GRAYMONT WESTERN CANADA INC.

2005 GEOLOGIC MAPPING AND EXPLORATION NEAR CROWSNEST PASS, BRITISH COLUMBIA

Tenure Numbers 331238, 331239, 347228, 331956, 331242, 331243, 337304, 337305, 337306, 337307, 337308, 337309, 336358, 336359, 337314, 337315, 337316, and 513344

Geographic Coordinates

49° 40' N
115° 42' W

NTS Sheet 82 G/10E

Owner of CMM Claims: Ecowaste Industries Ltd.

Operator: Graymont Western Canada Inc.
190, 3025-12st NE
Calgary, AB. T2E 7J2

Consultant: Dahrouge Geological Consulting Ltd.
18, 10509 - 81 Avenue
Edmonton, Alberta T6E 1X7

Author: J. Tanton, B.Sc., Geol. I.T.
J.R. Dahrouge, B.Sc., P.Geol

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1. INTRODUCTION

Summit Lime Works Ltd. (Summit Lime) has been in operation since 1905 when a plasterer, Edward George Hazell, obtained the land and used the lime for his business at Fernie, British Columbia. Summit Lime was placed in his daughters' names in 1938. It remained in the family until it was sold in 1990 to Continental Lime, who continue to operate the plant as Ecowaste Industries Ltd., an associated company.

Ecowaste obtained claims CMM 1 through 7, totalling 32 units, by staking in September and October, 1994. The claims adjoin land held by Summit Lime in Alberta. Fifteen additional adjoining claims (CMM 8-13, 16-24), totalling 65 units, were staked in June of 1995, and eight more (CMM 14, 15, 25A, 25B, 25C, 26, 27 and 28) of one unit each in May, 1997. A few claims (CMM 21-24, part of 20) were dropped in 1999, and some claims (CMM 6-7, 25 A-C, 26-28) were grouped, expanded, and converted to a cell claim (513344) in May, 2005.

This report describes the 2005 geologic mapping conducted on the CMM claims north of a natural gas pipeline corridor, concentrating specifically on claims CMM 4, 5, 8, 9, 14, 15, and claim tenure 513344. Detailed mapping was conducted in order to better define the locations and characteristics of the members of the Mount Head Formation; namely the Baril-Wileman, Salter, Loomis, Marston, Opal, and Carnarvon members. A geological map was compiled from the 2005 field work and from previously collected analytical and geological data. The Carnarvon, Opal and Loomis members of the Mount Head Formation and the Upper Massive Member of the Livingstone Formation host potentially large tonnages of high-quality limestone deposits.

Structural measurements were obtained at stations throughout the property. A magnetic declination of 16½° E was used. Attitudes of bedding and other planar features are given as A°/B° NW, where A° is the azimuth of the strike and B° is the amount of dip in the direction indicated. Linear measurements are given as D°-C°, where C° is the azimuth of the trend and D° is the amount of plunge in the direction of C°.

2. GEOGRAPHIC SETTING

2.1 LOCATION AND INFRASTRUCTURE

The CMM claims are located in southeastern British Columbia. They extend northerly for about 12 km from Crowsnest Pass and within about 4 km west of the British Columbia - Alberta border (Fig. 2.1, 2.2). The parts of the CMM claims explored in 2005 and described in this report extend north from the pipeline corridor for about 6½ km to a trail through Deadman Pass, and are within 3 km west of the interprovincial boundary. A convenient reference point is the entrance to

Crowsnest Provincial Park, which is on Highway 3 about 2 km west of the B.C. - Alberta border, and adjoins southwest of the CMM claims.

The Forestry Road corner in Coleman is 17 km east of Crowsnest Provincial Park and Sparwood is about 19 km westerly. Blairmore is 5 km east of Coleman. All three are, or were, centres of coal mining and are located along Highway 3. Nearly all supplies and resources are available in these towns, including fuel, groceries, phone and internet access, laundry, and accommodations. The Elk Valley Regional Airport serves Sparwood. Crowsnest Provincial Park is about 231 km by paved highway, southwest of Calgary, Alberta.

The southern line of the Canadian Pacific Railway (CPR), a natural gas pipeline of Alberta Natural Gas (ANG), and two electric power transmission lines, the northerly with aluminum towers, pass through or within 1 or 2 km of Crowsnest Provincial Park.

2.2 ACCESS

Access within the property and surrounding areas was investigated in early 2005. Several routes that lead northerly from Highway 3, on both sides of the British Columbia-Alberta border, provide access to the CMM claims. Most trails are accessible by 4x4 truck, but ATV's are recommended for steeper sections.

A trail that leads northerly from Crowsnest Provincial Park only continues for about 300 metres before it is blocked by a berm. The trail, which runs along the ANG pipeline, eventually reaches the southeastern portion of the CMM claims. Although B.C. Parks has denied vehicle access through the park, the ANG pipeline road is accessible along Highway 3 in Alberta, at the east end of Crownsnest Lake.

In 1996, Crestbrook Forest Industries Ltd. (Crestbrook) constructed the Scale House Logging Road (SHR) about 4 km long, starting near the weigh scale on Highway 3 about 1 km westerly from the entrance to Crowsnest Provincial Park. The SHR leads north and connects, or turns into, a road previously named Norman Road, which follows Norman Creek. The SHR-Norman Road crosses the beginning of the potential access trail flagged up Norman Creek in 1995, at the western boundary of CMM 5. In addition, the road provides easy access to the southwestern part of the CMM claims, the powerlines, and the east-west ANG pipeline road. Trails along the power transmission lines, and access to them, have gradients commonly reaching 14°, locally 18°, and even 22°.

CMM claims 9 and 16, the northern part of CMM 8, and the southern part of CMM 10 are accessible from a trail through Deadman Pass, which joins the 4-wheel-drive logging road within 1 km east of Alexander Creek. Sections of these trails contain large, deep potholes, which are impassable during wetter months; road rehabilitation would be required for extensive use. The Deadman Pass trails were not checked in their entirety. Their condition should be assessed prior to future use.

The rest of the CMM claims, particularly the higher parts, are accessible by helicopter, which is based in Fernie, B.C., or by extensive hiking and climbing. Cattle or game trails along Norman Creek and tributary creeks provide easier walking for accessing northerly and easterly areas of the property.

2.3 GEOGRAPHIC NAMES, TOPOGRAPHY, AND VEGETATION

For convenience, previously unnamed geographic features have been given informal names in this report. These names are those previously applied to these features by Schindler (1995), with a few added.

The CMM claims are on the western slopes of High Rock Range, which straddles the boundary between British Columbia and Alberta. In this part of High Rock Range, Allison Peak reaches an elevation of 2644 m, but the highest elevation within the property is 2560 m on an unnamed ridge 500 m further west, within claim CMM 12. The lowest elevations on the property are about 1400 m, where Norman Creek crosses the southern edge of the claim block, and along the pipeline road at the western boundary of claim CMM 4. Within the part of the property explored in 2005, the mountain slopes are steep and rugged. They are broken by valleys of creeks tributary to Norman Creek, which flows southerly from Rudolf Ridge to Summit Creek, near Crowsnest Provincial Park.

Vegetation consists of poplar, pine, and spruce, some of which reach diameters of ½ m on lower slopes. Treeline is at about 1950 m. Undergrowth is mostly thin except at lower elevations on some northerly facing slopes. Rock exposure is generally greater on southerly facing slopes.

2.4 FIELD OPERATIONS

From October 15 to 27, 2005, a four person crew, based at the Best Canadian Inn in Coleman, Alberta, conducted the fieldwork. Transportation between Coleman, Blairmore, and the property was by a rented four-wheel-drive vehicle. Access throughout the property was by truck and ATV's where possible, and otherwise by extensive hiking and climbing.

Garmin 76 GPS instruments were used to mark mapping stations and record access information. A magnetic declination of 16½° E was used.

3. PROPERTY

The CMM Property consists of 20 contiguous mineral claims totalling 103 units covering approximately 2575 ha within the Fort Steele Mining Division, NTS Map Sheet 82 G/10E (Fig. 2.2; Table 3.1). These claims are registered in the name of Ecowaste Industries Ltd.

The land south of latitude 49°43'N was granted to the Southern British Columbia Railway in 1898. The present holder of the land comprising this grant is Tembec Inc. The limestone is a mineral under the B.C. Mineral Tenure Act, and the CMM claims south of latitude 49°43'N include the limestone.

Tembec Inc. owns the surface rights to the specified areas above, including the timber, so permission to explore and quarry must be obtained from Tembec Inc.

4. HISTORY AND PREVIOUS INVESTIGATIONS

Lime has been produced at the present site of Summit Lime, which is located on the Alberta side, since 1905 (Gresl, 2005). The first owner of the land was Archibald Macmott McVittie, a dominion government land surveyor, in 1903. The property was purchased from McVittie by Edward George Hazell, a plasterer by trade, in 1905. He initially obtained approximately 63 acres and continued to purchase additional land in the area over the next 33 years. Hazell hauled lime from Summit to Fernie, B.C., as he was involved in the rebuilding of the town after the fire of 1903 (Gresl, 2005).

Summit Lime was sold to Hazell's three daughters, Bessie, Nellie, and Minnie, in 1938. The family kept the business until 1990, when they sold it to Continental Lime, or Ecowaste Industries Ltd.

TABLE 3.1 LIST OF CMM MINERAL CLAIMS

Claim Name	Tenure Number	Units per Claim	Size (Ha)	Record Date	Current Expiry Date
CMM 1	331238	1	25	Sep 18, 1994	Dec 31, 2005
CMM 2	331239	1	25	Sept. 18, 1994	Dec. 31, 2005
CMM 2A	347228	1	25	June 11, 1996	June 11, 2006
CMM 3	331956	1	25	Oct. 11, 1994	Dec. 31, 2005
CMM 4	331242	12	300	Sept. 20, 1994	Dec. 31, 2005
CMM 5	331243	15	375	Sept. 21, 1994	Dec. 31, 2005
CMM 8	337304	15	375	June 21, 1995	June 21, 2006
CMM 9	337305	4	100	June 21, 1995	June 21, 2006
CMM 10	337306	16	400	June 22, 1995	June 22, 2006
CMM 11	337307	6	150	June 22, 1995	June 22, 2006
CMM 12	337308	6	150	June 22, 1995	June 22, 2006
CMM 13	337309	9	225	June 22, 1995	June 22, 2006
CMM 14	356358	1	25	May 23, 1997	May 23, 2006
CMM 15	356359	1	25	May 23, 1997	May 23, 2006
CMM 16	337314	1	25	June 21, 1995	June 21, 2006
CMM 17	337315	1	25	June 22, 1995	June 22, 2006
CMM 18	337316	1	25	June 19, 1995	June 19, 2006
	513344	10.98	274.5	May 26, 2005	Dec. 31, 2005
		103	2574.5		

Several quarries have operated in strata of the Livingstone and Mount Head Formations (Holter, 1994, p. 6-1). Currently, twelve quarries belong to summit lime in Alberta, not all in operation, and two working vertical kilns exist at Summit Lime. Other than lime production, the limestone is screened for size and shipped out to various markets. The rock is used in beet-sugar factories, coal-washing plants, glass-making, coal mine dusting, stock feeds and other agricultural purposes, poultry grit, stucco dash, for flux, and road material.

