CONTINENTAL LIME LTD.

1999 GEOLOGIC MAPPING AND SAMPLING ON THE NIM, NIMP, AND TSULT CLAIMS

EAST OF NIMPKISH LAKE, BRITISH COLUMBIA
(NANAIMO MINING DIVISION)

CLAIMS NIM 1, 4-12, NIMP 1-2, AND TSULT 1-4

Geographic Coordinates
50° 29' N
126° 58' W
NTS Sheet 92 L/7 W

Owner of Claims NIM 1, 4-12, NIMP 1-2, AND TSULT 1-4:
Ecowaste Industries Ltd.
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Calgary, AB, T2E 7J2

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Date Submitted: 2000 01 07

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1. INTRODUCTION

Throughout this report the term "Nimpkish Lake limestone deposits" refers to the high-calcium limestone of the Quatsino Formation which outcrops along three northerly trending ridges on the northeast side of Nimpkish Lake. The claims which encompass these occurrences were acquired by Ecowaste Industries Ltd. in 1993 and 1994. Two new two-post claims, NIM 11 and 12 were staked on the eastern side of Centre Ridge in September, 1999; and one four-post claim, NIM 13, along the southern side of Centre Ridge in November, 1999.

Some 104 samples were collected from the Nimpkish Lake limestone deposits and analysed in 1993. Between September 13 and 23, 1999 Continental Lime Ltd. conducted geological mapping and collected 125 rock samples at Centre, East, and Bear ridges. In addition, digital topographic information encompassing the Nimpkish Lake limestone deposits was acquired. The 1999 exploration was authorized by Mr. Mike Brown of Continental Lime Inc.

Throughout this report attitudes of bedding and other planar features are given as A°/B° SW, where A° is the azimuth of the strike and B° is the amount of dip in the direction indicated. A magnetic declination of 21° east was used. Where bedding could not be determined, stratigraphic thicknesses were calculated using orientations from adjacent units. Where more than one bedding orientation was measured, the mean orientation was used.

1.1 GEOGRAPHIC SETTING

1.1.1 Location and Access

The Nimpkish Lake property is within the Insular Belt near the northern end of Vancouver Island southwestern British Columbia. It lies along the northeastern shore of Nimpkish Lake about 53 km southwest of the town of Port Hardy, 15 km south to southeast of the town of Port McNeill, and less than 8 km southwest of Beaver Cove (Fig. 1.1).

From Port McNeill, the Nimpkish Lake property is easily reached by driving easterly and southeasterly on paved Highway 19 for about 15 km (Fig. 1.2). Highway 19 passes through the western part of the property. About 17¼ km along Highway 19 gravel logging roads lead both westerly and easterly. The westerly road provides excellent access to the parts of the property along Nimpkish Lake. The easterly road provides access to an extensive network of roads along Centre Ridge. Most of the roads are well-maintained and suitable for heavy equipment. The current network of logging roads generally grade less than 8 per cent.

About 14½ km from Port McNeill on Highway 19 , the gravelled Kilpala Road leads easterly to Beaver Cove. A southerly fork (Noomas Road) 2¾ km along this road, provides access to the eastern and southern parts of the property. Noomas rail crossing is about 7 km along this road. Immediately north of the rail crossing a westerly logging road provides access to the southern parts of Centre and East ridges. Immediately south of the rail crossing an easterly logging road (Tsulton Road) provides access to the northern part of claim Nim 1. For most of its length Tsulton Road is covered with recent dead fall. Tsulton River is crossed, about 300 m along this road, by a disused bridge that would require modification or replacement prior to use. From Tsulton River to the first switchback, a distance of about 650 m, the road grades less than 8 per cent. From the switchback to the northern part of Bear Ridge, the road grades up to 22 per cent and averages about 12¾ per cent over a distance of about 750 m.

The network of logging roads which traverse the Nimpkish Lake property are owned and maintained by Canadian Forest Products Ltd. (Canfor). Access to them and other surface rights are not encumbered by Canfors' ownership.

1.1.2 Topography, Vegetation, Climate, and Geographic Names

The Nimpkish Lake property includes three roughly parallel north trending ridges of moderate relief cut by small valleys with either northerly or southerly flowing creeks (Fig. 3.1). Elevations range from a minimum of about 20 m at Nimpkish Lake to 316 m at Bear Ridge. Bear Ridge forms a fairly extensive plateau between 300 to 316 m elevation, with its northern end just south of Tsulton River. East Ridge attains elevations of between 250 and 275 m. Centre Ridge forms a plateau above 200 m, with a maximum elevation of 233 m near its southern end.

Bear Ridge, parts of Centre Ridge, and along the shores of Nimpkish Lake have been clear-cut logged within recent years. The parts of Centre Ridge which have been logged more than 10 years ago are covered by decomposing slash and a very thick cover of second growth. The remainder of the property is covered with mature forest. Forest vegetation is dominated by a dense canopy of Alder, Balsam, Cedar, Hemlock, Douglas Fir, Poplar, and Spruce. Spruce and Cedar predominate in areas of lower relief with poor drainage, while Douglas Fir and Hemlock are more common in areas with well developed drainage. Tree cover is widely spaced with fairly open undergrowth. Near impenetrable underbrush are formed locally by Alder and Salal, or by immature Cedar and Spruce in areas of recent logging.

The area is considered part of the coastal rainforest climatic zone with generally mild and wet conditions. Temperatures rarely exceed 25°C during summer months and less than -20°C during winter months. Precipitation is considered heavy throughout the region, with average annual precipitation of between 500 and 610 cm. Most precipitation occurs during winter months, however heavy and prolonged rainfall during summer months is not uncommon.

Throughout this report informal names have been applied to previously unnamed creeks, ridges, and other topographic features to facilitate reference to geographic locations.

1.2 PROPERTY

The Nimpkish Lake limestone property was acquired by Ecowaste Industries Ltd. in 1993, 1994, and 1999. Two new two post claims (Nim 11 and 12) and one four post claim (Nim 13) were staked on the east side and south side of East Ridge in September and October, 1999 (Fig. 1.3, Table 1.1).

TABLE 1.1: LIST OF MINERAL CLAIMS

Claim Name	Tenure Number	Units/Claim	Record Date	Actual or Expected Expiry Date
Nim 1°	322 208	8	1993 10 22	2005 10 22
Nim 4°	322 209	20	1993 10 23	2005 10 23
Nim 5°	322 210	2	1993 10 23	2005 10 23
Nim 6°	322 216	1	1993 10 20	2005 10 20
Nim 7°	322 211	6	1993 10 23	2005 10 23
Nim 8°	322 212	8	1993 10 23	2005 10 23
Nim 9°	322 217	1	1993 10 23	2005 10 18
Nim 10°	323 507	1	1994 02 08	2006 02 08
Nim 11°	372 022	1	1999 09 10	2005 09 10
Nim 12°	372 021	1	1999 09 10	2005 09 10
Nim 13°	372 695	9	1999 10 22	2000 10 22
Nimp 1°	314 208	1	1992 10 25	2000 10 25
Nimp 2°	314 209	1	1992 10 25	2000 10 25
Tsult 1°	314 216	1	1992 10 22	2000 10 22
Tsult 2°	314 217	1	1992 10 22	2000 10 22
Tsult 3°	314 218	1	1992 10 22	2000 10 22
Tsult 4°	314 219	1	1992 10 22	2000 10 22
		64		

° Ecowaste Industries Ltd.

1.3 HISTORY AND PREVIOUS INVESTIGATIONS

1.3.1 Investigations by Officers of Government Agencies

The earliest reported examination of the northern part of Vancouver Island dates back to the early part of the century when Dawson (1887) assigned limestone units near Quatsino Sound to the Vancouver Group. Dolmage (1919) subdivided the Vancouver Group, and assigned extensive limestone occurrences at Quatsino and Barkley sounds to the Quatsino Formation. In 1929 (Gunning, 1930 and 1932) tentatively assigned the thick limestone unit of the Nimpkish Lake Quadrangle to the Quatsino Formation, and provided an Upper Triassic age for fossils from the upper part of the formation. Nimpkish Lake Quadrangle was mapped by Gunning (1938a and 1938b) at a scale of 1:63 360. Detailed information on geology of the Nimpkish Lake area was published by Hoadley in 1953 and a detailed account of stratigraphy by Jeletzky in 1976. Muller, Northcote, and Carlisle (1974) mapped the area as part of the Alert-Cape Scott map area at a scale of 1:250 000 (Fig. 2.1); which was subsequently revised by Roddick (1980).

The earliest analyses of limestone from northern part of Vancouver Island were reported by Goudge (1945) and the first from the east side of Nimpkish Lake by McCammon (1968). Fishl's (1992) compilation on limestone and dolomite in British Columbia includes a summary of available information on the northern part of Vancouver Island.

1.3.2 1993 Reconnaissance by Continental Lime

In 1993 Dr. Stanley Krukowski of Continental Lime Inc. recognized the potential for deposits of high-calcium limestone within the vicinity of Nimpkish Lake. Several claims were staked on the northeast side of Nimpkish Lake in the later part of 1993. Subsequently, 104 samples (Krukowski, 1993) were collected from the extensive network of roads within the western part of the property and several in the vicinity of Noomas rail crossing.

