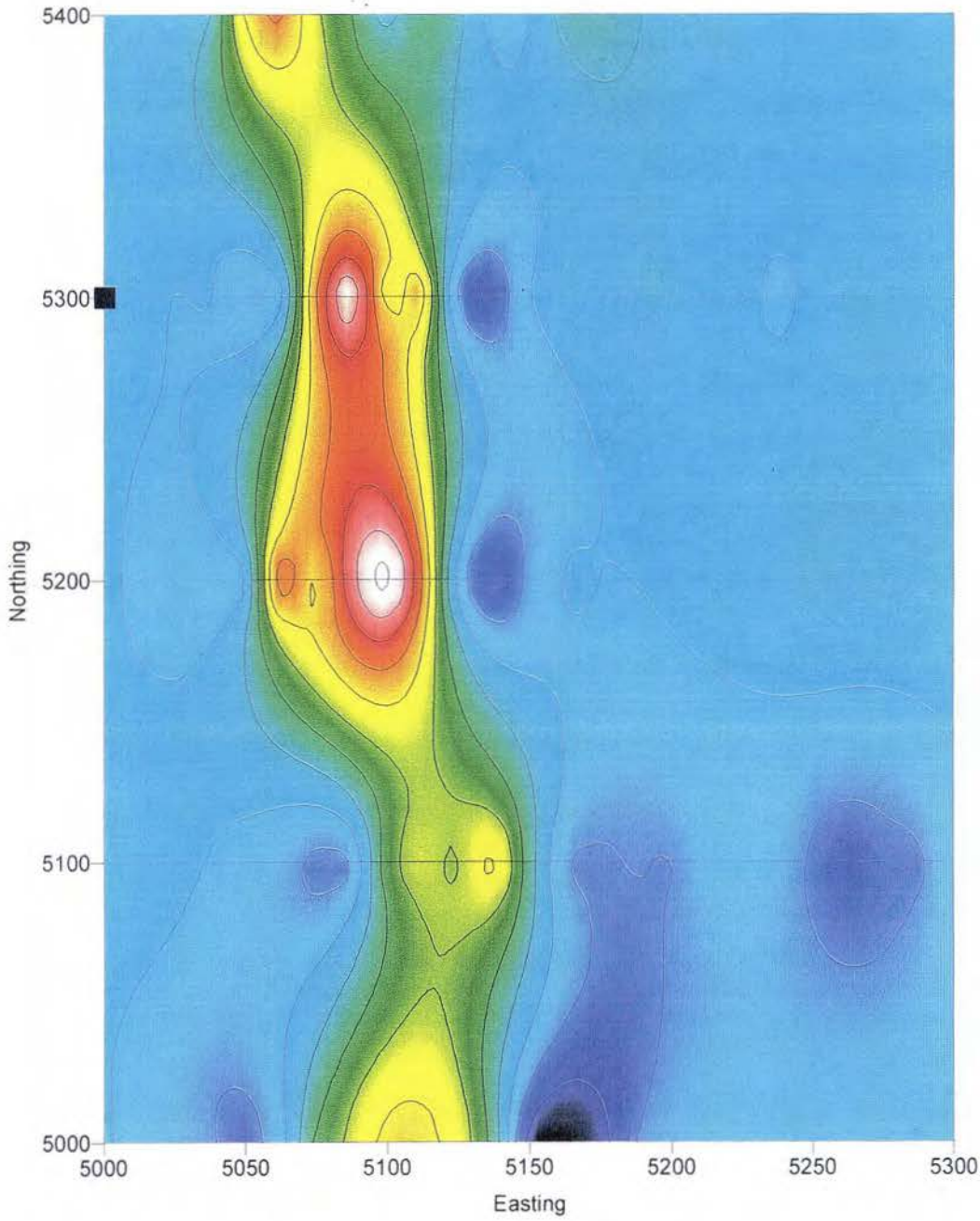
Fig. 6.7
Pel Grid
Ground Magnetic Survey
Total Magnetic Field

TF 2000.05



Scale 0 25 50 100 Metres

SYMBOLS

Seismic line

Isomagnetic contour; contour interval 10 nT

Reference UTM co-ordinate 356325 E 6171000 N

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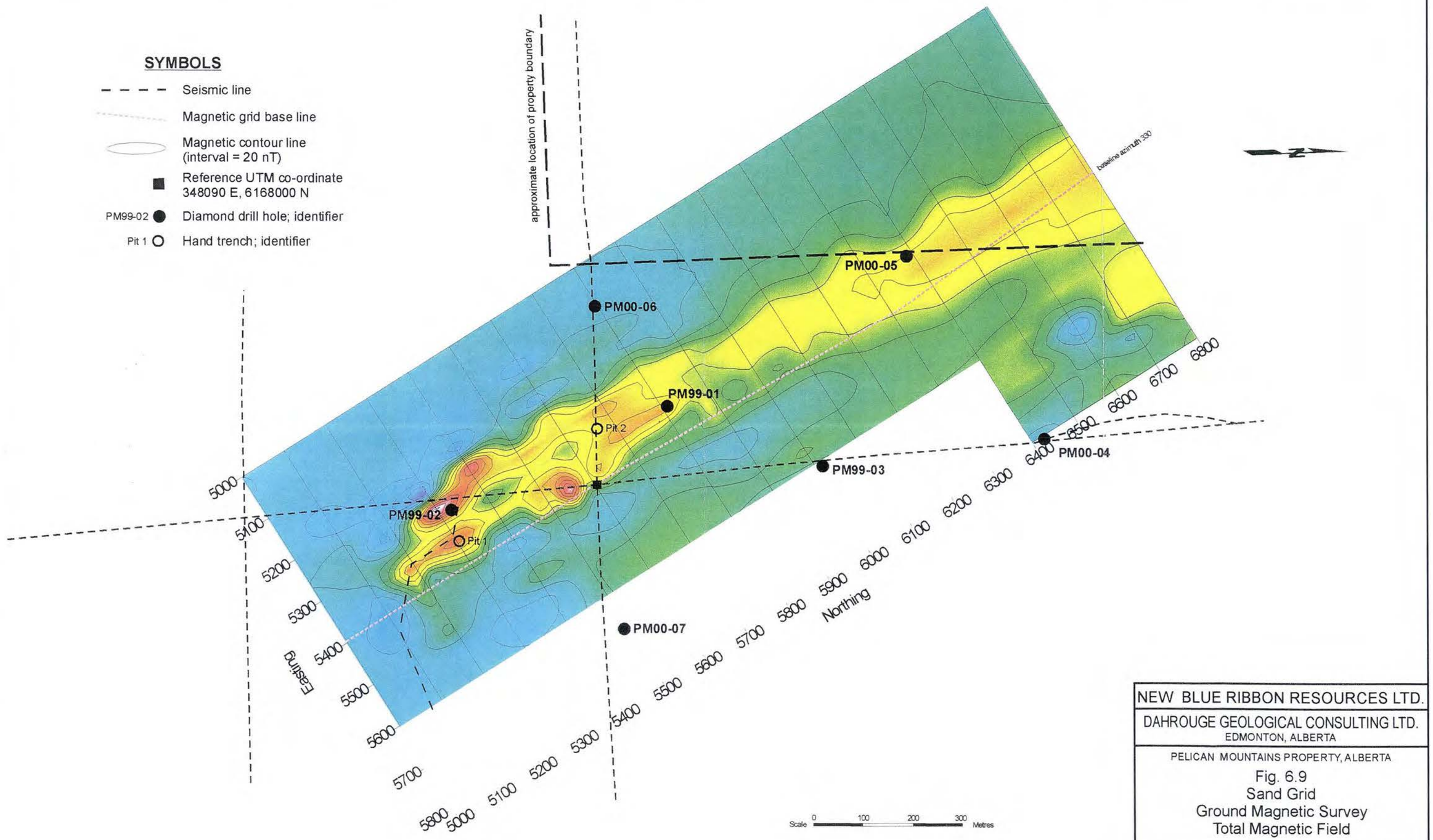
Fig. 6.8
Quad Grid
Ground Magnetic Survey
Total Magnetic Field