Goudge (1945) described and presented chemical analyses of limestone at and near Summit Lime at the time of his examination, believed to be in the 1930's.

Price (1962) described the geology of the Fernie map-area east half, which includes Summit Lime and the CMM claims.

Between 1960 and 1990, the geology and other features of the area at, and surrounding, Summit Lime have been investigated by several geologists and engineers including Pennar (1960), Crabb (1966), Dawson (1964), Van Raalte (1969), Pelletier (1973), Brasher (1974), Pool (1974), Sherman (1990), and Wardall (1990).

Holter (1976) described the limestone resources of Alberta including those of Summit Lime

and briefly mentioned Crowsnest Pass and Summit Lime in his 1994 review of Alberta limestone.

Macdonald and Hamilton (1981) described limestone prospects near the Crowsnest Pass including some that are now within the CMM claims. Hamilton (1987, p. 12-17) investigated carbonate rocks of the Devonian Fairholme Group in Phillipps Pass for use as filler material.

Riprap was the subject of two reports in 1988. Seymour and Schindler (1990) evaluated the economic potential of Summit Lime. Their work included 16 percussion drillholes and 10 diamond drillholes.

Richard T. Brandley (1993) completed a Graduate Thesis on the lithostratigraphy, sedimentologic relationships and depositional characteristics within the Mount Head Formation of southwestern Alberta and southeastern British Columbia.

Knox and Schindler (1995) described a drilling program involving 10 diamond drillholes at, and near, Summit Lime's #8 Quarry in Alberta. Schindler (1995) spent a few days in the latter part of 1994 examining and sampling limestone from the British Columbia - Alberta border near Crowsnest Pass north to, and beyond, Deadman Pass, an area now included in the CMM claims.

In 1995, approximately 3830 m of a potential access trail part of the way to future potential drillsites were flagged. The route was selected so that it could serve as a future haul road for quarried stone. In addition, 263 m were flagged for a possible access trail connecting the pipeline access road to a powerline access trail just east of Crowsnest Provincial Park. Gradients of the access trail along the powerline with aluminum towers were measured to assess its suitability.

Potential drillsites were checked for archeological and timber concerns and none were found. With approval of the B.C. Government obtained only for helicopter-supported drilling north of the pipeline corridor, the planned drilling was deferred.

Also in 1995, a total stratigraphic thickness of nearly 4000 m was measured and 634 samples of limestone were chipped from 1400 m of outcrops at 125 stations. Samples were analysed by Inductively Coupled Plasma (ICP) techniques in the Central Laboratory of Graymont Inc. in Salt Lake City, Utah.

5. SUMMARY OF WORK

5.1 PURPOSE OF STUDY

The work described herein was undertaken to determine the local stratigraphy of the Mount Head Formation and to identify the location and extent of high quality limestone units throughout the area.

5.2 2005 EXPLORATION AND GEOLOGICAL MAPPING

Between October 15 and 27, 2005, a total of 253 mapping stations were examined, and geological observations and other pertinent information recorded (Appendix 2). Geological observations included lithologic information, measurements of structural elements and other pertinent details. In some instances, interval thicknesses were determined by measuring outcrops perpendicular to bedding, where it could be identified. Stratigraphic thicknesses are more approximate in areas of excessive or cliff outcrop. A solution of 6% HCl was used to assess carbonate quality in the field.

TABLE 5.1 LOCATIONS EXAMINED IN 2005*

Section	Stations
Along Northern Powerline (Aluminum Tower Line)	1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 1R, 1S, 1T, 1U, 1V, 1W, 1X, 1Y, 1Z, 1AA, 1BB, 1CC, 1DD, 1EE, 1FF, 1GG, 1HH, 1II, 1JJ, 1KK, 1LL, 1MM, 1NN, 1OO, BHH, BII, BJJ
Along Southern Powerline	AB, AC, AD, AE, AF, AG, AH
Between Northern Powerline Trail and Southern Powerline	AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, AAA, ABB, ADD, AEE, AFF, AGG, AHH, AII, AJJ, AKK, ALL, AMM
Norman Road	1PP, AA, ANN, AOO
Lower Western Slope of Vaughan Ridge	BA, BB, BC, BD, BE, BG, BH, BI, BJ
Northern Slope of Vaughan Ridge	BK, BM, BN
Vaughan Ridge	BO, BP, BQ, BS, BU, BV, BW, BX, BY, BZ, BAA, BBB, BCC, BDD, BFF, BGG
Caroline Creek	CA, CB, CC, CP, CQ, CR
Ridge between Mary Creek, Caroline Creek and Waterfall Creek (Lower)	CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO
Mary Creek	DA, DB, DC, DD, DE, DF, DG, DH, DI
Ridge between Mary Creek and Waterfall Creek (Upper)	DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU
Lower David Ridge	EA, EB, EC, ED, EE, EF, EG, EH, EI
Upper David Ridge	EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU
Miriam Creek	EV, EW, EX, EY
Southern Slope of Rudolf Ridge	FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ
Near Knox Creek (discontinuous)	FR, FS, FT, FU, FV, FW, FAA
Knox Ridge	FX, FY, FZ
Along Norman Creek	FA, FC, FBB, FCC, FDD, FEE
Deadman Pass	GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ

*Listed are the plotted mapping stations on Fig. 7.1

6. REGIONAL GEOLOGY

Except for the Mount Head Formation, most of the following description of the regional geology is summarized from Price (1962); references to him are omitted except for direct quotations. Only Devonian, Mississippian, Pennsylvanian, Permian, and Triassic formations are included in Table 6.1, although other formations are present in High Rock Range north of Crowsnest Pass.

At and near Crowsnest Pass, the formations listed in Table 6.1 comprise a northerly trending band in the Lewis thrust sheet. They unconformably overly Upper Cretaceous strata and outcrop to the east in Alberta. Although they outcrop in Alberta within the Lewis thrust sheet, none of the Devonian Formations, nor the Exshaw Formation, outcrop in High Rock Range in British Columbia for at least 30 km north of Crowsnest Pass; therefore, they are not described further in this report.

TABLE 6.1 PERTINENT STRATIGRAPHY IN HIGH ROCK RANGE, CROWSNEST PASS *

Age	Group	Formation	Member
Triassic	Spray River		
Permian - Pennsylvanian	Rocky Mountain		
Mississippian	Rundle	Etherington	
		Mount Head	Carnarvon Opal Marston Loomis Salter Baril-Wileman
		Livingstone Banff Exshaw	
Devonian		Palliser Alexo Fairholme	

*modified after Price, 1962

6.1 STRATIGRAPHY

6.1.1 Banff Formation

According to Price (1962; p. 19-20), the Banff Formation is 320 m thick at Tornado Pass, about 38 km north of Crowsnest Pass in High Rock Range. It consists mostly of thinly-bedded black and brownish-black shale and calcareous shale, black cherty limestone, cherty siltstone and banded black chert in its lower part. Its middle part consists of thinly-bedded, dark-grey and black, dense, cherty argillaceous limestone. Its upper part consists mainly of medium-dark-grey, fine- to medium-crystalline limestone with disseminated skeletal fragments and bands, lenses, and patches of grey calcareous chert. The limestone in its upper part weathers darker grey than limestone in the lower part of the overlying Livingstone Formation.

6.1.2 Livingstone Formation

The Livingstone Formation is about 350 m thick at Tornado Pass. "It consists mainly of light-grey skeletal calcarenites and calcarenitic fine-crystalline limestone. Cherty limestone beds are common in the lower part ... and interbeds of light-grey fine-crystalline dolomite, commonly silty" (Price, 1962; p. 20) are present in the upper part. Beds of porous sucrosic "dolomite appear to be the dolomitized equivalents of calcarenites" (Price, 1962; p. 20).

6.1.3 Mount Head Formation

The Mount Head Formation is about 300 m thick at Tornado Pass. To the northeast of Crowsnest Pass, near Gap and Mount Head in Alberta, the Mount Head Formation was originally divided into six members from bottom to top: Wileman, Baril, Salter, Loomis, Marston, and Carnarvon with lithologies (Douglas, 1953), except for the Marston Member indicated in Table 6.2; to the west, facies changes in the Marston and lower two-thirds of the Carnarvon Member led Macqueen and Bamber (1968) to introduce the Opal Member for this interval. In High Rock Range, the lithology of the Baril Member appears to alternate with that of the Wileman Member, so that three stratigraphic units of each lithology are present (Knox and Schindler, 1995); therefore, in this report, the Baril-Wileman is considered one unit for simplicity.

The most recent comprehensive account of the stratigraphy of the Mount Head Formation in southwest Alberta and Southeast British Columbia is that of Brandley (1993). He described and measured 27 sections from Upper Exshaw Creek north of Bow Valley to Overfold Mountain southeast of Fernie, B.C. Information on five wells in southwest Alberta was also included. The thickness of the Mount Head Formation ranges from 84 to 516 m. Brandley critically reviewed previous stratigraphic studies and confirmed the seven members previously described by Douglas (1953, 1958) and Macqueen and Bamber (1968). From bottom to top they are Wileman, Baril, Salter, Loomis, Marston, Opal, and Carnarvon. Not all members are present at every section. In seven isopach maps, one for each of the seven members, Brandley (1993) shows considerable irregular variations in thickness of the seven members. In general the Wileman, Salter, Marston, and Carnarvon Member thicken to the west. The sections described by Brandley (1993) closest to the CMM claims are at Racehorse Pass and Mount Ptolemy, which are about 14½ km northerly and 12½ km southerly from Crowsnest Peak, respectively. The stratigraphic thicknesses of the seven members of the Mount Head Formation, as used in this report at these sections, are listed below. Brief descriptions of the members, as determined in the property area, are available in the following section entitled Property Geology.

TABLE 6.2 COMPARISON OF MEMBER THICKNESSES OF THE MOUNT HEAD FORMATION

Member	Racehorse Pass (m)	Mount Ptolemy (m)	Range of Thicknesses in Brandley's Area (m)
Carnarvon	32	20½	2-117
Opal	311½	158½	0-320
Marston	42½	14	0-60
Loomis	81½	57½	4-125
Salter	9½	21	0-64
Baril	not present	43	3-27
Wileman	not present	11½ +	6-38

6.1.4 Etherington Formation

The Etherington Formation is about 185 m thick at Crowsnest Pass. According to Price (1962; p. 22-23), the lowest part

> ..."consists mainly of medium grey, fine-crystalline to cryptocrystalline limestone with variable amounts of skeletal calcarenite, mainly as disseminated echinoderm fragments in the dense limestone matrix. Nodules and bands of medium grey chert are abundant and silicified brachiopods are common. Thin interbeds of green and greenish grey shale are characteristic. The limestone is typically thinly bedded and commonly has faint lamination etched into relief on weathered surfaces. These beds appear to be gradational over a few feet into those of the Carnarvon Member of the Mount Head Formation. The middle part of the Etherington Formation consists mainly of medium and light grey skeletal calcarenites. Medium- to very coarse-grained echinoderm fragments occur in association with foraminifera, and less commonly contain lenses and nodules of medium grey chert. The calcarenites are generally thickly bedded or massive and commonly contain lenses and nodules of medium grey chert. ... The upper part ... is characterized by silty and sandy fine-crystalline dolomite".