1.3.3 Limestone Deposits of Northeastern Vancouver Island

Exploration for high-calcium limestone in the northern part of Vancouver Island and surrounding area began prior to 1909 when Pacific Lime Company began producing limestone at Blubber Bay, Texada Island (Goudge, 1945). The Quatsino Formation contains the most significant resources of high-calcium limestone on northern Vancouver Island (Table 1.2); however, parts of the Parsons Bay Formation are also reported to contain appreciable thicknesses of good quality limestone. Within the northern part of Vancouver Island the Quatsino Formation outcrops along three parallel belts: the western Quatsino-Tlupana Belt; the central Nimpkish Belt; and the eastern Bonanza Belt (Fig. 2.1). Triassic limestone at Texada Island, previously referred to as Marble Bay Formation, is now incorporated within the Quatsino Formation (Fischl, 1992). Similarly, the late Triassic Sutton Formation of southern Vancouver Island is now considered part of the Parsons Bay Formation.

TABLE 1.2 QUALITY OF LIMESTONE AND PRELIMINARY RESERVES IN THE NORTHEASTERN PART OF VANCOUVER ISLAND

Location	Reserves (Mt)	Quality (%)			Comments
		CaO	MgO	SiO_2	
Quatsino-Tlupana (West) Belt					
Benson Lake *	-	55.1	2.49	0.27	Quatsino Formation; active quarry; about 25 km southwest of Port McNeill
Nimpkish (Central) Belt					
Cluxewe River Quarry °	-	< 55¼	~¼	~¼	Parsons Bay Formation; abandoned quarry about 50 m x 150 m; less than 5 km from Port McNeill
S.U.P. Quarry °	5.4[1]	~53¾	~¼	< 3¼	Quatsino Formation; abandoned quarry; about 4 km from Port McNeill; the limestone is at least 60 m thick
Bonanza (East) Belt					
Leo D'Or[3]	0.66	> 55	< ¼	~ 1	Quatsino Formation on eastern shore of Bonanza Lake; reserve block encompasses an area 100 m by 160 m of white marble
Bonanza Lake (Doro)	300[2]	54.9	< ½	½ - 3	Quatsino Formation which consists of white partly recrystallized limestone with high brightness; reserves are a 'potential geologic resource'

* After Hora (1986)
° After McCammon (1968) with SiO_2 reported as Acid Insolubles
[1] Minfile 92L-282
[2] Brown (1994) with SiO_2 reported as Acid Insolubles (tonnes are reported as tons)
[3] Fischl (1992) with SiO_2 reported as Acid Insolubles

1.4 PURPOSE OF SURVEY

The work described in this report was undertaken to provide information on the extent of limestone within the Nimpkish Lake property that is of sufficient quality for the manufacture of lime. Particular attention was given to Centre Ridge, East Ridge, and Bear Ridge (Fig. 3.1).

1.5 SUMMARY OF WORK

1.5.1 Geologic Mapping and Sampling

Between September 13 and 23, 1999 some 125 samples were collected from 17 sample sections (Table 1.3) by chipping outcrops mostly perpendicular to defined or assumed bedding. At Centre Ridge 44 chip samples were collected from eight traverses. On and near East Ridge

38 chip samples were collected from seven traverses and at Bear Ridge 44 samples were collected from four traverses. Geological observations and measurements of structural elements accompanied the sampling.

All or parts of claims NIM 1, 4-12; NIMP 1-2; and Tsult 1-4 were mapped geologically at a scale of 1:7,500. The area mapped is estimated at 7 km^2.

TABLE 1.3 LOCATIONS EXAMINED AND SAMPLED IN 1999 (Fig. 3.1)

Location	Measured Stratigraphic Thick. (m)*	Covered Stratigraphic Thick. (m)*	Sampled Stratigraphic Thick. (m)*	Number of Samples
Centre Ridge				
99-1: North end of Centre Ridge	93½	89¼	4¼	4
99-2: Eastern part of Centre Ridge	170¾	164¼	6½	8
99-3: Along Former Logging Trail on Centre Ridge	40½ - 60½	30 - 50	10½	4
99-4: Along Former Logging Trail on Centre Ridge	55½	40	15½	9
99-5: Southern Flank of Centre Ridge	101¾	89¾	12	7
99-6: Southeastern Flank of Centre Ridge	76¼	64½	11¾	9
99-7: Between Centre Ridge and East Ridge	5	-	5	2
C5220: Isolated Sample on East Shore of Nimpkish Lake	3½	-	3½	1
Totals:	546¾ - 566¾	477¾ - 497¾	69	44
East Ridge				
99-8: North end of East Ridge	10½	2¾	7¾	4
99-9: East Flank of East Ridge	28¼	24¾	3½	4
99-10: West Flank of East Ridge	158½	133¼	25¼	9
99-11: Across Central Part of East Ridge	130¼	115½	14¾	9
99-12: Along Road at South End of East Ridge	11¼	-	11¼	5
99-13: Along Road at South End of East Ridge	4½	-	4½	2
C5114 to 7; and C5133: Isolated Samples	2½	-	2½	5
Totals:	345¾	276¼	69½	38
Bear Ridge				
99-14: South of First Switchback on Bear Ridge	44½	6½	38	17
99-15: Along Road on Northeastern Part of Bear Ridge	16¼	7	9¼	7
99-16: Central Part of Bear Ridge	24¼	11½	12¾	7
99-17: Southwestern Part of Bear Ridge	150	130¼	19¾	13
Totals:	235	155¼	79¾	44

* All thicknesses are approximate (see Section 3.1.2).

1.5.2 Digital Topographic Information

To assist in the field mapping and interpretation of results, digital topographic data were acquired and detailed topographic maps produced at a scale of 1:7,500 (Fig. 3.1).

1.6 FIELD OPERATIONS

Field work was conducted by a three-man crew on September 13 and 14, 1999; and by a two-man crew between September 15 and 23, 1999. Personnel were based in a motel in Port McNeill with transportation to the property by either two- or four-wheel-drive vehicles.

2. REGIONAL GEOLOGY

The Insular Belt of the Pacific Margin comprises several discrete terranes of disparate origin, the largest of which are Alexander and Wrangellia terranes (Gabrielse et al., 1991). Wrangellia is a complex of Paleozoic through Cenozoic volcanic arc, oceanic, and clastic wedge assemblages comprising the modern Pacific Continental Margin from Vancouver Island northward to Queen Charlotte Islands. It is disrupted by northwesterly trending dextral transcurrent faults, westerly verging thrust faults, plutonic rocks, and anticlinoria.

Within the Insular Belt of southwestern British Columbia, high-calcium limestone has been quarried in commercial quantities from the Mount Mark Formation of the Sicker Group and the Quatsino Formation of the Vancouver Group (Table 2.1). Parts of the Parsons Bay Formation are reported to contain relatively thin intervals of high-calcium limestone, but it has not produced commercial quantities. Only the regional stratigraphy of those units that reportedly contain high-calcium limestone or which affect the quality of limestone are discussed herein. Accounts of the regional stratigraphy of the other units listed in Table 2.1 are available in Hoadley (1953), Muller et al. (1974), and Muller (1980).

2.1 STRATIGRAPHY

2.1.1 Mount Mark (Buttle Lake) Formation

The Pennsylvanian Mount Mark Formation of the Buttle Lake Group (Massey and Friday, 1988) conformably overlies and grades into the Cameron River Formation of the Sicker Group (Table 2.1). The Mount Mark Formation is equivalent to the Buttle Lake Formation (Massey and Friday, 1988). It consists of massive, fine- to coarse-grained, crinoidal limestone beds with minor argillaceous and chert interbeds. Significant outcrops of Mount Mark Formation are found within the Cowichan uplift of southeastern Vancouver Island; near Tofino along the west coast; within the Buttle Lake Uplift between 50 to 100 km southeast of Nimpkish Lake; and along the southern part of Texada Island. It obtains thicknesses of 150 m near Buttle Lake and up to 300 m within the Cowichan uplift.

TABLE 2.1 STRATIGRAPHY OF THE NORTHERN PART OF VANCOUVER ISLAND *

Period	Stratigraphic Unit			
	Group	Formation	Lithology	Approx. Thick. (m)
Tertiary	-	Tertiary Volcanics and Sediments		305
	-	Tertiary Intrusions	Quartz diorite	-
Cretaceous	Nanaimo		clastics, coal	125
	Queen Charlotte		clastics, coal	305 - 1050
	-	Longarm Formation	clastics	60 - 400
	-	Pacific Rim Sequence	clastics	-
Jurassic	-	Island Intrusions	Granitic intrusives	-
	Vancouver	Bonanza	volcanics	305 - 5650
Triassic	Vancouver	Harbledown	clastics and tuffs	
		Parsons Bay[1] - Sutton	calcareous clastics and limestone	305 - 710
		Quatsino[2]	limestone	30 - 750
		Karmutsen	volcanics	3000 - 6100
		Sediment Sill Unit	clastics and volcanics	750
Pennsylvanian	Buttle Lake°	Mount Mark (Buttle Lake)	limestone	215

* Modified after Muller et al. (1974) and Fischl (1992)
° Formerly of the Sicker Group (Massey and Friday, 1988)
[1] Equivalent to the Sutton Formation of western Vancouver Island Jeletzky (1970)
[2] In part, previously mapped as Sutton Formation on southern Vancouver Island and equivalent to the Marble Bay Formation of Texada Island (Fischl, 1992)

2.1.2 Quatsino Formation

The Upper Triassic Quatsino Formation of the Vancouver Group paraconformably overlies and is interbedded with volcanic and limestone litho-types of the Karmutsen Formation. The Karmutsen Formation includes basaltic and andesitic flows, tuffs, agglomerates, and breccias; with minor interbedded limestone (Hoadley, 1953). It is widely exposed along the southwest Pacific margin and is up to 6,100 m thick (Muller et al., 1974).