TF 2000.05



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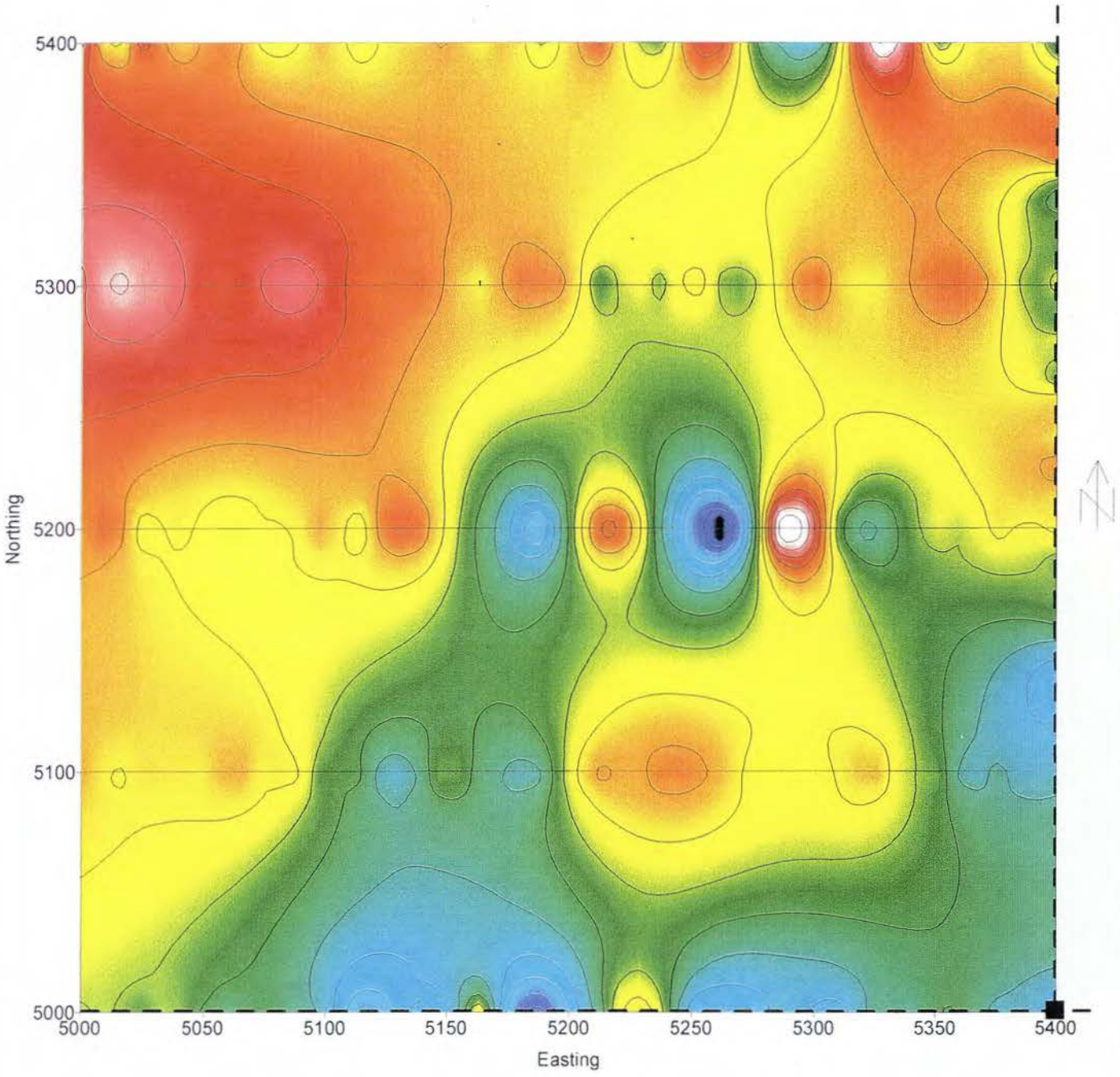
DAHROUGE GEOLOGICAL CONSULTING LTD. EDMONTON, ALBERTA
PELICAN MOUNTAINS PROPERTY, ALBERTA Fig. 6.9 Sand Grid Ground Magnetic Survey Total Magnetic Field
TF 2000.05



SYMBOLS

- Seismic line
- Isomagnetic contour; contour interval 2 nT
- Reference UTM co-ordinate 322125 E 6167680 N