Brandley (1993) designated the first greenish shale as the bottom of the Etherington Formation.

6.1.5 Rocky Mountain Group

The Rocky Mountain Group is about 300 m thick at Tornado Pass. According to Price (1962; p. 24), the

> "lower and by far the greater part ... consists of a monotonous succession of light-coloured quartzitic, dolomitic or calcareous, fine-grained, quartz sandstone. ... The sandstone succession is overlain by

approximately 50 feet of grey, fine-crystalline dolomite, silty dolomite, and cherty dolomite with interbeds of yellow and brown shale, grey chert, cherty quartz-pebble conglomerate, and conglomeratic sandstone. The dolomites are most abundant".

6.2 STRUCTURE

The pertinent parts of the High Rock Range are at, or near, the eastern limit of the Lewis Thrust Sheet. The Lewis Thrust is a major feature of the southern Canadian Rocky Mountains. It has been traced for more than 300 km along the strike of the Rocky Mountains. The maximum stratigraphic separation across it may reach 9000 m, and the maximum thickness of strata within the thrust sheet is about 6000 m. Within the Lewis Thrust Sheet, the strata constituting High Rock Range form a west-dipping homoclinal succession. Some are repeated not far to the west by the Alexander and other faults.

"North of Crowsnest Pass the Lewis Thrust Sheet has been folded, essentially concordantly, with the underlying Mesozoic strata ... " (Price, p. 49).

7. PROPERTY GEOLOGY

Strata of the Livingstone, Mount Head and Etherington were mapped in 2005. Based on this exploration and previously collected data, geological contacts shown on previous maps (Halferdahl, 1995) pertinent to the CMM claims were adjusted.

7.1 STRATIGRAPHY

The focus of the 2005 exploration program was the detailed lithostratigraphic mapping of the members of the Mount Head Formation, as well as their contact relation to the Livingstone and Etherington formations.

7.1.1 Livingstone Formation

North of the pipeline corridor, the Livingstone Formation outcrops in the southeast part of claim CMM 4, and underlies the eastern part of tenure 513344. It also occupies the area east of these claims to the British Columbia - Alberta border and beyond, into Alberta where it is underlain by the Banff and Palliser formations. Not far north or northwest of Phillips Peak, the contact between the Livingstone and Mount Head formations trends northerly in Alberta just east of the British Columbia - Alberta border. Grainstone, and some wackestone - packstone in the upper part of the Livingstone Formation were examined in 2005 (Appendix 2).

The Livingstone Formation consists of grainstones with interbeds of dolomitic wackestones to packstones, all generally light-grey in color. The grainstones are quite thick-bedded to massive, with a homogenous bioclast content; typically they are very rich in crystalline crinoid stems and ossicles, with minor bryozoans. Larger bioclasts are generally not present in the Livingstone Formation, which aids in distinguishing the unit from the more heterogenous Baril-Wileman Member of the Mount Head Formation. The massive and resistant grainstones of the Livingstone Formation react well with HCl and are considered to be limestones of a high quality. Some platy, or "oozy", chert is present within occasional beds of lime or dolomitic mudstones. Covered intervals seen in the field are likely thin-bedded mudstone units, as they tend to be more recessive than the grainstone layers.

7.1.2 Mount Head Formation

North of the pipeline corridor on the claims explored in 2005, the Mount Head Formation outcrops within the majority of claims CMM 4 and 5, the eastern part of CMM 8, and northeastern parts of tenure 513344. About 214 stations were examined within the Mount Head Formation. Lithologies include grainstone, packstone, wackestone, and mudstone, some of which is dolomitic or chert-bearing or both (Appendix 2). Descriptions of the different members of the Mount Head Formation follow.

The Baril-Wileman Member is a grouping of the originally defined Baril and Wileman members. It consists of alternating sequences of the Baril and Wileman lithotypes.

The Wileman Member is defined as the first approximately 5m of recessive fine-grained, dolomitic mudstone above the resistant coarse-grained limestone of the Livingstone Formation. The basal contact is disconformable, gradational and bioturbated. It is olive-grey to light-grey to brown dolomudstone that commonly contains 10 to 30 percent silt. The rocks are massive or bioturbated, or may show ripple cross lamination. Chert is locally common as nodules and along beds.

The Baril Member is a relatively thin unit in sharp contact with the Wileman Member, and consists of moderately resistant, grey-weathering, coarse-grained limestone with chert nodules and scattered dolomite crystals. It's lithology includes bioclastic packstone, generally cross-bedded grainstone and packstone, with interbeds of mudstone to wackestone. Locally, up to 40 percent of the rock is dolomitized or extensively neomorphosed to crystalline limestone. The packstone and grainstone are coarse-grained, poorly sorted, resistant layers. They are generally medium-grey to brown fresh, containing a variety of bioclasts, including crinoids, bryozoans, solitary corals

and brachiopods. Algal mat bindstones were observed in one outcrop along the northern powerline traverse (Figure 7.1, Station 1BB). The algal mats have not been noted at any other locations.

The Salter Member disconformably overlies the Baril Member. It is a recessive succession of tan- to olive-grey weathered, medium-grey and dark-brown fresh, silty, microcrystalline dolostone (less silty than the Wileman Member). The unit includes bioturbated microcrystalline dolo and lime mudstone, grading to wackestone at the base, with interbeds of grainstone and packstone. Chert is present throughout the Salter Member as large nodules and along beds. The large amount of chert distinguishes the Salter from the Baril-Wileman and Loomis members and aids in determining contacts between the units. Commonly, the Salter Member is not exposed in the field due to its recessive nature and therefore contacts are placed at the start and end of covered sections. Locally, abundant gypsum and/or anhydrite indicate an evaporitic depositional environment.

The Loomis Member is a thick, mostly resistant, coarse-grained, ooid-rich limestone sequence. The Loomis is dominated by packstone and grainstone with thin interbeds of bioturbated microcrystalline dolostone, bioclastic mudstone to wackestone, and thin chert beds and nodules. The rocks are commonly neomorphosed to crystalline limestone, particularly near faults, or locally dolomitized, with dolomite rhombohedrons. The Loomis Member is in disconformable sharp contact with the underlying Salter Member.

The Marston Member overlies the Loomis following a sharp disconformity. It consists of a recessive succession of tan to brown to light-grey, microcrystalline dolostone, silty dolostone, limestone with well-developed dissolution-collapse breccias, and sparse paleosol interlayers. Within the upper part, chert is present as large nodules and along beds, similar to the Salter Member. Alike the Salter, the Marston is a recessive sequence that doesn't always outcrop. Contacts are often placed at the beginning and end of covered sections.

The Opal Member is generally comprised of thick massive grainstones with packstones to grainstones and mudstones in upper sections.

The lower portion is a resistant, thick, high-quality limestone unit of massive, homogenous, medium to dark greyish-brown, fossiliferous packstone to grainstone. The majority of the bioclasts are indeterminate, or fragmented; however, ooids and crinoids are commonly visible. Some field sections of Opal were entirely ooid packstone or grainstone, making it difficult to distinguish from the Loomis Member. Minor, small interbeds of dolomitic wackestone to packstone may be present near the centre of the section.

Some sections are wackestone to packstone with occasional silty or mudstone beds containing either bioclasts or chert. Distinctive beds of pelleted or fenestral limestone have been noted. Its uppermost parts are well bedded, cryptocrystalline to micritic, argillaceous lime mudstone, and dolomitic and calcareous shales.

The distinctive dark color of the Opal Member results dominantly from organic matter disseminated throughout the rock. The very top of the Opal Member is very well bedded with interbeds of black, organic-rich, shaly layers, cryptocrystalline to micritic lime mudstones, and sparse beds of tan weathered, brown fresh dolostone with cherty layers.

The Carnarvon Member consists of well bedded, dark-grey to greyish-brown lime mudstones and siltstones with shaly, black carbonaceous interbeds. It grades upwards to a dark-grey wackestone to packstone to peloidal grainstone with a variety of fossils, such as large rugose corals, brachiopods, bryozoans, crinoids, and very rare blastoids.

7.1.3 Etherington Formation

North of the pipeline corridor, on the claims explored in 2005, the Etherington Formation outcrops within the western parts of claims CMM 4, 5, and 8. Its upper contact was not observed, but at one place along Norman Creek near the Initial Post of abandoned claim CMM 21, it is bracketed by sandstone talus of the Rocky Mountain Formation.

Lithologies noted include packstone, wackestone, grainstone, limestone conglomerate, cherty dolomudstone or dolosiltstone, and shale. Within packstones of the lower Etherington, a unique crinoid was observed in a section near Highway 3, just west of the northern portion of Island Lake. The cross section of the crinoid ossicles exposed a five chamber, or pentamerally symmetrical, flower-like columnar centre.

7.2 STRUCTURE

The strata of the western slope of High Rock Range form a westerly dipping homocline and are affected by several sets of joints.

Faults are sub-parallel to bedding and show steeper dips (Fig. 7.1). They are related to the general eastward thrusting within the Foothills and Front Ranges of the Rocky Mountains. Of the faults within the property, the thrust fault crossing Vaughan Ridge at an elevation of about 1980 m repeats strata of the Mount Head and Livingstone formations as observed from the Initial Post of claim CMM 15. Its trace is based on an attitude of 0°/52° W. Other faults suggested within the property are based on stratigraphic considerations. A local minor fault along Kirsten Creek was

observed along Kirsten Creek with a strike of 30° and a dip of 33° SE. The orientation of this fault is opposite to the general vergence and steep dip of thrusting along Kirsten Creek, suggesting that normal detachment accompanied Late Tertiary to Recent uplift of the High Rock Range.

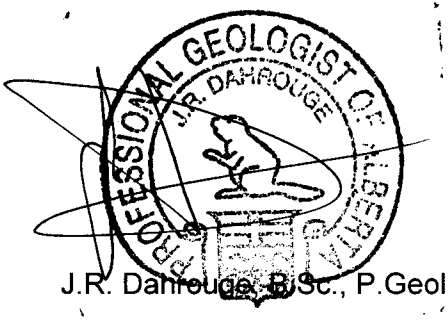
8. CONCLUSIONS

Within the CMM claims, exposures of the Livingstone Formation, members of the Mount Head Formation and the Etherington Formation were examined between Phillips Pass and Deadman Pass of the High Rock Range. A total of 253 stations were mapped and described in detail.

The 2005 work was undertaken to develop an accurate geological map of the area and define the locations of high quality carbonate units. Mapping concentrated within an area approximately 4 km north of the Alberta Natural Gas pipeline. Various lithologies are present, such as fossiliferous grainstones, packstones and wackestones, lime mudstones, and cherty dolomudstones. A large assortment of fossils were noted, including crinoid ossicles and stems, ooids, bryozoans, brachiopods, bivalves, rugose and other solitary corals, colonial corals, blastoids, and algal mats.

More work is required to complete the geological map initiated in 1995 in order to better interpret the stratigraphy, structure and outlines of the targeted stratigraphic units within the Livingstone, Mount Head, and Etherington formations throughout the entire property.

J. Tanton, B.Sc., Geol. I.T.



J.R. Dahrouge, B.Sc., P.Geol.