Extensive outcrops of the Quatsino Formation are known from Texada and Vancouver islands. Within the northern part of Vancouver Island the formation outcrops along three parallel belts (Fig. 2.1):

Belt *	Length	Location
(West) Quatsino-Tlupana	165 km	from Quatsino Sound to Tlupana Inlet
(Central) Nimpkish	39 km	east and south of Nimpkish Lake
(East) Bonanza	30 km	west of Telegraph Cove to Bonanza Lake

* After McCammon (1968)

The Quatsino Formation attains a maximum thickness of 760 m at a location immediately south of Alice Lake, within the western belt (Fischl, 1992). Near Nimpkish Lake, within the central beld, Coffin and Soux (1988) reported a drill intersection of about 135 m thickness for the lower part of the Quatsino Formation (Appendix 2). Within northern Vancouver Island the Quatsino is divisible into lower and upper parts (Hoadley, 1953 and Muller et al., 1974). The lower part with highly variable thickness (Table 2.2) is characterized as a thick-bedded to massive, brownish-grey to black, fine- to microcrystalline limestone (Muller et al., 1974) and includes a few thin interbeds of andesite or basalt (Hoadley, 1953).

TABLE 2.2 MEASURED THICKNESS OF THE QUATSINO FORMATION FROM THE NORTHERN PART OF VANCOUVER ISLAND

Location	Quatsino Formation *		
	Lower Part Approx. Thick. (m)	Upper Part Approx. Thick. (m)	Description
Western Belt			
Alice Lake	488	302	- immediately south of Alice Lake
Klaskino	25	49	- along north side of Klaskino Inlet (50°18'50", 127°51'50")
Central Nimpkish Belt			
Tsulton Property°	~ 135	-	- opposite halfway Islands on Nimpkish Lake
Eastern Belt			
Beaver Cove	76 +	140	- along a tributary of Tsulton River south of Beaver Cove (50°29'50", 126°53'20")

* Modified after Muller et al. (1974)
° After Coffin and Soux (1988; Appendix 2)

The upper part of the Quatsino Formation consists of thin-bedded limestone with black calcareous siltstone interbeds and laminations. Upwards, laminae and interbeds of calcareous black shale increase in frequency and thickness. Toward the top of the unit the limestone is increasingly dark-grey or black, due to increasing quantities of carbonaceous matter (Hoadley, 1953). Bedding and color banding is distinctive and well preserved. Locally the upper part contains abundant ammonites and pelecypods (Muller et al., 1974).

Toward central and southern Vancouver Island the Quatsino Formation thins considerably and is complicated by intense faulting and folding. According to Fischl (1992) the Quatsino is less than 75 m thick at Cowichan Lake about 40 km south of Nanaimo.

On Texada Island the Quatsino Formation is divisible into a northern and southern belt. The northern belt is up to 3 km wide by 13 km long and the southern belt, which is located on the southwest coast, is up to 6 km long. Based on chemical composition Mathews and McCammon (1957) divided the northern belt into three members, each up to 200 m thick. The lowermost member is composed predominately of high-calcium limestone; the middle member is predominately high-calcium limestone with some dolomitic interbeds; and the upper member is dominantly dolomite and dolomitic limestone.

2.1.3 Parsons Bay Formation

The Parsons Bay Formation of the Vancouver Group conformably overlies and is interbedded with limestones of the underlying Quatsino Formation. The lower part of the Parsons Bay Formation consists of light-grey limestone with laminae and thin interbeds of calcareous black shale (Muller et al., 1974). The Parsons Bay formation has a similar distribution as the Quatsino Formation (Section 2.1.2). Near Alice Lake it is up to 610 m thick and is only about 60 m thick near Beaver Cove (Muller et al., 1974).

Along the west-central part of Vancouver Island, near Checleset Bay, the Parsons Bay Formation includes a massive limestone unit between 18 and 27 m thick within its upper part which was termed 'Sutton Limestone Formation' by Jeletzky (1970). Near Smith Cove, on the southern side of Quatsino Inlet, the Sutton Formation is divisible into upper and lower members. Jeletzky (1976) described the Upper Limestone Member as predominately relatively pure, grey, well-bedded limestone up to 45 m thick.

2.2 INTRUSIONS

2.2.1 Island Intrusions

Within the northern part of Vancouver Island Jurassic dykes, sills, stocks, and batholiths are widespread. The Island Intrusions (Eastwood, 1965) which have invaded all rock types are medium- to coarse-grained and range in composition from gabbro to quartz monzonite. Typically elongate in a northwesterly direction, they form narrow 3 km to 8 km wide northwesterly trending belts separated by Upper Triassic volcanic and sedimentary rocks (Hoadley, 1953). The intrusive belts are up to 80 km in length and show a pronounced decrease in size towards the western part of Vancouver Island. Localized recurrent folding of the Quatsino Formation along northwesterly axes was accompanied by emplacement of andesitic sills and dykes (Carlisle, 1972). According to Hoadley (1953)

> "The fact that the lineation is more or less parallel with the general fold structure of the invaded rocks indicates that the intrusions were associated with orogenic disturbances, and that they were intruded at about the time the invaded rocks were folded. They were probably guided in part by contemporaneous faults."

Intense metamorphism associated within the emplacement of large scale batholiths and stocks is common. Most bodies exhibit well developed agmatitic intrusive breccias within marginal zones. Within a few kilometers of the intrusive bodies limestone lithotypes can be strongly contorted, fractured, and jointed; cut by numerous dykes; and altered to calc-silicate minerals. Skarn mineralization is common; however, it rarely results in the complete alteration of limestone bodies (Eastwood, 1965).

Smaller stocks, sills, and dykes genetically related to the Island Intrusions generally exhibit limited metamorphism and sharp contacts with the surrounding country rock. However, these intrusive bodies are most abundant within the contact aureole of the larger batholiths.

2.2.2 Nimpkish Intrusions

The Nimpkish batholith is an irregular shaped intrusive situated between Nimpkish Lake southeasterly to Woss Lake (Fig. 2.1), where it is in tectonic contact with the Vernon batholith. Muller et al. (1974) include Bonanza Batholith along the eastern shore of Bonanza Lake and several smaller plutons in the vicinity of Beaver Cove within this group. These intrusives impinge the entire Vancouver Group.

Contact relations of the Nimpkish Batholith are highly irregular and include a large number of small tongues and dykes (Gunning, 1932b) which are

> "...frequently much contorted, fractured, and sheared near the intrusive and in a number of places are silicified and mineralized with pyrite, pyrrhotite and calcite. In a few places, and particularly where the granodiorite intrudes limestone, contact metamorphic silicates, magnetite, and copper, iron or zinc sulphides are quite extensively developed."

2.2.3 Tertiary Intrusions

Small Tertiary stocks- to medium- intrusive bodies, commonly as dykes, sills and small plutons are exposed throughout the entire length of Vancouver Island. These rocks vary widely in size, texture, and mineralogical composition and include medium- to coarse-grained granite porphyry, diorite porphyry, gabbro and finer-grained dacitic rocks. Jeletzky (1976) terms the intrusives the 'Sooke Intrusions', Massey and Friday (1989) the "Catface Intrusions", while Muller and Carson (1969) discuss "Tertiary Intrusions".

According to Hoadley (1953) the Tertiary Intrusions are most commonly dark-green to black, diabasic gabbro dykes which vary in width from a few centimeters up to 5 m. Furthermore (Hoadley, (1953),

> "where these dykes occur in Vancouver Group rocks they are almost impossible to distinguish in the field from dykes associated with the Triassic volcanic rocks."

Near Port Alberni, Massey and Friday (1989) note that these intrusives occur as dykes up to 3 m wide and are commonly found along fault zones, which may have acted as conduits for emplacement.

2.3 STRUCTURE

The northern part of Vancouver Island is dominated by north to northwesterly trending anticlinoria which is flanked by fault blocks with outward dipping stratigraphy. The region is cut by steep normal or strike-slip vertical faults. The main structural elements of the region are shown in Figure 2.1. Detailed accounts of regional structure are available in Hoadley (1953) and Muller et al. (1974).

The main structural elements of the Nimpkish Lake Block from northeast to southwest are Bonanza Fault, Nimpkish Syncline (here termed), and Nimpkish Fault. Bonanza and Nimpkish faults define the respective eastern and western boundaries of Nimpkish Block. Both structures have variable amounts of displacement and are in part defined by valley lineaments.

3. PROPERTY GEOLOGY

3.1 STRATIGRAPHY AND LITHOLOGY

Three successive lithological units are recognizable within the area (Table 3.1). The Karmutsen Formation comprises incompletely metamorphosed basaltic and andesitic flows, tuffs, agglomerates, and breccias; with minor interbedded limestone (Hoadley, 1953). The Nimpkish Lake limestone occurrences are considered part of the Quatsino Formation of the Vancouver Group. Throughout the property a number of predominately northerly trending, near vertical, dark-green to black mafic dykes, are presumably part of the Tertiary suite of intrusives.

TABLE 3.1 LITHOLOGIC UNITS NEAR NIMPKISH LAKE

Lithologic Unit	Estimated Thick. (m)	Description
Tertiary Intrusions	< ¼ m to 15 m	dark-green to black, rusty weathered, northerly trending dykes
Quatsino Formation	>200 m	grey weathered, dark-grey to black fresh, micritic, massive limestone, with rare patches of chert; middle and upper parts include interbeds of argillaceous limestone, dolomitic limestone, and dolomite
Karmutsen Formation	-	incompletely metamorphosed basaltic and andesitic flows, tuffs, agglomerates, and breccias; with minor interbedded limestone

In many places, uniform deposition and subsequent tectonics have rendered bedding difficult to recognize in the more massive limestone lithologies of the Quatsino Formation. Cleavages are easily confused with bedding and the absence of readily recognized marker horizons hinders stratigraphical and structural analysis.