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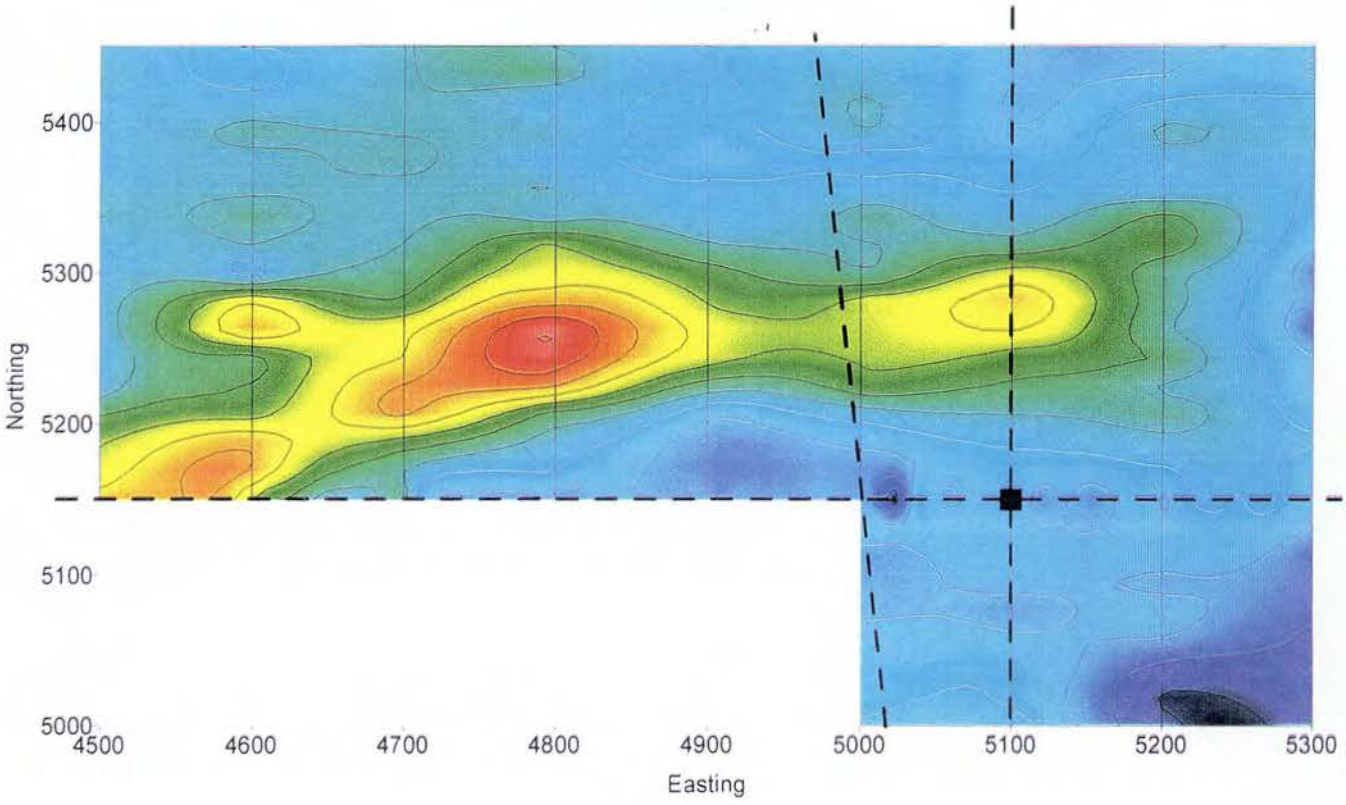
Fig. 6.10
Snag Grid
Ground Magnetic Survey
Total Magnetic Field

TF 2000.05



Scale 0 100 200 Metres

SYMBOLS

Seismic line

Isomagnetic contour; contour interval 5 nT

Reference UTM co-ordinate 344800 E 6146220 N

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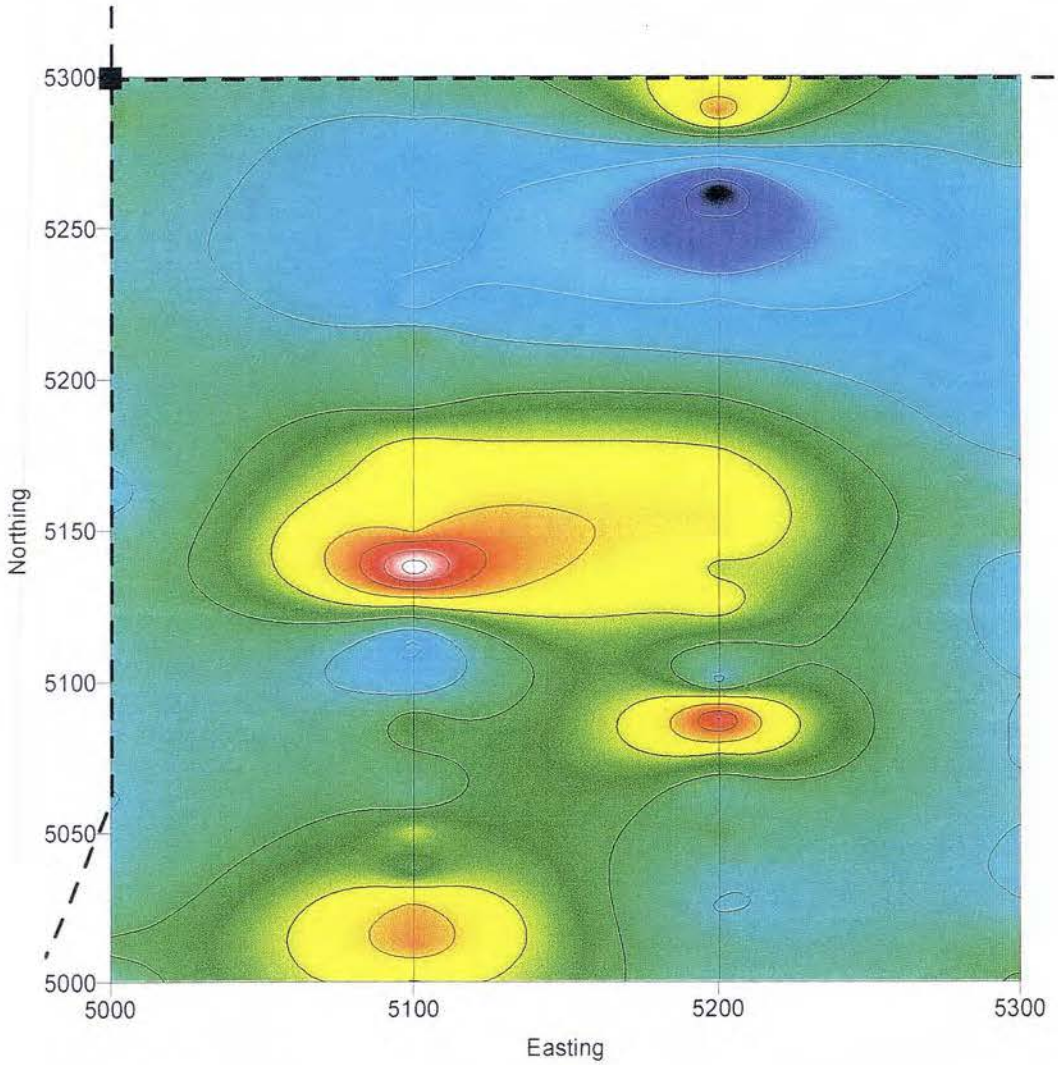
Fig. 6.11