Edmonton, Alberta
2006 02 02

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APPENDIX 1: ITEMIZED COST STATEMENT

a) Personnel

A. Knox, geologist						
2.00	days		preparation for field			
6.41	days		field work and travel August 28, 29; October 16 to 20			
8.41	days	@	$ 481.50	$ 4,049.42		
J. Dahrouge, geologist						
6.90	days		field work and travel between August 28, 29; October 24 to 27			
0.20	days		supervising and report preparation			
7.10	days	@	$ 518.95	$ 3,684.55		
J. Tanton, geologist						
13.00	days		field work and travel between October 15 to 27			
24.10	days		preparations, report preparation, map preparation, other			
37.10	days	@	$ 363.80	$ 13,496.98		
A. Wennekamp, geologist						
13.00	days		field work and travel between October 15 to 27			
1.00	days		preparations			
14.00	days	@	$ 363.80	$ 5,093.20		
W. McGuire, draftsman						
7.10	days		drafting, preparing and plotting figures and maps, other			
7.10	days	@	$ 476.15	$ 3,380.67		
D. Wilson, assistant						
8.00	hours		data entry, binding reports, photocopying, other			
8.00	hours	@	$ 16.05	$ 128.40		
					$	29,833.21

b) Food and Accommodation

34	man-days	@	$ 55.86	accommodations	$ 1,899.09	
34	man-days	@	$ 40.89	meals	$ 1,390.10	
34	man-days	@	$ 5.07	groceries and other	$ 172.50	
						$ 3,461.70

c) Transportation

Vehicles:	Rental for 4x4 Sports Utility Vehicle	$ 3,849.36	
	ATV Rentals (August 28, 29; October 15 to 27)	$ 4,413.75	
	Fuel	$ 783.26	
	Mileage	$ 217.35	
			$ 9,263.72

d) Instrument Rental n/a

e) Drilling n/a

f) Analyses n/a

g) Report

Reproductions and assembly	$ 52.80		
		$	52.80

h) Other

Courier and Shipping	$ 12.84	
Digital Data	$ 440.00	
Field Equipment and Supplies	$ 221.20	
Long distance telephone	$ 3.86	
Photocopying	$ 65.74	
Plots	$ 294.25	
		$ 1,037.88
Total		$ 43,649.30

APPENDIX 2: DESCRIPTIONS OF THE 2005 STRATIGRAPHIC SECTIONS

Notes: Bedding attitudes are strike and dip. Measured sections are listed in order from stratigraphic top to bottom. Section locations are shown on Fig. 7.1.

Abbreviations: Sltst - Siltstone, Mdst - Mudstone, Wkst - Wackestone, Pkst - Packstone, Grst - Grainstone, Ca - Calcite, HCl - Hydrochloric Acid

Liv - Livingstone Formation; MH - Mounthead Formation, BW - Baril-Wileman Member, Sa - Salter Member, Lo - Loomis Member, Ma - Marston Member, Op - Opal Member, Cn - Carnarvon Member; Et - Etherington Formation; RM - Rocky Mountain Formation

Location	Thick. (m)	Unit	Type	Description

Traverse 2005-1

Traverse 1 starts at the southeastern end of the mapping area at the split of two electric power transmission lines. The traverse continues northwest along the northerly 'aluminum tower' powerline until it reaches Norman Road.

1A		Liv	outcrop	**Crinoidal Lime Grainstone**, light-brownish-grey fresh; medium-grained; indistinct bioclasts, some crinoids; weakly fractured; massive
1B		Liv	outcrop	**Lime Grainstone**, light-grey-brown fresh; medium- to coarse-grained; cherty dolomudstone to limestone interbeds; homogenous; weakly bedded
1C		Liv	scattered outcrop	**Crinoidal Lime Grainstone**, light-grey to light-brown fresh; fine- to medium-grained; some chert nodules; indeterminate bioclasts, one horizon with large rugose corals; massive
1D		Liv	float	**Cherty Dolomudstone**, abundant chert
1E-1F		Liv	outcrop	**Dolomitic Lime Wackestone, Crinoidal Packstone, Dolomitic Cherty Lime Wackestone**, tan weathered, light-grey fresh; Wkst: fine-grained, Pkst: coarse-grained; Wkst: weak, slow reaction to HCl; local chert; Ca veins; visible dolomitic grains weathering up; moderately fractured; platy; base: Cherty Lime Wkst, mid: Pkst, top 3m: Lime Wkst
downslope from 1F		Liv	outcrop	**Dolomitic Mudstone**, light-grey fresh; fine-grained
1G		Liv	contact	**Dolomitic Mudstone (E) vs Grainstone (W)**
1H		Liv	outcrop	**Grainstone**
1I		Liv	scattered outcrop	**Dolomitic Packstone**, light-grey fresh; fine-grained; weak reaction to HCl; frost heave blocks; extends 5m N-S, 15m E-W
30m E of 1I		Liv	contact	**Dolomitic Packstone (E) vs Grainstone (W)**
1J-1K		Liv	outcrop	**Crinoid-Bryozoan Grainstone**, light-grey fresh; medium- to coarse-grained; no chert; crinoids, bryozoans; massive
1L		Liv	scattered outcrop	**Crinoidal Lime Wackestone**, light- to medium-brown fresh; fine-grained; abundant bioclasts (crinoids, bryozoans); massive; extends 20m N-S, 10m E-W
1M		BW	outcrop	**Dolomitic Lime Mudstone**, medium-brown-grey to medium-grey fresh; fine-grained; abundant chert; well bedded; beds 177°/34° W
1N		BW-Liv	contact	**Crinoidal Packstone (E) vs Cherty Dolomudstone (W)**, Pkst: coarse-grained, Mdst: very fine grained
1O		BW?	outcrop	**Cherty Dolomudstone**, dark-brown/grey fresh; abundant chert
1P		BW	outcrop	**Grainstone with Packstone**, light-grey weathered and fresh; visible bioclasts, large crinoid stems to 1cm
1Q		BW-Sa	contact?	fault/gully; trend 034°-214°
1R-1S		Liv	outcrop	**Crinoidal Lime Grainstone**, light-brown to light-grey fresh; medium- to coarse-grained; crinoids, bryozoans; visible fracture surfaces; well bedded, few thicker beds, some laminated; beds 155°/33° W
1S-1T			covered	
1T-1U		Liv	outcrop	**Crinoid-Bryozoan Lime Grainstone**, light-grey fresh; coarse-grained, finer grained to west (up section); abundant crinoids and bryozoans; appears slightly dolomitic at top; well-bedded; beds 178°/37° W
1U-1V			covered	small gully; trend 004°-184°
1V		Liv	outcrop	**Lime Grainstone**, coarse-grained, fine-grained sections; well-bedded

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
1W		Liv	outcrop	**Lime Grainstone**, coarse-grained; moderately bedded
1X		Liv	outcrop	**Crinoid-Ooid Lime Grainstone**, fine- to medium-grained; crinoids, locally ooid-rich; extends 20m E, 5m N, 10m S
1X-1Y		BW?/Liv?	float	**Dolomudstone**, fine-grained, sucrosic
1Y		BW?/Liv?	outcrop	**Dolomudstone with Grainstone interbeds**, abundant and extensive chert, large chert nodules; well-bedded
1Z		BW	contact	**Dolomudstone (E) vs Grainstone (W)**, Grst: dark brown fresh
1AA		BW	outcrop	**Cherty Dolomitic Lime Mudstone**
1BB		BW	outcrop	**Algal Bindstone and Lime Mudstone**, localized beds of algal mats
1CC		BW	outcrop	**Grainstone and Cherty Dolomudstone**, beds 153°/16° W
1CC-1DD		BW?	scattered outcrop	**Grainstone and Cherty Dolomudstone**
1EE		Sa	outcrop	**Cherty Dolomudstone**, tan weathered; fine-grained; very well sorted; homogenous; weak reaction to HCl; abundant chert nodules, vugs, and along beds; no bioclasts; beds 163°/33° W; extends 3m E, 4m W, rubble for 20m E
1FF		Lo	outcrop	**Lime Grainstone**, ooids; extends 10m E
1GG		Lo	outcrop	**Crinoid-Ooid Lime Grainstone**, coarse-grained; 70-75% crinoids (up to 1½ cm), 20% ooids, 5% corals, bryozoans, few rugose corals; beds 176°/38° W
1HH		Lo	outcrop	**Grainstone to Oolitic Grainstone**, fine-grained; abundant ooids
1II		Ma?		**Wackestone and Grainstone**, fine-grained; some dolomitic sections
20m W of 1II		Ma?	outcrop	**Dolomitic Grainstone**, fine-grained; chert nodules continue for ~10m; beds 174°/38° W
1JJ		OpU-OpM	contact	**Dolomitic Lime Mudstone vs Grainstone**, Grst: light-grey fresh, coarse-grained; Mdst: fine-grained; Grst: abundant bioclasts identifiable on weathered surface (crinoids, corals, bryozoans, brachiopods)
1KK		OpM-Ma	contact	**Ooid Grainstone(W) vs Dolomitic Lime Mudstone (E)**, Mdst: fine-grained; cherty; Grst: bioclastic (ooids, colonial corals)
1LL		OpU?	outcrop	**Dolomitic Lime Mudstone**, fine-grained; crystalline; crinoids
1MM-1NN		Op?	outcrop	**Interbedded Bioclastic Grainstone and Dolomudstone; Wackestone at base**, Mdst: tan weathered, dark-grey-brown fresh; massive, fine-grained towards west (up section), fining upwards; Grst: large fossils (corals, bryozoans, crinoids (sparkly grains)); Wkst: dolomitic and bioclastic; Op-Cn transition zone?
1NN-1OO			covered	
1OO		OpU/ Cn	outcrop	**Dolomitic Lime Mudstone**, dark-brown fresh; fine-grained; extends 15m E, 10m N, 1m S, 15m W
15m W of 1OO		Cn	outcrop	**Dolomitic Lime Wackestone**, medium- to dark-brown fresh; fine-grained matrix; shell fragments, bivalves
1PP			end	Norman Road - **END OF TRAVERSE**

Traverse 2005-A

Traverse A starts at the crossing of the southerly powerline and Norman Road. It initially went east along the powerline trail and then turned north and northwest to cover ground between the start of Traverse A and Traverse 1. The traverse ended at the crossing of a trail and Norman Road, about half way between the two powerlines.