3.1.1 Karmutsen Formation

Exposures of the Karmutsen Formation can be traced from the eastern shore of Nimpkish Lake southeasterly towards Noomas rail crossing. The southerly contact of the Karmutsen Formation with the overlying Quatsino Formation is well exposed along a forestry road leading westerly from Noomas rail crossing. The uppermost part of the Karmutsen Formation consists of rusty-brown to brown weathered, green fresh, medium-grained, volcanics. Outcrops are typically recessive and deeply weathered.

3.1.2 Quatsino Formation

As previously indicated (Section 2.1.2) the most detailed published work on the stratigraphy of the Quatsino Formation is that of Hoadley (1953) and Muller et al. (1974); they indicate that the Quatsino is divisible into a lower and an upper part. The lower part with highly variable thickness is thick-bedded to massive, brownish-grey to black, fine- to microcrystalline limestone with a few thin interbeds of andesite or basalt. The upper part consists of thin-bedded limestone with black calcareous siltstone interbeds and laminations. Upwards laminae and interbeds of calcareous black shale increase in frequency and thickness.

The lower part of the Quatsino Formation is the main limestone unit that outcrops at East and Centre ridges, and the upper part at Bear Ridge. At East and Centre ridges the lower part of the Quatsino Formation consists of variably recrystallized, massive to thick-bedded, grey weathered, dark-grey to black fresh, micritic, limestone with rare patches of chert. Along the crest of East Ridge (Section 99-4; Fig. 3.1) clasts and nodules (chert?) up to 2 cm in diameter may represent secondary replacement of bioclasts.

At Bear Ridge the upper part of the Quatsino Formation is variably buff to medium-grey weathered, very dark grey to black fresh, thick-bedded, interbedded micritic limestone and buff dolomite.

Within the lower part of the Quatsino Formation clear bedding surfaces or sedimentary laminae are rare. Definitive bedding surfaces; such as along the westerly logging road at Noomas rail crossing (Section 99-13, Fig. 3.1) and near the crest of Centre Ridge (Section 99-4) indicate a shallow north to northeasterly dip.

The lack of a readily recognized marker horizon within the massive limestones of the Quatsino Formation hinders stratigraphic correlations. Hence, thickness determinations must be taken with caution as the continuity of stratigraphy across vast covered intervals with probable concealed internal structures, is uncertain. In addition, apparent northerly trending faults separate East, Centre, and Bear ridges; hence the continuity of stratigraphy across these structures is uncertain. Slight variations in major and minor constituents may aid in correlating stratigraphy. Their use for this purpose is not yet complete and not discussed further in this report.

Section 99-2 (Fig. 3.1) along the eastern part of Centre Ridge was across a maximum stratigraphic interval of 170¾ meters of the Quatsino Formation. Section 99-10 along the western flank of East Ridge, was across a maximum stratigraphic interval of 158½ meters. At Bear Ridge, Section 99-17 reaches 150 m apparent thickness within the upper part of the Quatsino Formation.

3.1.3 Tertiary Intrusions

Throughout the property, dykes and sills which are presumably part of the Tertiary Suite of intrusives, vary from a few centimeters to more than 10 m thick (Fig's. 3.1). The intrusives appear preferentially aligned along the pre-existing structural fabric which is dominantly steep-dipping to vertical, and northwest to northeast. Several dykes and sills occur at other orientations. The intrusives typically stand above the local bedrock surface forming resistant linear features. Northwesterly from Noomas rail crossing, eight northerly trending dykes which vary from one to more than 10 m thick, were observed across a horizontal distance of about 500 m (Fig. 3.1).

Several dykes and sills northwesterly from Noomas rail crossing, were observed to cut the Karmutsen - Quatsino contact. Where they intrude the Karmutsen Formation the intrusives are difficult to visually distinguish from the volcanic rocks, which concurs with Hoadley's (1953) observations (Section 2.3.3). The intrusives are commonly rusty-brown weathered, green fresh, and fine- to medium-grained. Commonly, they exhibit strong jointing parallel to intrusive alignment.

Associated alteration includes haloes to several meters of thermal recrystallization with negligible chemical alteration, and thin zones of skarnification adjacent to intrusives.

3.1.4 Recent Sediments and Weathering

The region is covered by a veneer of unconsolidated glacial sediments which range in thickness from nil to several meters. Within upland areas, such as along Centre Ridge and Bear Ridge bedrock exposures are common. It is expected that within major valleys such as at Nimpkish Lake and Tsulton River, unconsolidated sediments may be tens of meters thick. Along the eastern and southeastern side of Centre Ridge, unconsolidated sediments are up to several meters thick.

Surficial weathering has resulted in a weathering profile which varies from a few centimeters up to several meters thickness. Many of the erosional (topographic) features appear elongate along the pre-existing structural trend. Locally, the bedrock surface is highly irregular.

3.2 STRUCTURE

Structural measurements were collected from limestone and dyke units exposed on Centre Ridge, East Ridge, and Bear Ridge (Appendix 5, Fig. 3.1). Where unequivocally determined, original bedding (S_0) is generally shallowly dipping; whereas, joints and cleavages (S_1) are steeply dipping or near vertical. Intensity of deformation within the limestone unit varies, so that individual outcrops may display either mentioned planar structures or none of them. Orientations of the different categories of planar elements are relatively consistent throughout the region. Since in most exposures there are no qualitative criteria, geometric criteria revealed by statistical analysis are employed to differentiate sedimentary (primary) and tectonic (superimposed) surfaces.

3.2.1 *Statistical Analysis of Measured Orientations*

A statistical analysis of the orientation data measured within limestone units exposed on Centre Ridge, East Ridge, and Bear Ridge was completed by plotting poles to measured planes in the southern hemisphere of a Schmidt (equal angle) stereographic projection (Fig's. 3.2 and 3.3). At Centre and East ridges, bedding and cleavage orientations plot within a poorly defined cluster near the centre of the stereonet which corresponds to the calculated mean of all measured orientations of 106°/12° N. At Bear Ridge the bedding orientation is consistent, whilst cleavage orientation is highly variable. The calculated mean of all measured orientations is 90°/14° N.

In general, the orientations indicate a shallowly dipping monocline or fold limb. Slightly different mean orientations in the two areas, may indicate a structural bend or a small block rotation.

3.2.2 Tectonic Overprint

From west to east, three ridges; namely Centre Ridge, East Ridge, and Bear Ridge are separated by two north-south trending valleys. A right-lateral offset of the Quatsino-Karmutsen contact of about 150 m across the creek separating Central and East ridges suggests a northerly trending dextral wrench fault (Fig. 3.4). The topographic low with a general north-south trend between East Ridge and Bear Ridge is inferred to be a fault as it projects southward into a mapped major fault.

Original bedding of limestone units is variously overprinted by fracture cleavages. A northwesterly oriented tectonic overprint indicated by fracture cleavages coincident with the orientation of a local fault (120°/62°NE) is marked in topography by the trend of several segments of the hydrographic network. A set of northeasterly trending subvertical cleavages, plot along the edge of the NW quadrant (Fig. 3.2), are likely related to the similarly orientated Tsulton fault located a few kilometres to the north. At Bear Ridge, the northeasterly trending cleavage planes that parallel the Tsulton fault are locally (Sample C5171; Appendix 5) accompanied by secondary calcite veining (Fig. 3.2). Dykes generally trend northwesterly at Centre Ridge and north at Bear Ridge, parallel to the dominant local structural trend.

3.3 QUALITY OF LIMESTONE

3.3.1 Sampling and Analytical Procedures

Some 125 samples were collected between September 13 and 23, 1999 by chipping outcrops perpendicular to bedding, if it could be identified (Appendix 5). Where bedding could not be identified, chips were taken in directions appropriate to topography with stratigraphic thicknesses deduced from other measurements, where possible. Samples were collected from the places listed in Table 1.3 and shown in Figure 3.1, representing a total of 79¾ m of strata.

The samples for analyses were sent to the Central Analytical Laboratory of Continental Lime Inc. in Salt Lake City, Utah for preparation and analyses for 12 constituents by standard ICP techniques, and LOI. ICP analytical procedures in the Central Analytical Laboratory are described in Appendix 3. The analytical report as received by e-mail from the Central Analytical Laboratory constitutes Appendix 4.

3.3.2 *Sections with High-Quality Limestone*

East and Centre ridges, and Bear Ridge consist primarily of carbonate rocks of the lower and upper parts of the Quatsino Formation, respectively. Similar to those described by Hoadley (1953) and Muller et al. (1974). Limestone samples from East and Centre Ridges generally yielded high-calcium concentrations whilst samples from Bear Ridge exhibit compositional variability. Although lateral facies variations cannot be precluded, it is probable that the greater concentrations of $MgCO_3$ at Bear Ridge either represent different stratigraphy from that at Centre and East ridges or are related to Nimpkish batholith just southerly from Bear Ridge. Stratigraphic thicknesses and quality of sampled sections are compiled in Table 3.2.

TABLE 3.2: QUALITY OF LIMESTONE WITHIN THE QUATSINO FORMATION NEAR NIMPKISH LAKE, BRITISH COLUMBIA (Fig. 3.1)

Note: Compositional layers are in descending stratigraphic order but are not necessarily continuous as sampled intervals are across covered intervals (see Appendix 5).