Toque Grid

Ground Magnetic Survey

Total Magnetic Field

TF 2000.05



Scale 0 25 50 100 Metres

SYMBOLS

- Seismic line
- Isomagnetic contour; contour interval 20 nT
- Reference UTM co-ordinate 349265 E 6182000 N

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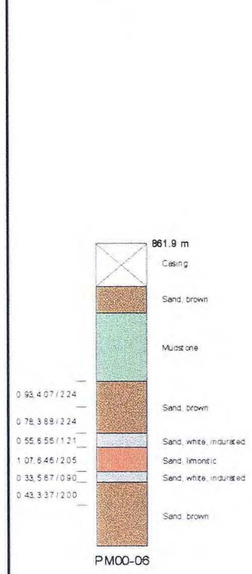
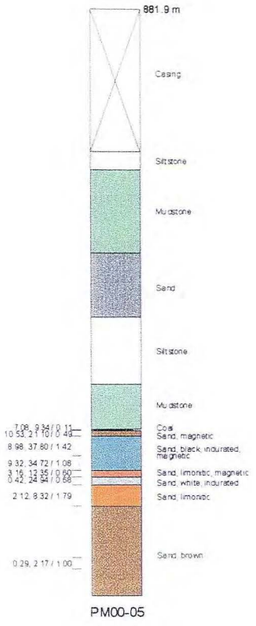
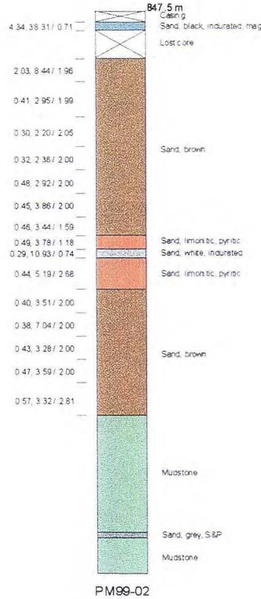
Fig. 6.12
Triad Grid
Ground Magnetic Survey
Total Magnetic Field

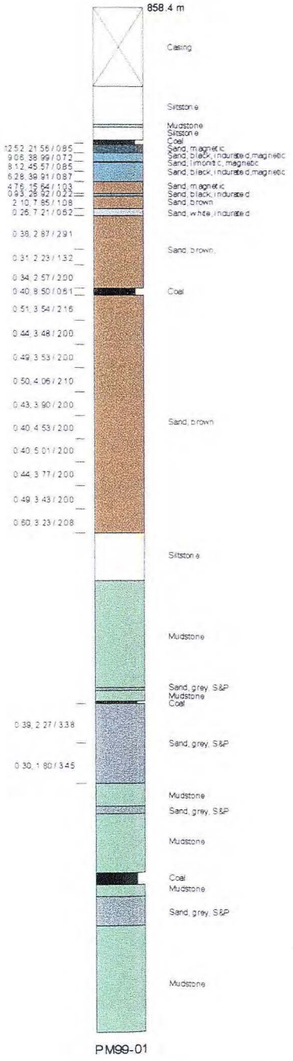
TF 2000.05

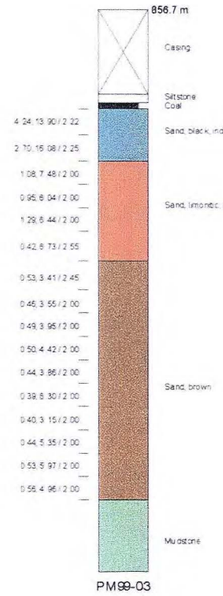
W

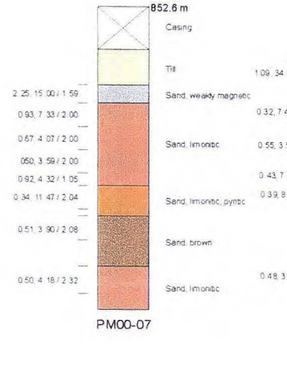


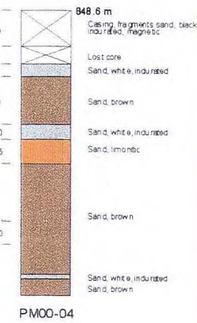




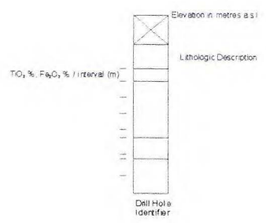








E



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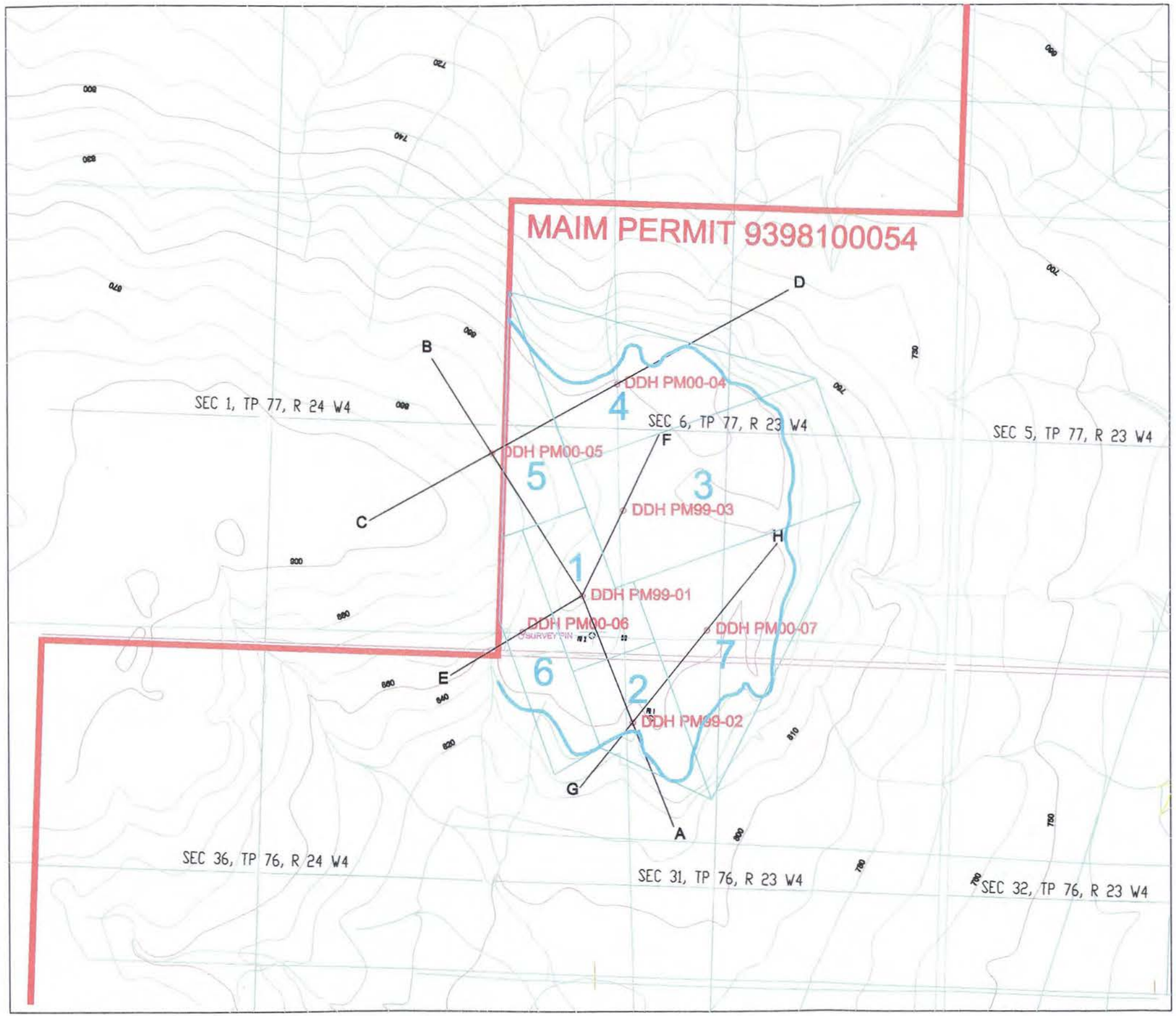
PELICAN MOUNTAINS PROPERTY, ALBERTA