AA		Cn	scattered outcrop	**Bioclastic Grainstone**, tan-grey weathered; dark-grey to dark-brown fresh; fine-grained matrix; coarse granular; poorly sorted; moderate reaction to HCl; no chert; abundant indeterminate/broken bioclasts (crinoids, ooids, solitary corals); black shiny grains; beds 004°/27° W; extends 20m E; at the powerline on Norman Road
AB		Cn	end of outcrop	**Bioclastic Grainstone**, tan-grey weathered; dark-grey to dark-brown fresh; fine-grained matrix; coarse granular; poorly sorted; moderate reaction to HCl; no chert; abundant indeterminate/broken bioclasts (crinoids, ooids, solitary corals); black shiny grains
AC		Ma	float/ subcrop	**Wackestone to Packstone**, tan weathered; light to medium brownish-grey fresh; fine-grained matrix; coarse granular; poorly sorted; large chert nodules (6-7cm); crinoids

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
AD		Lo	float and subcrop	Crinoid-Ooid Lime Grainstone, light- to medium-grey weathered; medium- to dark-brown fresh; moderate to good reaction to HCl; majority of bioclasts indeterminate, visible crinoids and ooids; angular float
AE		Lo	end of float/ subcrop	
AF		Lo	subcrop/ outcrop	Dolomitic Lime Grainstone, light-grey and medium-grey-brown weathered; medium-grey-brown fresh; moderate reaction to HCl; majority of bioclasts indeterminate; some visible ooids, crinoid ossicles and stems, bryozoans; continues 12m N; abundant angular boulders
AG		Lo-Sa	contact	Grainstone (W) and Dolosiltstone and recessive valley to E, Sltst: tan weathered, light-tan-grey; Grst: becomes finer grained to east (down section); Sltst: slow and weak reaction to HCl; Sltst: some chert along beds and nodules, abundance increases up section; Sltst: well bedded, visible laminae; trend of valley/contact 025°-205°
AH		Sa	end of float, subcrop and outcrop	Cherty Dolosiltstone, tan weathered
AI		Sa	outcrop	Cherty Dolosiltstone, light- to medium-brown-grey weathered and fresh; very fine grained; well sorted; moderate reaction to HCl; abundant chert nodules; extends 15m N, 15m E, 10m S, 10m W
AJ		Sa-BW	contact	Cherty Dolosiltstone vs Wackestone to Packstone to Grainstone to E, Wkst: grey-brown fresh, very fine to fine-grained; Pkst/Grst: crinoid ossicles and stems, bryozoans, rugose and solitary corals; Wkst: indeterminate/broken bioclasts (solitary corals, bryozoans?); ~2m strat
AK		Sa-BW	gully, contact?	Cherty Dolosiltstone vs Oolitic Grainstone, Grst: light-grey weathered; sandpaper-like appearance; brown fresh; fine- to coarse-grained; poorly sorted; ooids; trend of gully/contact 024°-204°
AL		BW	outcrop	Cherty Dolomudstone, abundant chert; ¾m strat; recessive deep gully to east trends 027°-207°
AM		BW	outcrop	Lime Grainstone, light- to medium-grey weathered; medium-greyish-brown fresh; fine-grained; good reaction to HCl; ooids; ~5m strat, 5-10m covered
~10m E of AM		BW	outcrop	Lime Grainstone, medium-brown fresh; very fine grained; ooids
~20m E of AM		BW	outcrop	Lime Grainstone, dark-brown fresh; coarse-grained; ooids
AN		BW	end of outcrop	Grainstone, coarse-grained; chert appears to east (down section); covered for ~10m to E
~10m E of AN		BW	outcrop	Cherty Dolomudstone, light- to medium-grey weathered; light-tan-grey fresh; very fine to fine-grained; well sorted; abundant chert nodules and along beds; well bedded; undulose bedding surfaces
AO		BW	contact	Cherty Dolomudstone vs Bioclastic Lime Grainstone, medium-grey weathered; brownish-grey fresh; coarse-grained at base, fines towards top; bryozoans, rugose corals; fault fractures 115°/87° N, 047°/68° SE
AP			traverse point	cliff; fault?
AQ	2	BW	outcrop	Crinoidal Lime Grainstone, light- to medium-grey weathered; medium-brown-grey fresh; medium- to coarse-grained; ooids, crinoids; rubbly outcrop; between powerlines close to road on cliff
AR		BW	contact	Grainstone vs Cherty Dolomudstone, Mdst: nodular and platy chert; trend of gradational contact 160°-340°; 1½ m strat mdst, 1m strat grst, back in to mdst; bedding strike trends 025°-205°
AS	3	BW	outcrop	Grainstone, 3m strat; back into dolomudstone
AT		BW	contact	Cherty Dolomudstone vs Oolitic Lime Grainstone
AU		BW	outcrop	Oolitic Lime Grainstone, light- to medium-grey weathered; medium-brown fresh; medium- to coarse-grained; moderately sorted; ooids

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
AV		BW	end of subcrop/outcrop	**Oolitic Lime Grainstone**, recessive gully
AW		BW	contact	**Oolitic Lime Grainstone (E) vs Cherty Dolosiltstone to Wackestone (W)**, Sltst: light- to medium-grey weathered and fresh; moderate to good reaction with HCl; some chert; brachiopods, bryozoans, crinoid ossicles and stems; extends 5m E, 15m W
AX		BW	outcrop	**Cherty Lime Wackestone**, light-grey weathered; medium-greyish-brown fresh; chert nodules and along beds; covered to west (up section) for 15-20m, more exposure to N
AY		BW	contact	**Cherty Wackestone vs Oolitic Lime Grainstone**, Grst: light- to medium-grey weathered, medium-brown fresh, coarse-grained; majority of bioclasts indeterminate; colonial corals in float
~15-20m W of AY		BW	outcrop	**Bioclastic Grainstone with very fine grained granular Grainstone**, medium-grey weathered; medium-grey-brown; very fine grained; granular; coarse- to very coarse grained; indeterminate bioclasts in very fine grained Grst; coarse Grst: brachiopods, bryozoans, crinoids, ooids, corals (1-4 cm)
AZ		BW	outcrop	**Interbedded fine- and coarse-grained Grainstone**
AAA		BW-Sa	contact	**Wackestone (E) vs Cherty Wackestone (W)**, fine- and coarse-grained; ~7m W of AZ
AAA-BBB			covered	
ABB		Lo	outcrop	**Oolitic Lime Grainstone**, medium-grey weathered; brown fresh; fine-grained; majority of bioclasts indeterminate; visible ooids (abundance increases up section); homogenous; 5-10m outcrop
ABB-ACC		Lo	covered	**Grainstone float**
ACC		Lo	outcrop	**Oolitic Lime Grainstone**, light- to medium-grey weathered; medium-brown fresh; ooids; moderately to strongly fractured; homogenous; extends 10m N
ADD		Lo	end of outcrop	**Oolitic Lime Grainstone**
AEE		Lo	float, subcrop and outcrop	**Oolitic Lime Grainstone**, medium-brown-grey fresh; coarse-grained; finer-grained to east; ooids; rubble or frost heave; homogenous
AFF		Lo	end of outcrop	**Oolitic Lime Grainstone**, medium-brown-grey fresh; coarse-grained; finer-grained to east; ooids; rubble or frost heave; homogenous
AGG		Lo	outcrop	**Oolitic Lime Grainstone**, medium-brown-grey fresh; medium- to coarse-grained; ooids; homogenous; south of powerline, extends 30m E
AHH		Lo	outcrop	**Grainstone**, extends 7m W, 5m S
AII		OpM?	outcrop	**Grainstone**, extends 15m N, 20m S, 15m W, 5m E
AJJ		OpM	end of float and outcrop	**Grainstone**, majority of bioclasts indeterminate
AKK		OpU	float/ subcrop	**Lime Mudstone**, tan weathered; very dark grey fresh; very fine grained; micritic; recessive area, no outcrop
ALL		OpU	float/ subcrop	**Lime Mudstone**, tan weathered; very dark grey fresh; micritic
AMM		Cn?	float/ subcrop	**Lime Mudstone**, very dark grey or black fresh; micritic to cryptocrystalline; very good reaction to HCl; minor Ca veinlets
ANN		Et?	float/ subcrop	**Grainstone**, medium-grey weathered; greyish-brown fresh; fine- to medium-grained; ooids whitish in color
AOO			**END OF TRAVERSE**	Norman Road - **END OF TRAVERSE**

Traverse 2005-B

Traverse B starts just north of the northerly powerline, about 200 m northwest of Station 1OO. It leads east along Vaughan Ridge for approximately 1½ km and then continues west-southwest downslope towards the northerly powerline.

BA			start of traverse	

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
BB	1	Cn?	outcrop	Crinoidal Grainstone, light- to medium-grey weathered; dark-brown fresh; fine-grained; majority of bioclasts indeterminate; visiblecrinoid ossicles; beds 178°/49° W
overlying BB		Cn?	outcrop	Lime Mudstone, very dark brown or grey; very fine grained
20m N, uphill of BB		Cn?	outcrop	Bioclastic Grainstone, very dark brown fresh; medium- to very coarse grained
BC		Cn?	rubbly outcrop	Bioclastic Grainstone, very dark brown grey; fine-grained; continuation of BB
BD		Cn?	subcrop	Crinoidal Grainstone, very dark brown fresh; medium- to coarse-grained; finer-grained and granular up hill; coarse crinoids and rugose corals; black grains; well fractured; frost heave blocks
BE		Cn	scattered outcrop	Lime Mudstone with some Shaley Carbonaceous Beds, cryptocrystalline to micritic; spaced small ridges
BF		Cn?	outcrop	Dolomitic Lime Mudstone, tan-grey weathered; finely granular
BF-BG		Cn	outcrop	Lime Mudstone, black fresh; finely granular and cryptocrystalline; no chert; small outcrop and subcrop
BG-BH		Cn	covered	
BH		Cn	outcrop	Crinoidal Packstone, very dark grey fresh; fine-grained matrix; poorly sorted; large white crinoid fragments
uphill from BH		Cn	outcrop	Bioclastic Grainstone with tan float, Grst: crinoids, rugose corals, bryozoans
BI		Cn-OpU	contact	Grainstone vs Dolomudstone, dark-grey-brown fresh; Grst: coarse-grained, Mdst: very fine grained; Mdst: very well sorted, homogenous; Grst: bioclastic
BI-BJ		OpU?	scattered outcrop & float	Dolomitic Lime Wackestone and Dolomudstone
BJ		OpU	outcrop	Lime Mudstone, dark-brown fresh; cryptocrystalline; ~4m exposure, covered up hill
BK		OpU?	outcrop	Lime Wackestone to Grainstone, light- to medium-brown fresh; rare chert; weakly to moderately dolomitic; moderately bedded; 6m x 6m outcrop
BL		OpM	scattered outcrop	Crinoidal Lime Grainstone, light-grey weathered; light- to medium-brown fresh; fine- to medium-grained; granular; moderately fractured
BM		OpM	outcrop	Crinoidal Lime Grainstone, light- to medium-brown fresh; fine- to medium-grained; granular; top of cliff
BN		OpM	outcrop	Crinoidal Lime Grainstone, light- to medium-brown fresh; fine- to medium-grained; granular; outcrop extends 8m vertically down cliff face; slope to north
BO		OpM	outcrop	Crinoidal Lime Grainstone, medium-brown fresh; fine- to medium-grained; granular; top of visible outcrop along ridge
BP		OpM	end of outcrop	Crinoidal Lime Grainstone, medium-brown fresh; fine- to medium-grained; granular; ridge rounds off
BQ		Ma	float; contact?	Cherty Dolomudstone (last appearance of Grst), very fine grained; abundant chert; terrain steepens from BQ
BR		Ma	outcrop	Cherty Dolomudstone, light-grey weathered; brown fresh
BS		OpM-Ma	contact	Grainstone vs Cherty Dolomudstone, Mdst: medium-brown-grey weathered, medium-grey fresh, fine-grained, granular; Grst: brown fresh; Mdst: abundant chert, black color; top of BR
BT		Ma	contact	Cherty Dolomudstone vs Grainstone, Grst: light- to medium-grey-brown fresh, coarse-grained; Mdst: abundant chert, black color; Grst within Ma?
<5m uphill from BT		Ma	outcrop	Dolomudstone, no chert
BU		Ma-Lo	contact	Dolomudstone vs Grainstone, Grst: medium- to dark-brown weathered, light- to medium-brown fresh, fine- to medium-grained; majority of bioclasts indeterminate (crinoids, minor ooids); breaks easily; massive
BV		Lo	contact	small gully; Oolitic Lime Grainstone, contact between minor ooids and ooid-rich (up the hill); bryozoans, crinoids; well fractured; undulose fracture surfaces; gully trend 166°-344°