Section	Covered Thick. (m)	Entire Section				Compositional Layer(s)			
		Sampled Thick. (m)	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)	Sampled Thick. (m)	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)
Centre Ridge									
99-1	89	4¼	< 99	½	< ¼	-	-	-	-
99-2	164¼	6½	~ 95	< 3¼	< 1	¾	~ 99	< ¾	< ¼
-	-	-	-	-	-	½	~ 50	~ 35½	~ 8½
-	-	-	-	-	-	5¼	~ 98¾	~ ½	~ ¼
99-3	30 - 50	10½	~ 98¼	~ ½	~ ½	-	-	-	-
99-4	40	15½	~ 98	~ ½	~ ½	-	-	-	-
99-5	89¾	12	~ 98	< ½	< ½	-	-	-	-
99-6	64½	11¾	~ 98	~ ½	< ¾	-	-	-	-
99-7	5	5	~ 98	~ ½	< 1	-	-	-	-
East Ridge									
99-8	2¾	7¾	~ 98½	~ ¼	~ ¼	-	-	-	-
99-9	24¾	3½	~ 98½	< ½	~ ½	-	-	-	-
99-10	133¼	25¼	~ 97	1¾	< ½	20¼	~ 98¼	< ½	< ½
-	-	-	-	-	-	5	~ 91¾	~ 7¼	~ ½
99-11	115½	14¾	98	< 1	~ ½	1¼	~ 98½	~ ½	~ ½
-	-	-	-	-	-	1	~ 90	~ 7	~ ½
-	-	-	-	-	-	12	~ 98½	~ ½	~ ½
99-12	-	11¼	< 96	< ½	~ 3	-	-	-	-
99-13	-	4½	~ 96¼	~ ¾	~ 2	-	-	-	-
Bear Ridge									
99-14	6½	38	~ 95½	< 3¾	< ½	11¾	< 98½	~ ¾	~ ½
-	-	-	-	-	-	26¼	~ 94¼	~ 5	< ½
99-15	7	9¼	< 93	~ 5½	< 1¼	4¾	~ 98½	< ½	< ¾
-	-	-	-	-	-	4½	~ 87	< 10¾	~ 1¾
99-16	11½	12¾	~ 93¾	< 5½	< ½	-	-	-	-
99-17	130¼	19¾	~ 97½	< 1¾	< ½	3¼	~ 94¼	~ 5	< ½
-	-	-	-	-	-	6¾	< 98½	< ¾	< ½
-	-	-	-	-	-	1	~ 90½	~ 8	~ ½
-	-	-	-	-	-	8¾	~ 98½	~ ½	~ ½

4. DISCUSSION AND CONCLUSIONS

Within northern Vancouver Island, the upper Triassic Quatsino Formation outcrops along three northerly trending limestone belts:

Belt *	Length	Location
(West) Quatsino-Tlupana	165 km	from Quatsino Sound to Tlupana Inlet
(Central) Nimpkish	39 km	east and south of Nimpkish Lake
(East) Bonanza	30 km	west of Telegraph Cove to Bonanza Lake

* After McCammon (1968)

Prior examinations have shown that within each of these limestone belts the Quatsino Formation includes a lower, massive limestone member up to 466 m thick. Several abandoned and active quarries have produced nominal amounts of limestone from the Quatsino Formation of northeastern, Vancouver Island.

The Nimpkish Lake property includes three roughly parallel north trending ridges of moderate relief: Centre and East ridges northwest of Tsulton River and Bear Ridge to the southeast. Extensive structural measurements indicate that the property occupies part of a shallow, northeasterly dipping monocline or fold limb. Slightly different orientations at Bear Ridge indicates either a structural bend or small block rotation. The property is traversed by several northerly trending faults.

The lower part of the Quatsino Formation is the main limestone unit that outcrops at East and Centre ridges, and the upper part at Bear Ridge. At East and Centre ridges the lower part of the Quatsino Formation consists of variably recrystallized, massive to thick-bedded, grey weathered, dark-grey to black fresh, micritic, limestone with rare patches of chert, paraconformable with the underlying Karmutsen Formation. At Nimpkish Lake, it includes significant intervals of high-quality limestone (Table 3.2). However, the lack of a readily recognized marker horizon within the massive limestones of the Quatsino Formation hinders stratigraphic correlations. Hence, thickness determinations must be taken with caution as the continuity of stratigraphy across vast covered intervals with probable concealed internal structures, is uncertain. In addition, apparent northerly trending faults separate East, Centre, and Bear ridges; hence the continuity of stratigraphy across these structures is uncertain.

At Bear Ridge the upper part of the Quatsino Formation is variably buff to medium-grey weathered, very dark grey to black fresh, thick-bedded, micritic, high-calcium limestone; with significant interbeds of dolomitic limestone, dolomite, and argillaceous limestone (Table 3.2). Good bedrock exposures indicate the upper part of the Quatsino Formation may exceed 150 m thickness.

Throughout the property dykes and sills, which are presumably part of the Tertiary Suite of intrusives, vary from a few centimeters to more than 10 m thick. Near Noomas rail crossing eight dykes, between 1 m and 15 m thick, occur across a 500 m horizontal distance. The intrusives appear preferentially aligned along the pre-existing structural trend which is dominantly steep-dipping to vertical, and northwest to northeast. Several dykes and sills occur at other orientations. Associated alteration includes several-metre haloes grading from thermal recrystallization with negligible chemical alteration to thin zones of skarnification adjacent to intrusives.

Access to Centre Ridge is excellent. A majority of the area of interest on Centre Ridge has been logged in recent years. Potentially thick sequences of unconsolidated drift underlay the southern most part of East Ridge. Access is excellent given its proximity to Noomas road and rail-crossing. An extensive, overgrown rail-network criss-crosses much of East Ridge. East Ridge is covered by a dense canopy of mature second growth forest.

Bear Ridge is accessible via an easterly logging road (Tsulton Road) immediately south of Noomas rail crossing. This road is partly covered with dead fall and the bridge across Tsulton River would require repair prior to use.

PROFESSIONAL GEOLOGIST OF ALBERTA
J.R. DAHROUGE

Jody Dahrouge, B.Sc., P.Geol.

D. I. Pană, Ph.D. (Geol.)

Edmonton, Alberta
2000 01 10

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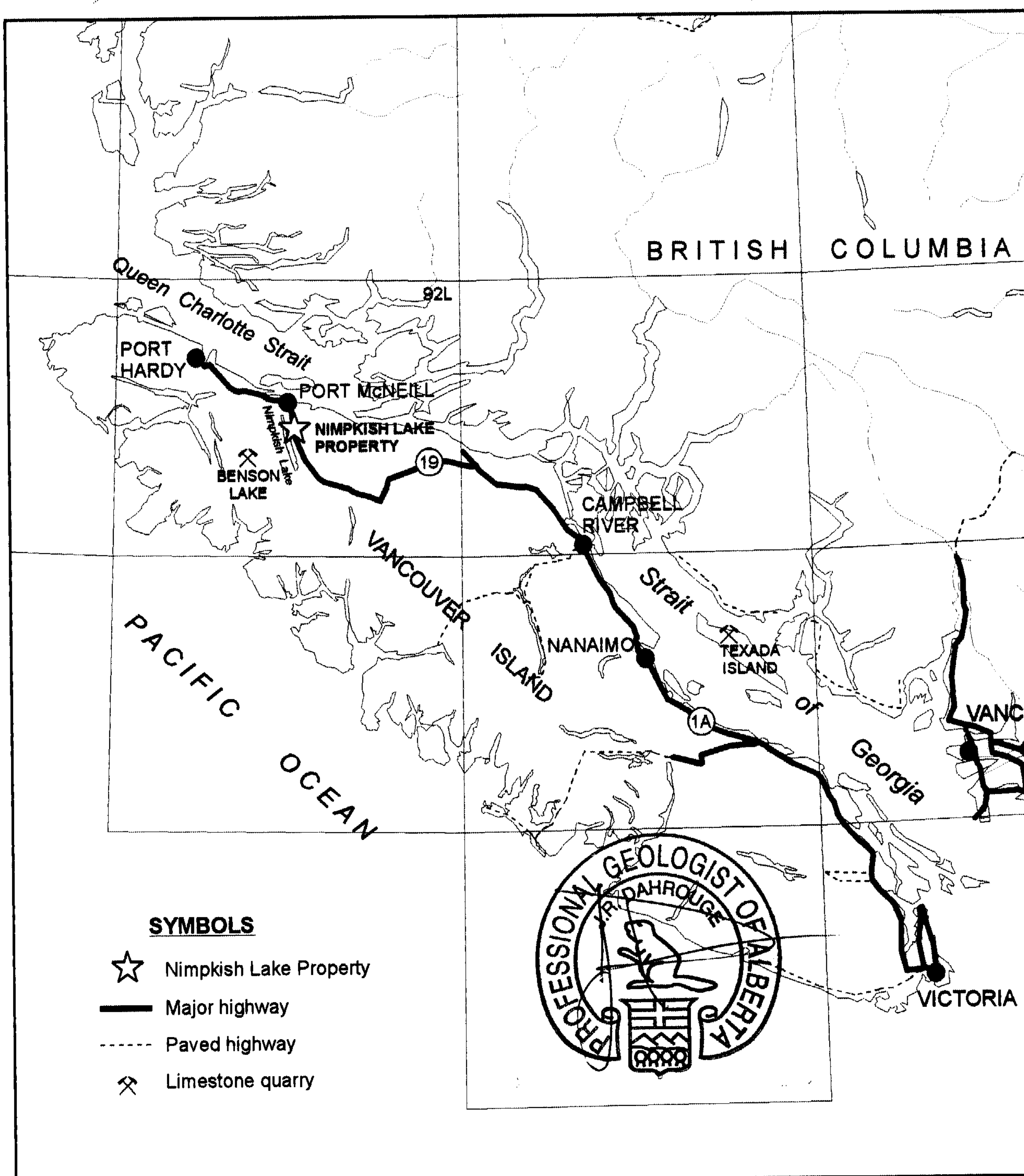