Fig. 7.1
Columnar Sections for
Drill Holes at the Pelican Mountains
Heavy Mineral Sand Occurrence

TF 2000.05



N

SYMBOLS

- Elevation contour (Interval = 10 m)
- ○ DDH PM00-04 — Core hole; number
- 4 — Polygon; number
- Polygon boundaries modified against topography
- Property boundary
- Trail, seismic line

NOTES

1. Map compiled from 1:20,000 scale digital base map 83P/11NW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.
2. Core hole locations were surveyed using a differential global positioning system (DGPS) unit supplied by Butler Surveys Ltd. of Edmonton, Alberta.

0 200 400 600 800 1000
Metres

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Fig. 7.2
Topography and Locations of Cross-Sections

W.M. 2000.06

South

North

Elevation Above Sea Level (metres)

880
870
860
850
840
830
820
810
800
790
780
770

GROUND PROFILE

PM99-02

847.5 m
Casing
Sand, black, indurated, magnetic
Lost core
4.54, 38.31 / 0.71
2.03, 8.44 / 1.98
0.41, 2.45 / 1.59
0.30, 2.20 / 2.05
0.32, 2.36 / 2.00
0.48, 2.92 / 2.00
0.45, 3.86 / 2.00
0.46, 3.44 / 1.59
0.49, 3.78 / 1.18
0.29, 10.93 / 0.74
0.44, 5.19 / 2.69
0.40, 3.51 / 2.00
0.38, 7.04 / 2.00
0.43, 3.29 / 2.00
0.47, 3.59 / 2.00
0.57, 3.32 / 2.61
Sand, brown
Sand, limonitic, pyritic
Sand, white, indurated
Sand, limonitic, pyritic
Sand, brown
Mudstone
Sand, grey, S&P
Mudstone

POLYGON (SOLID) 2

POLYGON (SOLID) 1

PM99-01

858.4 m
Casing
Siltstone
Mudstone
Siltstone
Coal
Sand, magnetic
Sand, black, indurated, magnetic
Sand, limonitic, magnetic
Sand, black, indurated, magnetic
Sand, magnetic
Sand, black, indurated
Sand, brown
Sand, white, indurated
12.52, 21.56 / 0.85
9.05, 38.99 / 0.72
9.12, 45.57 / 0.85
6.26, 59.91 / 0.87
4.76, 35.64 / 1.03
0.53, 28.92 / 1.22
2.10, 7.85 / 1.08
0.26, 7.21 / 0.62
0.38, 2.87 / 2.91
0.31, 2.23 / 1.32
0.34, 2.57 / 2.00
0.40, 8.50 / 0.61
0.51, 3.54 / 2.16
0.44, 3.48 / 2.00
0.49, 3.53 / 2.00
0.50, 4.06 / 2.10
0.43, 3.90 / 2.00
0.40, 4.53 / 2.00
0.40, 5.01 / 2.00
0.44, 3.77 / 2.00
0.49, 3.43 / 2.00
0.50, 3.23 / 2.08
Sand, brown
Coal
Siltstone
Mudstone
Sand, grey, S&P
Mudstone
Coal
Sand, grey, S&P
0.39, 2.27 / 3.38
0.30, 1.80 / 3.45
Mudstone
Sand, grey, S&P
Mudstone
Coal
Mudstone
Sand, grey, S&P
Mudstone

ZONE A (>4.00% TiO_2)

ZONE B (>2.00% TiO_2)

ZONE C (>1.00% TiO_2)

PM00-05

881.9 m
Casing
Siltstone
Mudstone
Sand
Siltstone
Mudstone
Coal
Sand, magnetic
Sand, black, indurated, magnetic
Sand, limonitic, magnetic
Sand, white, indurated
Sand, limonitic
Sand, brown
7.06, 9.34 / 0.11
10.53, 21.10 / 0.49
8.98, 37.80 / 1.42
9.32, 34.72 / 1.08
3.15, 12.33 / 0.69
0.42, 24.39 / 0.95
2.12, 8.32 / 1.79
0.29, 2.17 / 1.00

POLYGON (SOLID) 1

POLYGON (SOLID) 5

0 500 m

Horizontal Scale: 1:5000

Drill Hole Identifier
Elevation in metres a.s.l.
Lithologic Description
TiO_2 %, Fe_2O_3 % / interval (m)

NOTES:

1. Vertical exaggeration: 10X.
2. See Appendix 6 for lithologic logs.
3. See Appendix 7A for analytical results.
4. See Fig. 7.2 for location of section.