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
BW		Lo	outcrop	**Crinoid-Ooid Grainstone**, medium-grey and light- to dark-brownish-grey fresh; granular; darker Grst is finer grained
BX		Lo-Sa	contact	**Grainstone (W) vs Cherty Dolomudstone (E)**, Mdst: tan weathered and fresh, very fine grained, very well sorted, homogenous, abundant chert; Mdst: finely bedded
BY		Sa-BW	contact	**Cherty Dolomudstone to Wackestone vs Lime Grainstone with very small interbeds of Dolomudstone**, Mdst: tan weathered; Grst: medium-grey-brown fresh, coarse-grained, poorly sorted; Mdst: abundant chert; Grst: crinoids, bryozoans, brachiopods, ooids, solitary corals; base of Mdst: minor bioclasts; large exposure; gradational contact
BZ		BW-Liv	contact	**Lime Packstone and Grainstone vs Lime Grainstone, Wackestone to Packstone**, bioclastic; BW: well bedded, Liv: massive
BAA		Sa-BW	contact	**Cherty Dolomudstone with minor Wackestone (W) vs Lime Grainstone (E)**, Mdst: fine-grained; Grst: coarse-grained; Mdst: very well sorted; abundant rounded chert nodules; Wkst: minor bioclasts; Mdst: finely bedded; continuous Mdst outcrop
BBB		Sa	end of outcrop	**Cherty Dolomudstone**, scattered outcrop
BCC		Sa-Lo	contact	**Cherty Dolomudstone (E) vs Lime Grainstone (W)**, Grst: medium-brownish-grey weathered, medium-grey to medium-brown fresh, very fine to fine-grained, coarsens to west; Mdst: abundant chert; Grst: majority of bioclasts indeterminate; abundance of ooids increases to west; Grst: massive
BDD		Lo-Ma?	covered	continuous gully
BEE		Lo/Ma	covered	west side of gully
BFF		Lo-Ma	contact	**Lime Grainstone (E) vs Dolomudstone (W)**, Mdst: tan weathered and fresh, very fine to fine-grained, homogenous, recessive, ~1m strat, homogenous
BGG		Ma-OpM	contact	**Dolomudstone (E) vs Lime Grainstone (W)**, Grst: medium-brown; majority of bioclasts indeterminate (crinoids, ooids); homogenous; Grst: thinly bedded
BHH			powerline	
BII		OpM-OpU	contact	**Lime Grainstone vs Mudstone to Wackestone**, Mdst/Wkst: tan weathered, fine-grained; Wkst: large rugose corals, colonial corals in subcrop
BJJ		OpM-OpU	contact	**Lime Grainstone vs Mudstone to Wackestone**, Mdst/Wkst: tan weathered, fine-grained; ~3m west becomes cherty
BKK			powerline	exited onto powerline
BLL		OpM-OpU	contact	**END OF TRAVERSE**

Traverse 2005-C

Traverse C begins at the crossing of Norman Road and Caroline Creek and heads east until it reaches Waterfall Creek. It then continues downslope along Waterfall Creek and out to Norman Road along Caroline Creek.

CA			start	
CB		Cn?	float/ subcrop	**Lime Packstone to Grainstone**, tan weathered; dark-grey to black fresh; very fine grained; well sorted; very good to excellent reaction with HCl; Ca veins; shiny black flecks; along slope just S of creek
CC			no outcrop	
CD			no outcrop	
CE	½	Cn-OpU?	subcrop, outcrop?	**Lime Mudstone**, light- to dark-grey-brown weathered; dark-brown fresh; very fine grained; well sorted; very good reaction to HCl; visible dark grey and dark brown laminae; along slope of ridge; 2 small outcrops; Transition zone?
CF		OpU?	end of outcrop	High point of large outcrop
CG		OpU?	outcrop	**Oolitic Grainstone, some Wackestone to Packstone**, light-grey weathered; dark-greyish-brown and some light-brown fresh; very fine- to fine-grained; very good reaction to HCl; very rare chert nodules (~5 cm); some coarse cm-scale bioclasts (rugose, solitary and colonial corals, crinoids, ooids); west edge of CF outcrop

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
CH		OpU	outcrop	Oolitic Grainstone, some Wackestone to Packstone, light-grey weathered; dark-greyish-brown and some light-brown fresh; very fine to fine-grained; very good reaction to HCl; very rare chert nodules (~5 cm); some coarse cm-scale bioclasts (rugose, solitary and colonial corals, crinoids, ooids); east edge of CF outcrop
CI	1-1½	OpM	outcrop	Crinoid-Ooid Grainstone, medium- to dark-brown fresh; medium- to coarse-grained; moderate reaction to HCl; majority of bioclasts indeterminate (ooids, crinoids); quite homogenous; side of ridge
CI-CJ			covered	
CJ		Lo?	outcrop	Crinoidal Grainstone, light- to medium-grey; dark-greyish-brown; mostly homogenous; some larger fossils present; majority of bioclasts indeterminate (crinoid ossicles (sparkly grains) and stems, ooids, rugose corals); large outcrop; waypoint taken at W end
~10m E of CJ		Lo?	outcrop	Bioclastic Wackestone to Packstone, bioclasts more identifiable than CJ; large rugose corals more common; more heterogenous than CJ
~20m E of CJ		Lo?	outcrop	Bioclastic Grainstone, dark-brown fresh; majority of bioclasts indeterminate (ooids, crinoids); homogenous
CK		Lo	outcrop	Oolitic Lime Grainstone, light-grey weathered; medium- to dark-greyish-brown and brownish-grey fresh; fine- to medium-grained; very good reaction to HCl; very ooid-rich, minor crinoids; well fractured; breaks easily along fractures; top of outcrop
CL		Lo	outcrop	Oolitic Lime Grainstone, light-grey weathered; medium- to dark-greyish-brown and brownish-grey fresh; fine-grained at base to medium; very good reaction to HCl; ooids, minor crinoids, cm-scale rugose corals; E end of continuous outcrop; recessive area to E
CM		Lo	outcrop	Oolitic Lime Grainstone, light-grey weathered; medium- to dark-greyish-brown and brownish-grey fresh; fine-grained at base to medium; very good reaction to HCl; very ooid-rich; isolated outcrop; continues ~10m down slope
CN		Lo	outcrop	Oolitic Lime Grainstone, light-grey weathered; medium- to dark-greyish-brown and brownish-grey fresh; fine-grained at base to medium; very good reaction to HCl; very ooid-rich; isolated outcrop; extends 5m x 10m
CO		Lo	outcrop	Crinoid-Ooid Grainstone, coarser-grained than CN; ooids, crinoids, rugose corals; large outcrop; edge of cliff; extends 30m down slope, 40m up slope
CP		Lo	float	Crinoid-Ooid Grainstone, base of ridge along creek; abundant float; no outcrop
CQ			no outcrop	Continuing along creek traverse
CR			**END**; no outcrop	Continuing along creek traverse; **END OF TRAVERSE**

Traverse 2005-D

Traverse D starts at the split of Miriam Creek and Mary Creek. The traverse continues east along Independence Ridge north of and parallel to Mary Creek. Near the end of Mary Creek the route heads south along a dipslope and then northeast within a recessive section. Waterfall and Caroline creeks were followed downslope and towards Norman Road.

DA	OpM	outcrop	Bioclastic Grainstone, light-grey and minor tan weathered; medium-brownish-grey fresh; fine-grained; abundant bioclasts (crinoids, bryozoans, rugose and colonial corals); W end of large outcrop exposure; similar to CE, CF, CG
DB	OpM	outcrop	Bioclastic Grainstone, light-grey and minor tan weathered; medium-brownish-grey fresh; fine-grained; abundant bioclasts (crinoids, bryozoans, rugose and colonial corals); visible bedding; east end of large outcrop; beds 158°/40° W
DB-DC		covered	gully; fault?; trend 032°-212°
DC	OpM	outcrop	Ooid-Crinoid Grainstone, medium-grey weathered; light- to medium-brown fresh; very fine grained; ooids, crinoids, bryozoans; dipslope-like exposure; ~3m strat
DD	OpM	outcrop	Lime Grainstone, medium-grey weathered; light- to medium-brown fresh; strongly fractured at W end near gully; SE end of outcrop; lowest visible strat
DE	OpM	outcrop	Lime Grainstone, light- to medium-grey weathered; medium-brownish-grey fresh; fine- to medium-grained; massive; rare visible beds; SW end of outcrop

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
DF		OpM	outcrop	Lime Grainstone, massive; homogenous; east end of outcrop; recessive gully to east trends 040°-220°
DG		OpM	outcrop	Oolitic Lime Grainstone, light- to medium-grey weathered; medium- to dark-brownish-grey fresh; moderate reaction to HCl; massive; homogenous; west end of outcrop; gully to W trends 044°-224°
DH		OpM	end of outcrop	Oolitic Lime Grainstone, medium-grey and some tan weathered; medium- to dark-brownish-grey fresh; fine- to medium-grained; rugose corals; well bedded; visible laminae; outcrop up hill from DH
DI		Ma	covered	~60m covered
60m E of DI		Lo	outcrop	Lime Grainstone, light- to medium-grey weathered; medium-brownish-grey fresh; fine-grained; good reaction to HCl; indeterminate bioclasts; homogenous; E of covered section DI
DJ		Lo	end of outcrop	Lime Grainstone, light- to medium-grey weathered; medium-brownish-grey fresh; fine-grained; good reaction to HCl; indeterminate bioclasts; homogenous
DK	1-2	Lo	outcrop	Lime Grainstone, light- to medium-grey-brown fresh; isolated outcrop
DL		Lo	scattered outcrop	Bioclastic Grainstone, abundance of bioclasts increase to SW; crinoid ossicles and stems
20m S-SW of DL		Lo	scattered outcrop	Oolitic Lime Grainstone, medium-grey weathered; greyish-brown fresh; medium-grained; ooid-rich; scattered outcrop
DM		Lo	scattered outcrop	Lime Grainstone, medium-grey weathered; medium-greyish-brown fresh; ooids, rare large brachiopods; dipslope outcrop; continues up slope 20m, 7m N and S
DN		Lo	end of scattered outcrop	Lime Grainstone, occassional and small ooids; float to S/SE
DO		Lo	outcrop	Bioclastic Grainstone, medium-grey weathered; medium-greyish-brown fresh; very fine- to fine-grained; brachiopods, bryozoans, ooids
DP		Lo	end of outcrop	Oolitic Lime Grainstone, dipslope outcrop
20m S of DP			covered	recessive valley, trend E-W
DQ		Lo	scattered outcrop & float	Oolitic Lime Grainstone, medium-grey weathered; light- to medium-grey-brown
DR		Lo	outcrop	Oolitic Lime Grainstone, medium-grey weathered; light- to medium-grey-brown; fine-grained; well bedded; visible laminae; continuous from DQ; top of ridge; 1916m elevation
traverse from DR		Sa	float	Cherty Dolosiltstone, abundant nodular and bedded chert; well bedded; traverse along contour from DR
DS		Sa	scattered outcrop	Cherty Dolosiltstone to Dolowackestone, chert nodules and along beds
DT		BW?	outcrop	Grainstone, medium-grey-brown weathered; tan-grey fresh; fine-grained; no chert; indeterminate bioclasts; edge of ridge; large cliffs and sheer rock faces
DU		Sa-BW	contact	Dolosiltstone vs Grainstone, transitional contact **END OF TRAVERSE**

Traverse 2005-E

Traverse E starts at the split of Miriam Creek and Mary Creek. It runs north and northeast along David Ridge, west of and parallel to Miriam Creek. It exits downslope along Miriam Creek towards Norman Road.