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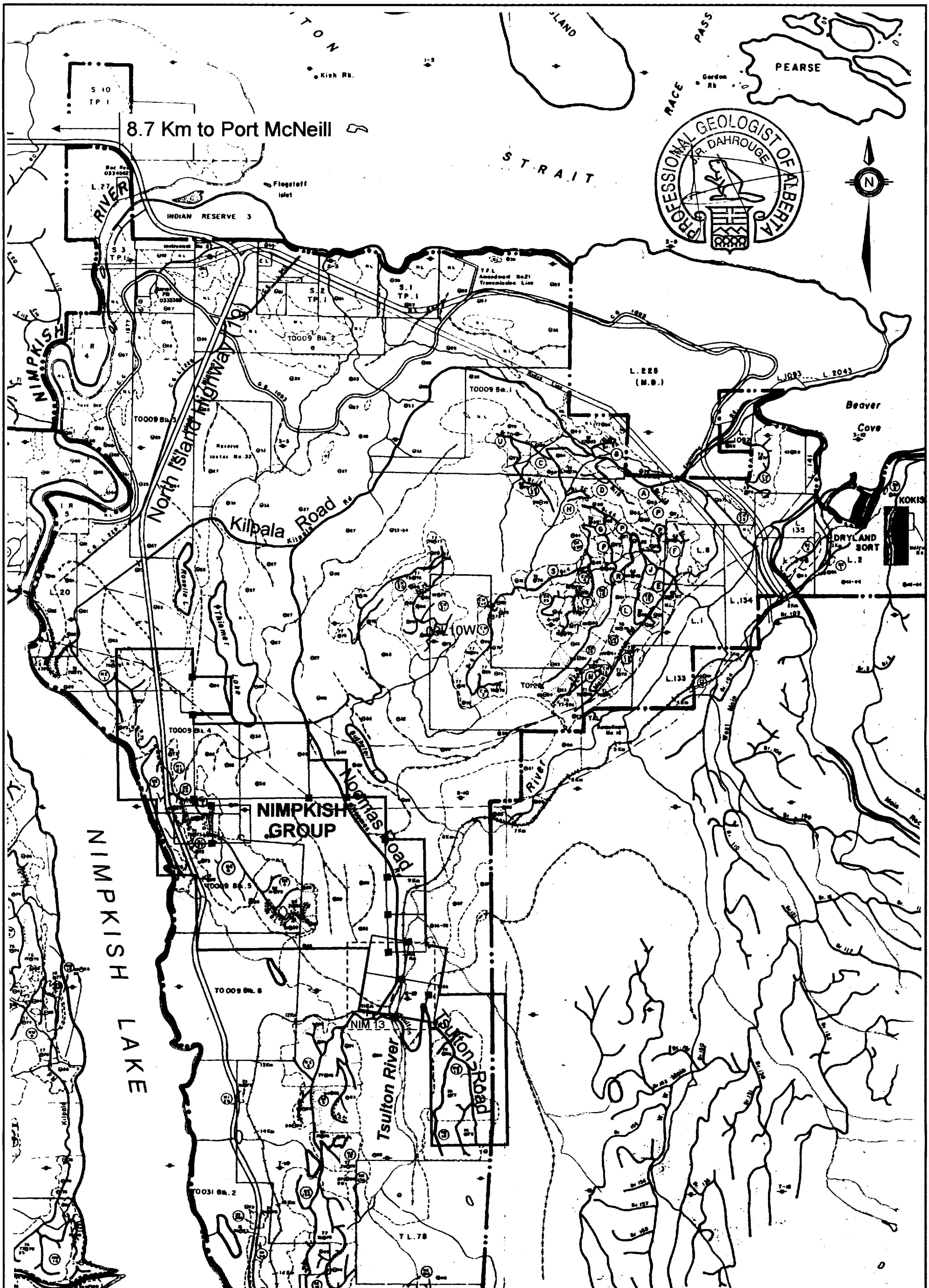
Dahrouge Geological Consulting Ltd.
EDMONTON, ALBERTA

SOUTHWESTERN BRITISH COLUMBIA

Fig. 1.1 Location Map



SYMBOLS

Highway 19	double line
Rail line of Canadian Forest Products Ltd.	dashed line
Abandoned rail line	fine dashed line
Logging or secondary road	heavy solid line
Nimpkish Lake Property	rectangle outline

Notes: Modified after the Access Map of Canadian Forest Products Ltd., 1992.

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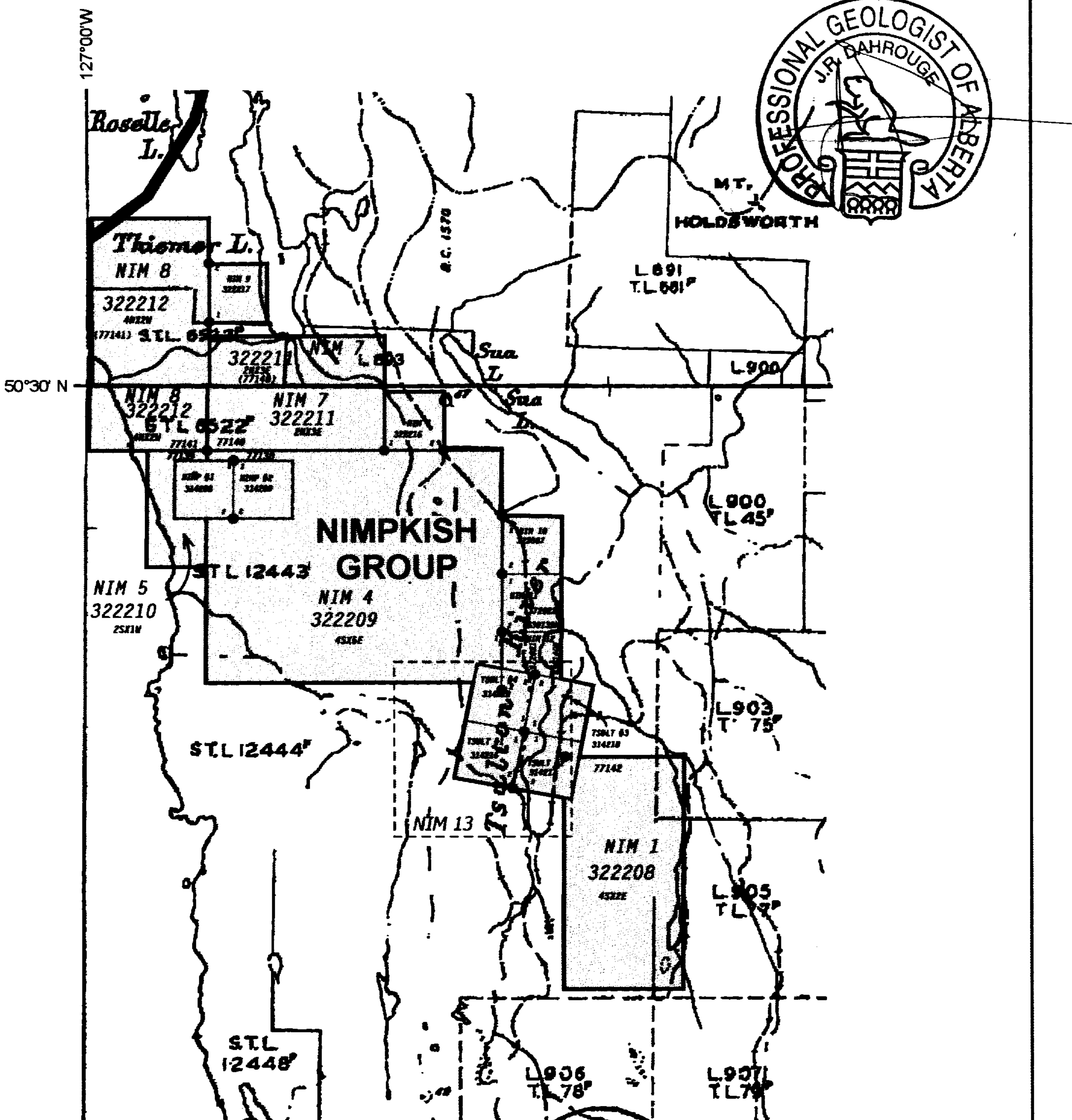
NIMPKISH LAKE AREA, B. C.