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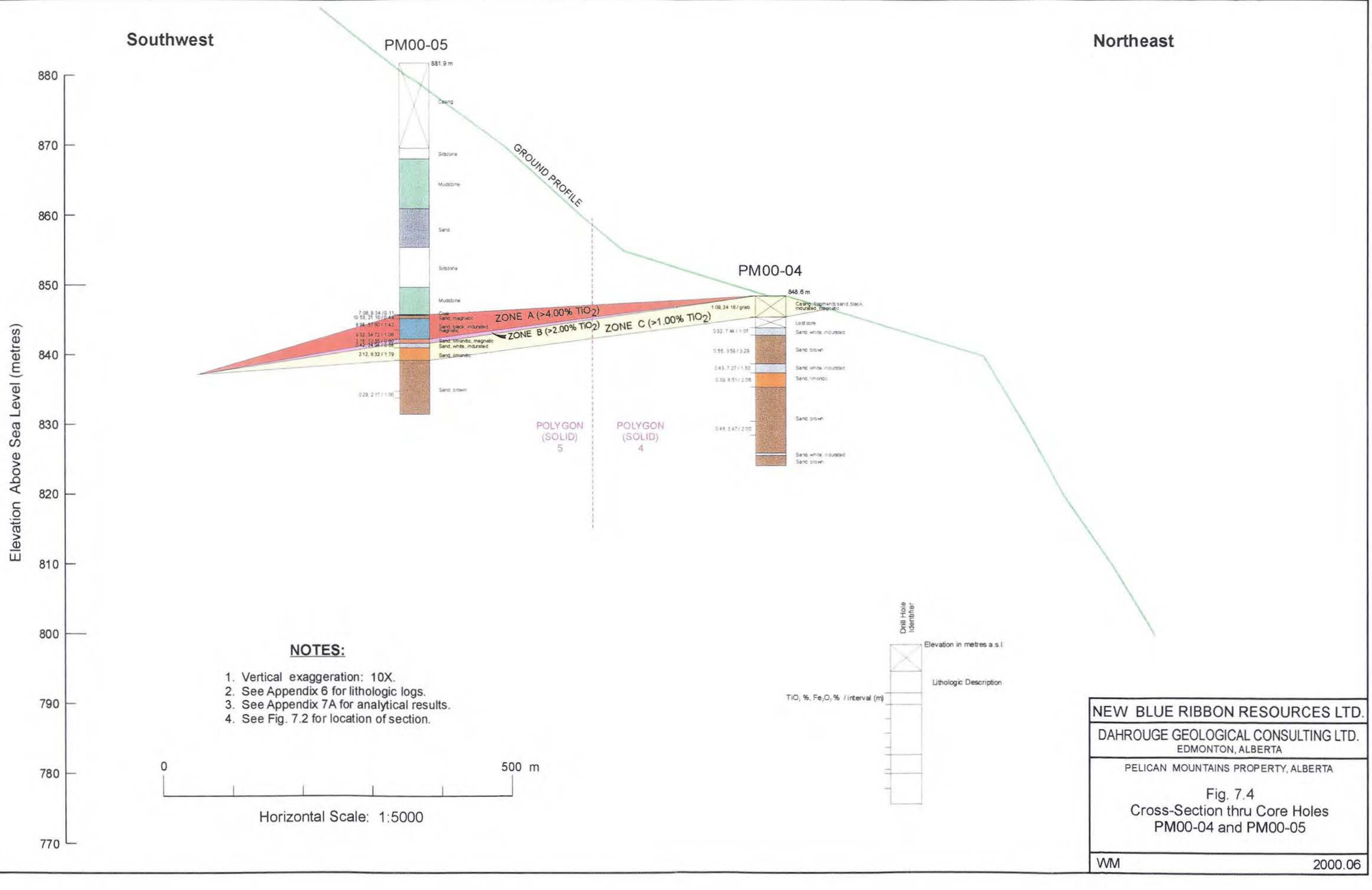
Fig. 7.3
Cross-Section thru Core Holes
PM99-01, PM99-02, and PM00-05

WM 2000.06



NOTES:

1. Vertical exaggeration: 10X.
2. See Appendix 6 for lithologic logs.
3. See Appendix 7A for analytical results.
4. See Fig. 7.2 for location of section.

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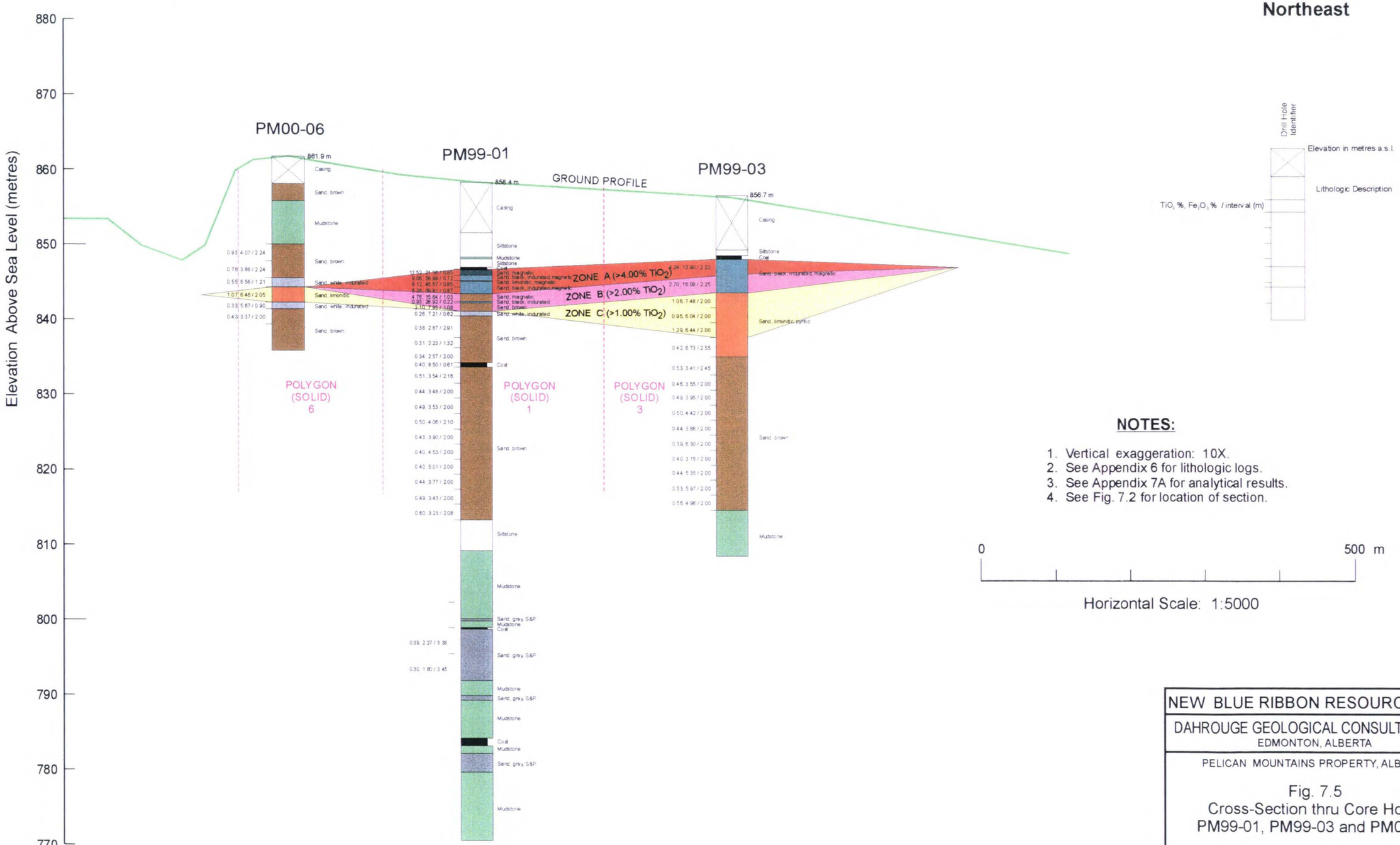
Fig. 7.4
Cross-Section thru Core Holes
PM00-04 and PM00-05