EA		Cn	outcrop	Packstone to Grainstone, tan and light-grey weathered; medium- to dark-brown fresh; very fine to fine-grained; some crystalline; very good reaction with HCl; chert along beds; minor bioclasts, majority indeterminate, rare crinoids; lower 4m crinoids more abundant; visible bedding; large outcrop along slope of ridge; base of outcrop
~4m higher strat than EA		Cn	outcrop	Packstone to Grainstone, very dark brown fresh; very fine grained; micritic; more abundant chert than EA; chert blebs and along beds; higher in strat and elevation than EA

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
EB		Et	outcrop	**Interbedded Cherty Lime Mudstone, Shaley sections, Crinoidal Lime Grainstone, Bivalve Lime Wackestone to Packstone**, Mdst: light-grey weathered, micritic; Wkst-Pkst: lichen covered, tan and medium-grey weathered, dark-brown fresh; Mdst/Grst: dark-grey-brown fresh; Shaley sections: dark-grey fresh; Mdst/shaley sections: micritic; majority of bioclasts indeterminate; Wkst/Pkst: coarse bioclasts (shell fragments, bivalves, rugose corals, crinoids); Ca veining; continuous outcrop from EA
EC		Et	outcrop	**Packstone to Grainstone with carbonaceous shaley partings**: tan weathered; 'oozy' texture; fine-grained; Ca replacement and nodules; well fractured; small covered section in middle (3-4m strat)
ED		Et	outcrop	**Bioclastic Grainstone**, chert nodules; crinoid ossicles and stems, bryozoans, rugose corals, ooids; well bedded; some platy; isolated outcrop at top of hill
EE		Et	end of outcrop	**Bioclastic Grainstone**, chert nodules; crinoid ossicles and stems, bryozoans, rugose corals, ooids; well bedded; some platy; start of covered section
EF		Et	outcrop	**Interbedded Bioclastic Wackestone to Packstone, Grainstone and Cherty Dolosiltstone**, light- to medium-grey and tan weathered, medium-brown and dark-grey-brown fresh; shaley sections in Sltst; abundant chert nodules and beds; Wkst-Pkst: rugose corals, brachiopods, crinoid stems and ossicles; Grst: crinoids, ooids; along top of ridge
EG		Et	outcrop	**Grainstone**, medium-grey and tan weathered, light-grey-brown fresh; fine- to medium-grained; chert ~1m up strat; end of continuous outcrop
EH		Et	outcrop	**Crinoidal Grainstone**, light- to medium-grey weathered; dark-grey-brown fresh; very fine- to medium-grained; crinoids; Ca veining; scattered outcrop since EG
EI		Et	outcrop	**Grainstone**, light-grey weathered; dark-grey-brown fresh; fine- to medium-grained; isolated outcrop; scattered outcrop since EH; traversing along strike
EI-EJ			covered	
EJ		Et	scattered outcrop	**Lime Wackestone**, light- to medium-grey weathered; dark-brown fresh; fine-grained; minor bioclasts (large rugose corals, crinoids, bryozoans); along slope; scattered outcrop 3m x 5m
EK		Et	scattered outcrop	**Cherty Dolomudstone and Dolowackestone**, light-grey weathered; dark-brown fresh; chert nodules; crinoid ossicles and stems; red staining along fractures; 3m x 5m
EL		Cn	scattered outcrop	**Lime Mudstone**, dark-brownish-grey and dark-brown fresh; very fine grained; micritic; abundant Ca veinlets; some conchoidal fracture; isolated scattered outcrop 5m x 8m
EM		Cn	outcrop	**Lime Mudstone**, light-grey weathered; dark-brown to dark-grey to black fresh; cryptocrystalline to micritic; along slope; extends 10m x 15m
EM-EN		Cn	scattered outcrop & float	**Lime Mudstone and Wackestone**, large bioclasts in float (bivalves, rugose and colonial corals); common Ca veining and replacement; ~30m covered
EN		Cn	outcrop	**Lime Mudstone**, light-grey weathered; dark-brown to dark-grey to black fresh; cryptocrystalline to micritic; mound of outcrop 15m x 15m; along dip slope
EO		Cn	outcrop	**Lime Mudstone**, dark-brown-grey fresh; cryptocrystalline to micritic; crumbly; end of large outcrop; start of covered section with abundant float
EO-EP		Cn	scattered outcrop & float	**Lime Mudstone**, dark-brown-grey fresh; cryptocrystalline to micritic; crumbly
EP		Cn	outcrop	**Lime Mudstone**, dark-grey fresh; cryptocrystalline to micritic, homogenous; start of very large outcrop; cliffs out to E and SE
EQ		Cn	traverse point	top of large outcrop; along steep ~dip slope at 2030m elevation
ER	2-3	Cn	outcrop	**Lime Mudstone to Siltstone**, medium-grey weathered; very dark grey fresh; cryptocrystalline to micritic; well fractured; moderately bedded; small cliff continues up and down slope
ES		Cn	outcrop	**Crinoidal Lime Grainstone**, very dark grey fresh; very fine to medium-grained; indeterminate bioclasts (crinoids (sparkly grains); black flecks; down slope from ER along cliff exposure

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
ET		Cn	outcrop	Lime Mudstone, light-grey weathered; dark-grey to black fresh; micritic; Ca veining; small cliff exposure, 2m strat, 10m length
EU		OpU	scattered outcrop	Lime Mudstone, tan weathered; light- and dark-grey fresh; cryptocrystalline to micritic; chert nodules and along beds; well bedded; extends 10m
EV		OpU	outcrop	Lime Grainstone, light=grey weathered; dark-brown fresh; fine- to medium-grained; majority of bioclasts indeterminate; visible crinoids (sparkly grains); well bedded; large cliff-forming outcrop cut by creek
EW		OpU	outcrop	Lime Packstone to Grainstone, fine-grained; abundant chert nodules and along beds; some large bioclasts (crinoid stems and ossicles, brachiopods, rugose corals); continuous outcrop within creek; small cliff up slope; 4m strat
EX		OpU	outcrop	Lime Wackestone to Packstone, continuously finer-grained; more abundant chert than EW; less bioclasts than EW; well bedded; end of creek outcrop
EY		Cn	outcrop	Lime Mudstone and Grainstone, along creek traverse; steep slope END OF TRAVERSE

Traverse 2005-F

Traverse F begins at the crossing of Norman Creek and Norman Road. It follows north along Norman Creek and then east as the creek bends into Knox Creek. The traverse verges up slope to the north of Knox Creek and then travels east for approximately 750 m. The traverse turns south until it reaches the southern branch of Knox Creek. It then heads downslope to the west and exits along Norman Creek to Norman Road.

FA		RM		along traverse up Norman Creek
FB		Et		along traverse
FC		Et?	outcrop	Crinoidal Lime Grainstone, light-grey weathered; medium-brownish-grey fresh; fine- to medium-grained; moderate to good reaction with HCl; majority of bioclasts indeterminate; visible crinoids; small isolated outcrop 1m x 1m, one bed; some float
FD		Cn	subcrop & float	Lime Siltstone, medium- to dark-grey weathered; dark-grey fresh; very fine-grained; excellent reaction with HCl; small isolated subcrop and float along slope
FE	2	Cn	outcrop	Lime Siltstone, medium-grey weathered; dark-brown or black fresh; micritic; west end of outcrop; 2m strat, 15m length; valley 40m to the west trends N-S; bedding 002°/27° W
FF		Cn	end of outcrop	Lime Siltstone, medium-grey weathered; dark-brown or black fresh; micritic; Ca veinlets; well bedded, 15-50 cm beds; end of continuous outcrop
FG		Cn	float	Lime Siltstone, medium-grey weathered; dark-brown or black fresh; micritic to very fine-grained; Ca veinlets; large float
FH	4	Cn	outcrop	Lime Siltstone, Ca veinlets; well bedded; 4m strat
FI		Cn	outcrop	Carbonaceous section, tan-weathered; dark-grey fresh; platy; isolated outcrop
FJ		Cn-OpU?	contact	Lime Mudstone (W) vs Dolomudstone (E), DoloMdst: tan weathered; dark grey fresh; very fine-grained; weak to no reaction with HCl; transition zone?
FK	4-5	OpU?	outcrop	Cherty Dolomudstone, tan weathered; very dark grey fresh; very fine grained; cryprtocrystalline; abundant chert nodules and along beds; Ca veinlets; well bedded; visible laminae; 4-5m strat; more outcrop downslope 15m; beds 167°/28° W
FL		OpU?	end of outcrop	Cherty Dolomudstone, tan weathered; very dark grey fresh; very fine grained; cryprtocrystalline; abundant chert nodules and along beds; Ca veinlets; well bedded; visible laminae
FL-FM			covered	
FM			float	
FN		OpU	subcrop	Bioclastic Packstone to Grainstone, medium-grey weathered; fine- to medium-grained; no chert; some coarse bioclasts (rugose corals, crinoids)
FO		OpU	outcrop	Bioclastic Grainstone, medium-grey weathered; medium-brownish-grey fresh; fine-grained; some chert; majority of bioclasts indeterminate; visible rugose corals; cliff outcrop
2m down strat from FO		OpU	contact	Bioclastic Grainstone with chert vs Wackestone to Packstone to Ooid Crinoid Lime Grainstone, medium-grey weathered; medium-brownish-grey fresh; colonial and rugose corals, ooids, crinoids

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
FP		OpU-OpM	contact	**Grainstone (above) vs Oolitic Lime Grainstone (below)**, light- to medium-grey weathered; medium-brownish-grey fresh; massive; homogenous; continuous outcrop; 15-20m below FO; cliff trending 34°-224°
FQ	5¼	OpM	outcrop	**Crinoidal Grainstone**, light- to medium-grey weathered; medium-brown fresh; medium- to coarse-grained; majority of bioclasts indeterminate; visible crinoids; massive; homogenous; 5¼m strat
FR		Ma	outcrop	**Cherty Dolomudstone**, base of slope at creek; abundant float; gully separating two ridges trending 061°-241°
FS	1¾	Lo	outcrop	**Oolitic Lime Grainstone**, light- to medium-tan and light-grey weathered; medium-brown fresh; medium- to coarse-grained; very good reaction with HCl; ooids, crinoids; ¼m strat, covered, 1¾m strat; bedding 010°/31° W
FT		Ma	float	**Cherty Dolomudstone to Dolopackstone**, tan weathered; abundant chert
FU		Ma	subcrop/out crop	**Cherty Dolograinstone**, tan weathered; weak reaction with HCl; abundant chert; isolated outcrop/subcrop
FV		Lo?	subcrop & float	**Crinoidal Lime Grainstone**, medium-grey weathered; medium-brownish-grey fresh; majority of bioclasts indeterminate (crinoids, ooids); base of slope
FW	3	Ma?	outcrop	**Cherty Dolomudstone**, medium-grey and tan weathered; medium- to dark-brownish-grey fresh; isolated outcrop; 3m strat; beds 166°/29° W
FX	3	OpM?/ Lo?	outcrop	**Grainstone**, light to medium grey weathered; medium to dark brownish-grey fresh
FY	3	OpM?/ Lo?	outcrop	**Oolitic Lime Packstone to Grainstone**, light-grey weathered; light to medium grey fresh; coarse-grained; excellent reaction to HCl; ooids; locally well bedded; west end of outcrop; 3m strat
FZ		OpM?/ Lo?	outcrop	**Oolitic Lime Packstone to Grainstone**, west facing dipslope; 50-70m from FY
FAA		OpU?	outcrop	**Bioclastic Wackestone**, medium-grey weathered; fine-grained; chert beds and nodules; crinoids, rugose corals; isolated outcrop
FBB			traverse point	no outcrop
FCC			traverse point	no outcrop
FDD			traverse point	no outcrop
FEE			traverse point	**END OF TRAVERSE**

Traverse 2005-G

Traverse G is the northernmost traverse located within Deadman Pass. The traverse begins along a road about 300 m south of the powerline. It heads southeast for approximately 550 m and then west for 400 m.