Fig. 1.2 Property Access Map

0 1 2 3
Scale 1:50,000

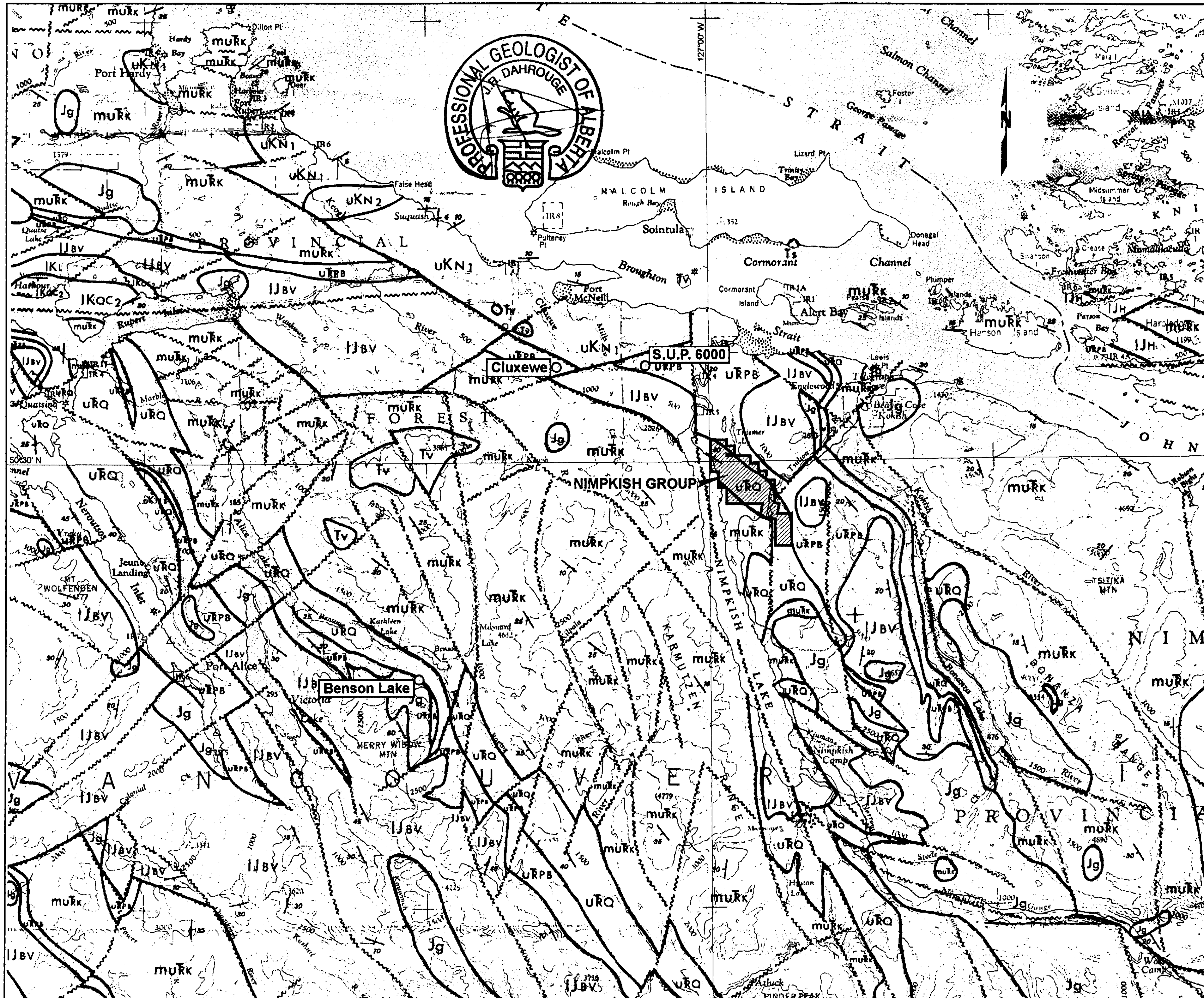
DP 1999.12



CONTINENTAL LIME LTD.		
Dahrouge Geological Consulting Ltd. EDMONTON, ALBERTA		
NIMPKISH LAKE AREA, B.C.		
Fig. 1.3 Property Map		
WM	Scale: 1:50 000	1999.12

NOTE

Parts of Mineral Titles Reference Maps 92L07W and 92L10W last updated Oct 19, 1999 and Mar 17, 1999, respectively.



LEGEND

TERTIARY

Ts	Cobble conglomerate

MIOCENE

Tv	Basaltic to dacitic lava, tuff, breccia, conglomerate

EOCENE

Tg	Quartz diorite

CRETACEOUS

UPPER CRETACEOUS

uKN2	Suquash Formation: siltstone, shale
uKN1	Greywacke, conglomerate, siltstone, coal

JURASSIC

Jg	Island Intrusions: quartz diorite, granodiorite, quartz monzonite, quartz feldspar porphyry

TRIASSIC AND JURASSIC

LOWER JURASSIC

lJBV	Bonanza Volcanics: andesitic to rhyodacitic lava, tuff, breccia
lJH	Harbledown Formation: argillite, greywacke

UPPER TRIASSIC

uTRPB	Harbledown Formation: argillite, greywacke
uTRQ	Quatsino Formation: limestone
uTRK	Karmutsen Formation: basaltic lava, pillow lava, breccia, aquagene tuff

SYMBOLS

Nimpkish Lake Property ....

Active or abandoned quarry; name..... Cluxewe

Geological boundary (approximate) ....

Fault, lineament (approximate) ....

Bedding (horizontal, inclined, vertical) ..

NOTES

Geology after Muller et al. (1974).

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NIMPKISH LAKE AREA, B. C.

Fig. 2.1 Geology and Prior Sample Locations, Northeastern Part of Vancouver Island

JRD	1 : 250,000	1999.12

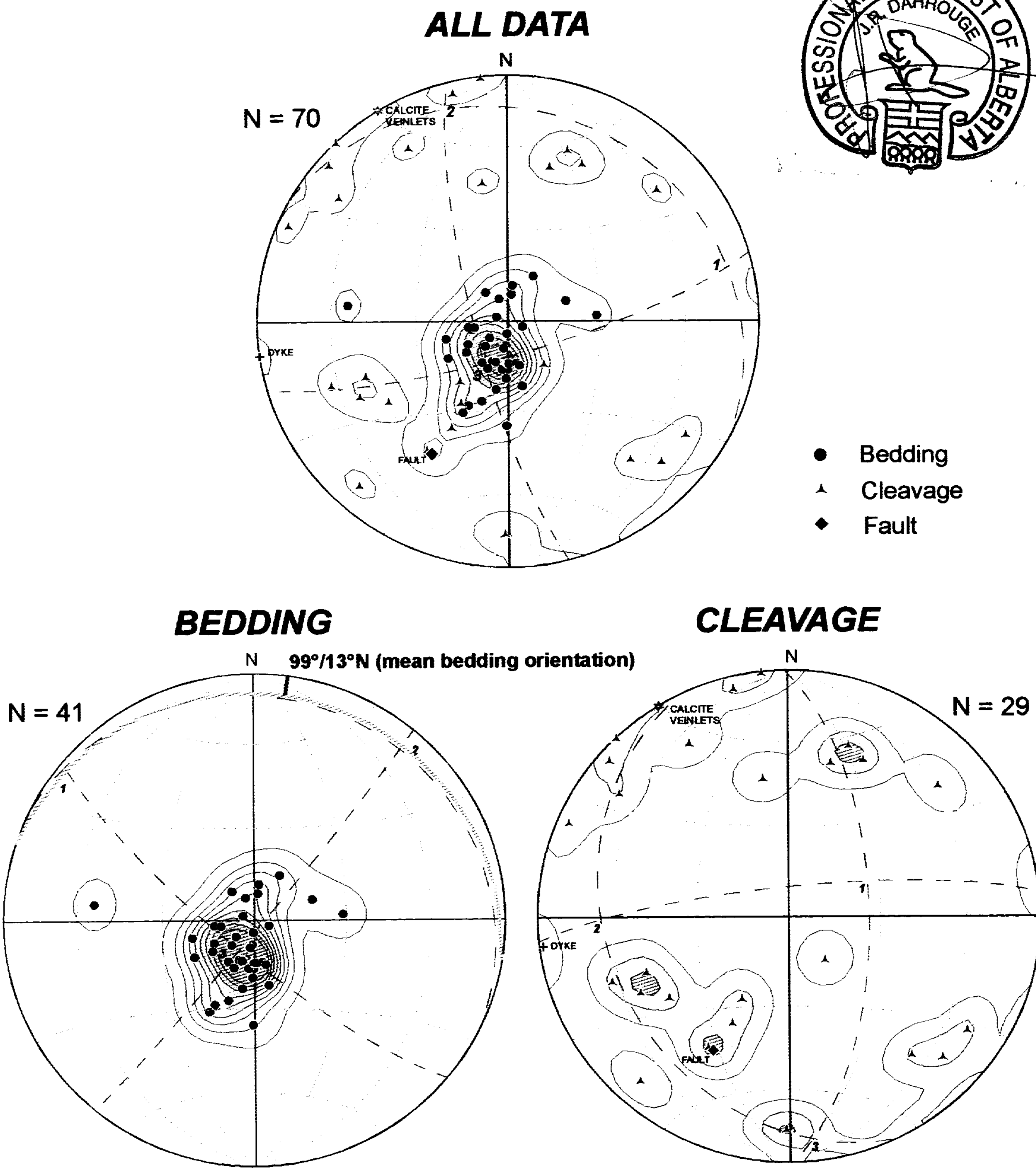
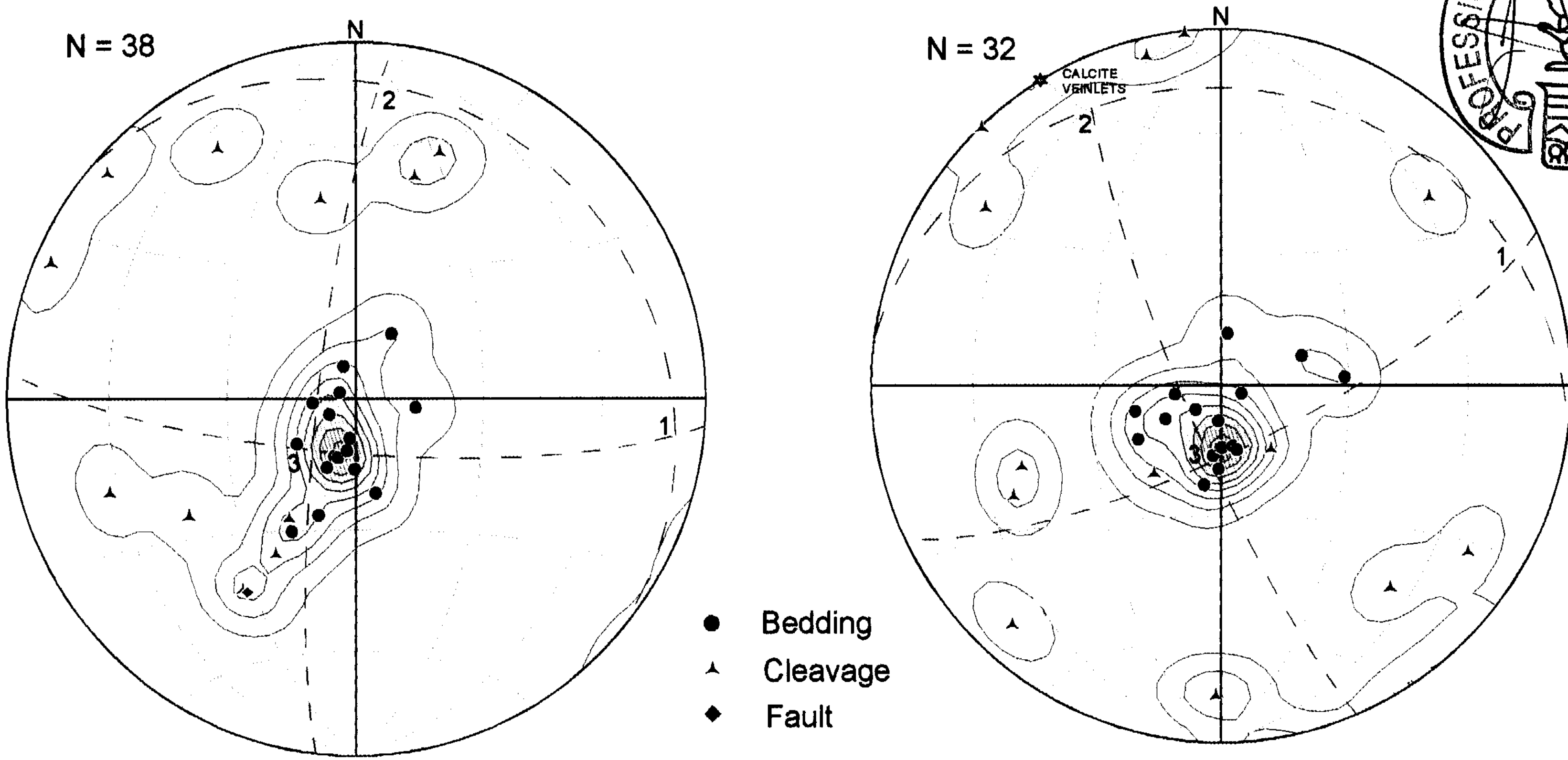