WM 2000.06

Southwest **Northeast**



NOTES:

1. Vertical exaggeration: 10X.
2. See Appendix 6 for lithologic logs.
3. See Appendix 7A for analytical results.
4. See Fig. 7.2 for location of section.

0 500 m

Horizontal Scale: 1:5000

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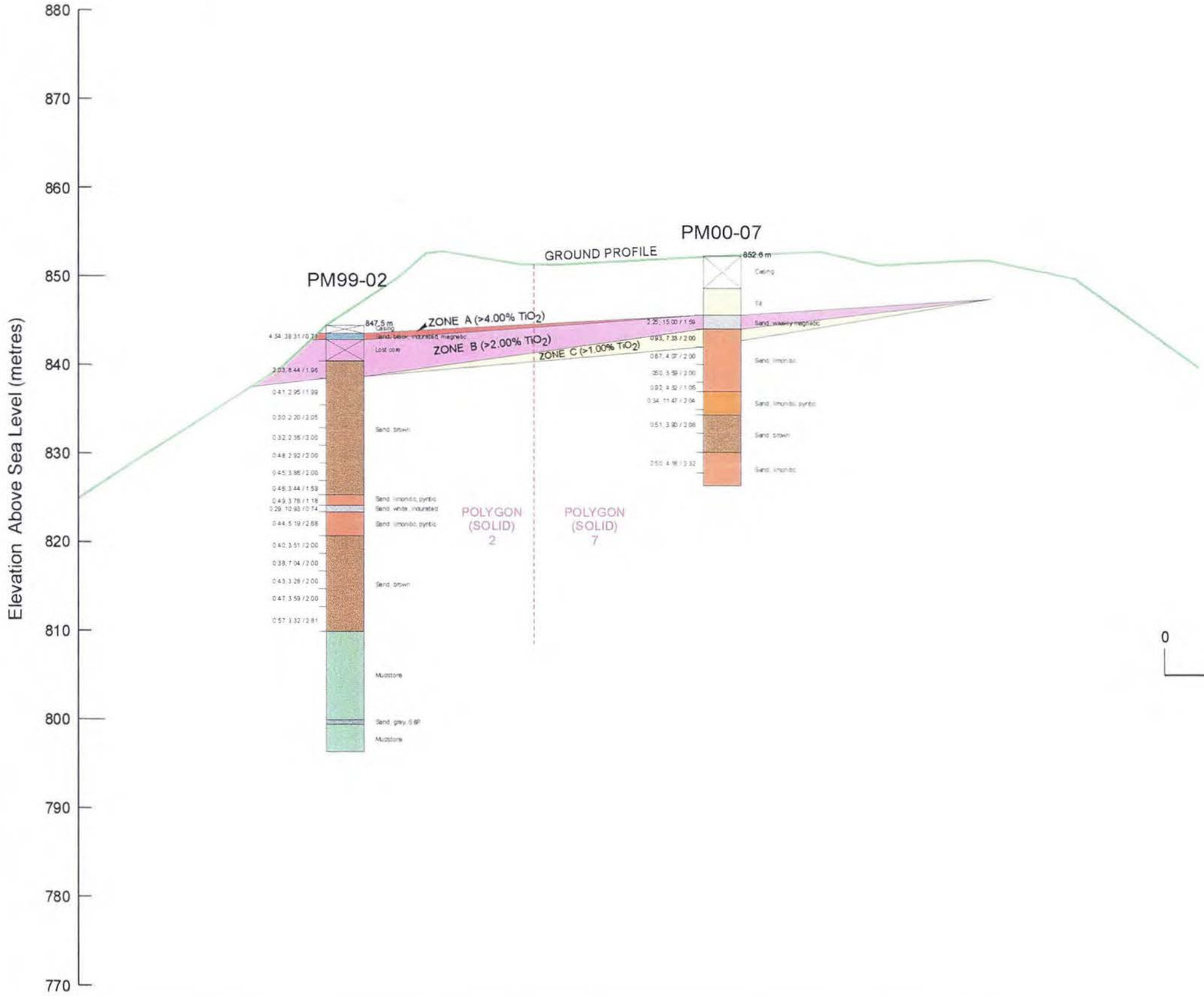
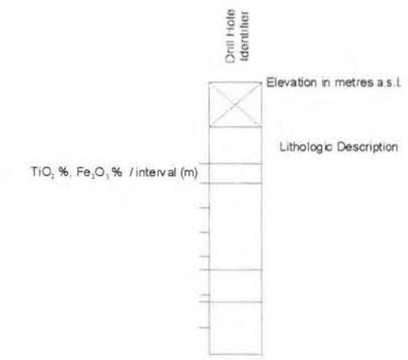
PELICAN MOUNTAINS PROPERTY, ALBERTA
Fig. 7.5 Cross-Section thru Core Holes PM99-01, PM99-03 and PM00-06
WM 2000.06

Southwest



Northeast



NOTES:

1. Vertical exaggeration: 10X.
2. See Appendix 6 for lithologic logs.
3. See Appendix 7A for analytical results.
4. See Fig. 7.2 for location of section.

0 — 500 m

Horizontal Scale: 1:5000

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PELICAN MOUNTAINS PROPERTY, ALBERTA Fig. 7.6 Cross-Section thru Core Holes PM99-02 and PM00-07
WM 2000.06

SYMBOLS

- Total field magnetic contour (interval: 2 nT)
- All-weather road
- All-weather or dry-weather gravel or dirt road
- Trail or cut line
- Property boundary
- Pipeline
- Oil / gas well
- Ground magnetic survey grid location — SAND GRID
- Airborne Geophysical Target; identifier — T11

NOTES

1) Map compiled from 1 : 20 000 scale digital base maps 83P/6NW, 11SW, 11NW, and 14SW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.