GA			traverse point	At road and creek
GB		Lo?	float	**Lime Grainstone**, light- to medium-grey weathered; medium-greyish-brown fresh; fine- to medium-grained; abundant ooids, crinoid ossicles and stems; relatively homogenous; 4 large boulders (1¼ m cubes) within creek
GC	5	Lo?	outcrop	**Oolitic Lime Grainstone**, light- to medium-grey and tan weathered; medium-brown fresh; fine- to medium-grained; excellent reaction to HCl; majority of bioclasts indeterminate; visible ooids, occassional crinoids; massive; large outcrop along slope; visible up slope 50m; 5m strat; beds 170°/32° W
GD	2	Lo?	outcrop	**Oolitic Lime Grainstone**, tan and medium-brown weathered; medium-brown fresh; medium- to coarse-grained; excellent reaction to HCl; more heterogenous than GC; ooids, crinoids; moderately bedded to massive; along slope 10m; 2m strat; from GC: 30-40m/280°/+05°
GE		Lo	subcrop/ outcrop	**Oolitic Lime Grainstone**, medium-grey weathered; medium-brown fresh; medium- to coarse-grained; excellent reaction to HCl; more heterogenous than GC; ooids, crinoids; moderately bedded to massive; 8m x 4m

APPENDIX 2: CONTINUED

Location	Thick. (m)	Unit	Type	Description
10m W of GE		Lo	stream/ gully	**Oolitic Lime Grainstone**, medium-grey weathered; medium-brown fresh; fine-grained; excellent reaction to HCl; ooids, crinoids; gully trend 027°-207°; outcrop in creek
GF			no outcrop	small creek gully; traversing side slope
GG	1½	Lo/OpM	subcrop/ outcrop	**Lime Mudstone and Lime Grainstone**, medium-tan-grey weathered; dark-grey to black fresh; Mdst: micritic; Grst: fine-grained; small subcrop/outcrop; 1½m strat
GH	2	Cn?	subcrop/ outcrop	**Oolitic Lime Packstone to Grainstone**, very dark greyish-brown to black fresh; very fine to fine-grained; excellent reaction to HCl; crinoids, ooids; well fractured; small subcrop/outcrop, 2m strat; from GH: 40m/255°/+15°
GI	1½	OpU?	outcrop	**Lime Packstone to Grainstone**, medium-tan-grey weathered; medium- to dark-brownish-grey fresh; very good reaction to HCl; crinoids, brachiopods/rugose, bryozoan; undulose fractures; small scattered outcrop; 1½m strat; 5m length
10m W of GI		OpU/ Cn	outcrop	**Lime Mudstone**
GJ		OpU?	subcrop/ outcrop	**Dolopackstone**, light-tan-grey weathered; mottled medium-grey and tan fresh; large chert nodules; crinoids, bryozoans, rugose and colonial corals; black flecks; small subcrop/outcrop; from GI: 20m/053°/0°; approximate bedding 160°/35° W
				END OF TRAVERSE

APPENDIX 3: STATEMENT OF QUALIFICATIONS

The field work described in this report was supervised by Jody Dahrouge.

J.R. Dahrouge is a geological consultant with Dahrouge Geological Consulting Ltd. based in Edmonton, Alberta. He 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.

J. Tanton is a geological consultant with Dahrouge Geological Consulting Ltd. based in Edmonton, Alberta. She obtained a degree in geology from the University of Alberta, Edmonton in 2003 and has been employed in the mineral exploration industry since. She is registered as a Geol. I.T. with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.

LEGEND

- Provincial capital
- Other populated places
- Trans-Canada Highway
- Major road
- Ferry route
- International boundary
- Provincial boundary

Scale

100 km 0 100 200 300 km

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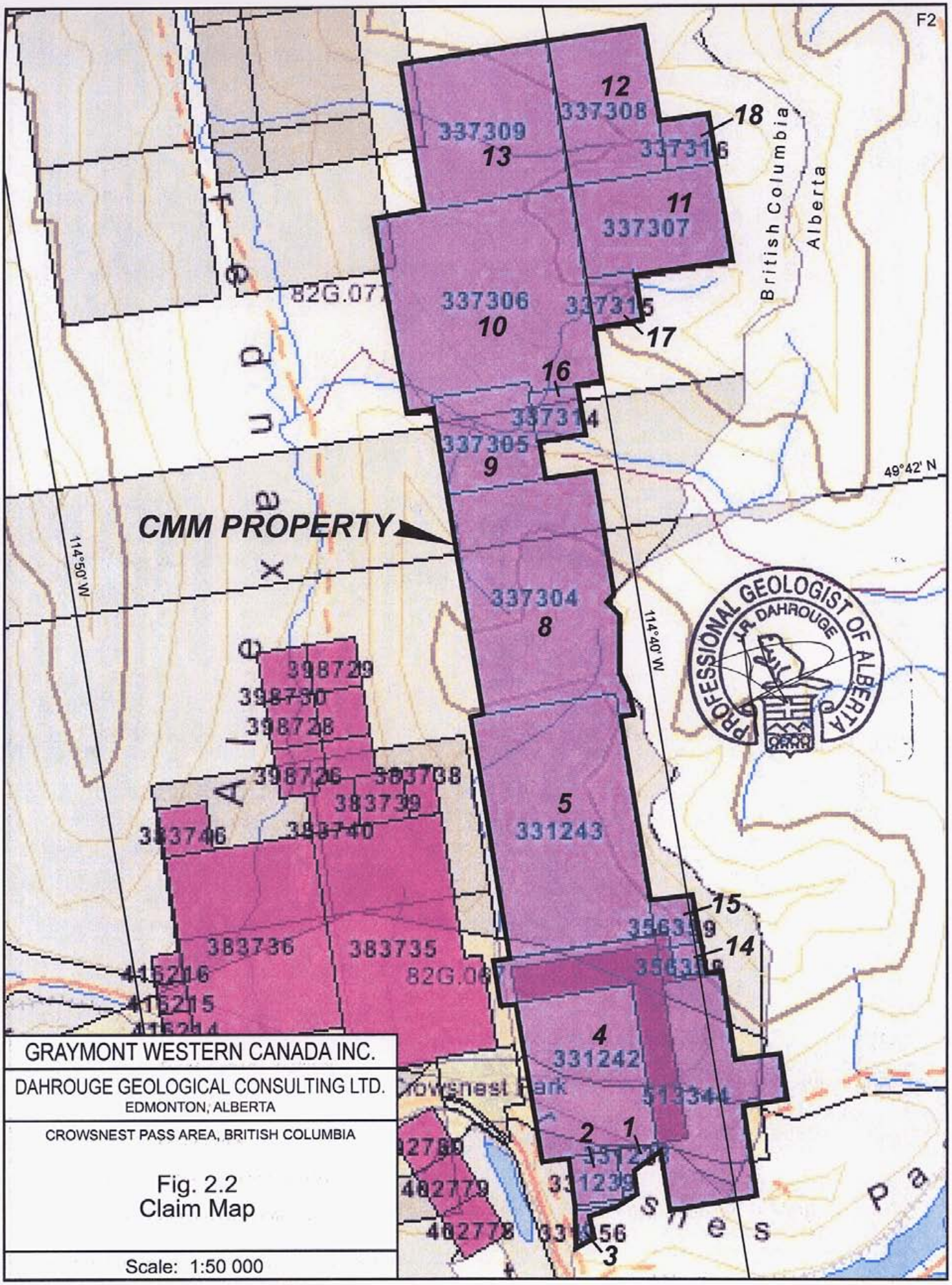
Fig. 2.1 Location Map
JT 2005.12



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CROWSNEST PASS AREA, BRITISH COLUMBIA

Fig. 2.2
Claim Map

Scale: 1:50 000

LEGEND

TRIASSIC

SR — Spray River Formation: dolomitic to argillaceous siltstone; platy siltstone; calcareous siltstone; silty shale

UPPER CARBONIFEROUS AND PERMIAN

RM — Rocky Mountain Formation: quartzitic, dolomitic, or calcareous quartz sandstone

LOWER CARBONIFEROUS

Rundle Group

Et — Etherington Formation: (upper) silty to sandy dolomite; (middle) resistant, light-grey, skeletal calcarenite; (lower) micritic limestones and dolomites with interbeds of green shale

Mount Head Formation

Cn — Carnarvon Member: resistant, dark-grey, micritic limestones with thin shale partings

Opu — Upper Opal Member: recessive, well-bedded cherty, argillaceous lime mudstones grading downward to nodular, cherty lime wackestone

Opl — Middle Opal Member: resistant, fine- to medium-grained grainstone; minor interbeds of dolomitic packstone and dolomudstone near middle of unit

Ma — Marston Member: tan to brown to light-grey cherty, vuggy dolomudstone; local thick interbeds of dark lime grainstone to packstone

Lo — Loomis Member: resistant, coarse- to very coarse-grained, white to light-grey, oolitic lime grainstone (dark brown at top) grading to sandy dolomite at base

Sa — Salter Member: recessive, yellow-orange weathering, dark-brown to medium-grey cherty dolomudstone grading to wackestone at base

BW — Baril-Wileman Member: resistant cycles of laminated and cross-bedded dolomudstone to wackestone, and fine- to medium-grained dark lime grainstone

Liv — Livingstone Formation: medium- to coarse-grained crinoidal ± bryozoan lime grainstone; interbedded dolomitic wackestone to packstone

- Li1 — Upper Massive Member
- Li2 — Upper Dolomitic Member
- Li3 — Middle Member
- Li4 — Cherty Dolomitic Member
- Li5 — Lower Member

Ba — Banff Formation: undivided

0 1000 2000

SCALE (metres)

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Geology and Sample Locations

28,002

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