2) UTM grid is based on North American Datum, (NAD27); UTM grid zone: 12U.

3) Raw magnetic data supplied by Terraquest Ltd., Toronto, Ontario.

0 2 4 6 8

Scale (km)

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PELICAN MOUNTAINS PROPERTY, ALBERTA

Fig 6.1
Airborne Total Magnetic Field
(East Sheet)

WM 1999.1

NOTES

1) Map compiled from 1 : 20 000 scale digital base maps 83P/6NW, 11SW, 11NW, and 14SW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.

2) UTM grid is based on North American Datum, (NAD27); UTM grid zone: 12U.

3) Raw total-field magnetic contour data provided by Terraquest Ltd., Toronto, Ontario.

0 2 4 6
Scale (km)

SYMBOLS

- Total field magnetic contour (interval: 2 nT)
- All-weather road
- All-weather or dry-weather gravel or dirt road
- Trail or cut line
- Property boundary
- Pipeline
- Oil / gas well
- Ground magnetic survey grid location — SAND GRID
- Airborne Geophysical Target; identifier — T11

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PELICAN MOUNTAINS PROPERTY, ALBERTA
Fig 6.2 Airborne Total Magnetic Field (West Sheet)
WM 1999.11

Range 22 | Range 21 | Range 20

Township 79 | Township 78 | Township 77 | Township 76 | Township 75 | Township 74 | Township 73

PELICAN LAKE

PEL GRID (See Fig. 6.7)

TRIAD GRID (See Fig. 6.12)

QUAD GRID (See Fig. 6.8)

SAND GRID (See Fig. 6.9)

BAIT GRID (See Fig. 6.5)

BOU GRID (See Fig. 6.6)

10863

14034

10865 (Def Py)

NAT95-129 (G1,G10,SP)

10862 (G9)

14036 (Def Py)

PM00-04
PM00-05
PM99-05
PM99-01
PM00-06
PM00-07
PM99-02
14029
14030, 14033
14031

10861

10860 (G9,CD)

10851

10859 (5G9,UV)

10852

14037 (Def Py)

14038

14035

10855 (G9,CD)

10853

10856

10858 (4G9,G10,CD)

BA00-02
BA00-01

BU00-01
BU00-02

ROCK ISLAND LAKE

07-35-076-23W4
HUSKY OIL BROWNED
Compression Station
CAPACITY 141.E3m3/D
UTILIZATION 55%

N

SYMBOLS

- Elevation contour (interval: 10 m) — 1400
- All-weather road
- All-weather or dry-weather gravel or dirt road
- Trail or cut line
- Property boundary
- Pipeline
- Oil / gas well
- Ground magnetic survey grid location — SAND GRID
- Diamond drill hole; identifier — PM99-02

Sample Location; number - (indicator minerals)

- 10833 (G9) — Stream Sediment Sample
- 10833 (G9) — Till Sample

Diamond Indicator Mineral Identifiers

Microprobed Indicator Minerals

- Chmt - Chromite
- Cpx - Clinopyroxene
- CD - Chrome Diopside
- G9 - Garnet
- UV - Uvarovite Garnet
- SP - Spinel

Visual Indicator Minerals

- Pos - Possible
- Def - Definite
- CD - Chrome Diopside
- Py - Pyrope Garnet
- Ec - Eclogite Garnet

NOTES

1) Map compiled from 1 : 20 000 scale digital base maps 83P/6NW, 11SW, 11NW, and 14SW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.

2) UTM grid is based on North American Datum, (NAD27); UTM grid zone: 12U.

3) Samples 10854 and 10857 collected south of Pelican Mountains Property; see Appendix 4.

0 2 4 6 8
Scale (km)

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PELICAN MOUNTAINS PROPERTY, ALBERTA

Fig. 6.3
Exploration Summary
(East Sheet)

WM 1999.1

Range 25 | Range 24 | Range 23 W4 | Range 26 W4

Township 77 | Township 76 | Township 75 | Township 74 | Township 73

SNAG GRID (See Fig. 6.10)

14040 | 10866 | 10867 (Def Py) | 10860 (G9, CD) | 10868 | 10859 (5G9, UV) | 10852 | 10869 (2 Def Py, Pos Py) | BAIT GRID (See Fig. 6.5) | 10870 | 14035 | TOQUE GRID (See Fig. 6.11) | 14039 (Pos Py) | 10864 (Pos CD)

12-18-076-25W4 ANDER CANADA MARTEN HILLS SOUR OIL SELVE. ARCSOP CAPACITY 4029 E3m3/D UTILIZATION 98%

03-12-075-03W4 HUSKY DX MARTEN HILLS SOUTH Compressor Station CAPACITY 328 E3m3/D UTILIZATION 97%

14-27-074-25W4 ANDERSON MARTEN HILLS #2 DEHYD. CAPACITY E3M E3m3/D UTILIZATION 993%

11-20-074-03W4 CANADIAN FOREST MARTEN HILLS DEHYD. CAPACITY 158 E3m3/D UTILIZATION 93%

PELICAN MOUNTAIN | ORLOFF LAKE

NOTES

1) Map compiled from 1 : 20 000 scale digital base maps 83P/6NW, 11SW, 11NW, and 14SW supplied by Spatial Data Warehouse Ltd., Calgary, Alberta.

2) UTM grid is based on North American Datum, (NAD27); UTM grid zone: 12U.

0 2 4 6
Scale (km)

SYMBOLS

- Elevation contour (interval: 10 m)
- All-weather road
- All-weather or dry-weather gravel or dirt road
- Trail or cut line
- Property boundary
- Pipeline
- Oil / gas well
- Ground magnetic survey grid location — SAND GRID

Sample Location; number - (indicator minerals)

- 10833 (G9) — Stream Sediment Sample
- 10833 (G9) — Till Sample

Diamond Indicator Mineral Identifiers

Microprobed Indicator Minerals

- Chmt - Chromite
- Cpx - Clinopyroxene
- CD - Chrome Diopside
- G9 - Garnet
- UV - Uvarovite Garnet
- SP - Spinel

Visual Indicator Minerals

- Pos - Possible
- Def - Definite
- CD - Chrome Diopside
- Py - Pyrope Garnet
- Ec - Eclogite Garnet

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PELICAN MOUNTAINS PROPERTY, ALBERTA

Fig 6.4
Exploration Summary
(West Sheet)

WM 1999.11