Fig. 3.2 Stereographic Projection of Poles to Planar Structural Elements Measured in Limestone Units near Nimpkish Lake.

EAST AND CENTRE RIDGES | **BEAR RIDGE**



Mean bedding orientation: 106°/12°N

Mean bedding orientation: 90°/14°N

Fig. 3.3 Stereographic Projection of Poles to Planar Structural Elements Measured in Limestone Units at East and Centre Ridges and at Bear Ridge.

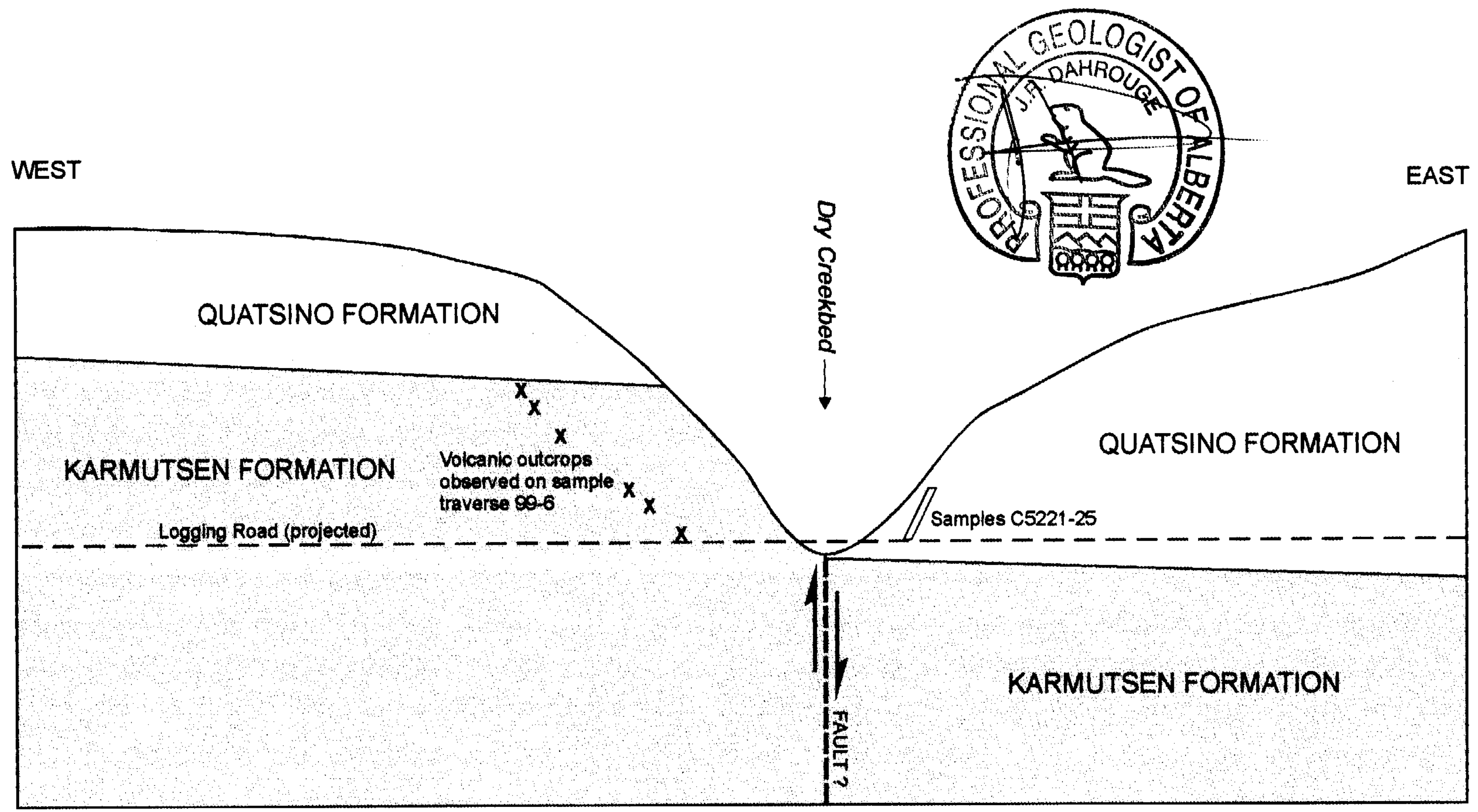


Fig 3.4 Sketch of right-lateral offset of Karmutsen-Quatsino contact, as observed about 800 metres northwesterly from Noomas rail crossing (see fig. 3.1 for sample locations).

APPENDIX 1: ITEMIZED COST STATEMENT

a) Personnel

M. Gidluck, geologist

13.0	days		field work and travel between September 13 and 25, 1999		
2.5	days		preparing for field work		
5.0	days		supervising, and preparing report		
20.5	days	@	$ 450.00	$ 9,225.00	

J. Dahrouge, geologist

11.0	days		field work and travel between September 13 and 23, 1999		
2.5	days		preparing for field work		
11.0	days		supervising, and preparing report		
24.5	days	@	$ 428.00	$ 10,486.00	

D. Pana, geological engineer

2.0	days		preparing report		
2.0	days	@	$ 428.00	$ 856.00	

S. Krukowski, geologist

2.0	days		field work and travel between September 13 and 14, 1999		
2.0	days	@	$ 450.00	$ 900.00	

W. McGuire, draftsman

15.2	days		compiling field data, and preparing base and final maps		
15.2	days	@	$ 374.50	$ 5,692.40	
					$ 27,159.40

b) Food and Accommodation

26 man-days @ $ 126.22	accomodations (motel), groceries, and meals	$ 3,281.68	
			$ 3,281.68

c) Transportation

Airfare:	Calgary to Port Hardy (return) - B.C. Portion Only	$ 1,117.89	
	Edmonton to Port Hardy (return) - B.C. Portion Only	$ 954.55	
	Salt Lake City to Port Hardy (return) - B.C. Portion Only	$ 357.08	
Freight:	Samples - Calgary to Salt Lake City (480 kg)	$ 652.35	
Vehicles:	Rental truck and gas for 13 days	$ 1,056.61	
	Rental car and gas for 3 days	$ 167.52	
			$ 4,306.00

d) Instrument Rental
n/a

e) Drilling
n/a

APPENDIX 1: CONTINUED

f) **Analyses**			
125 samples @ $ 14.50	sample preparation and analysis for 12 constituents by ICP (Salt Lake City)	$ 1,812.50	
			$ 1,812.50
g) **Report**		$ 97.75	
h) **Other**			
	Digital Base Maps (1 : 7 500)	$ 9,999.00	
	Field Supplies	$ 90.95	
	Long distance telephone	$ 6.66	
	Map reproductions	$ 235.40	
	Courier	$ 25.57	
			$ 10,455.33
Total			$ 47,014.91

APPENDIX 2: CONDENSED LITHOLOGICAL LOGS FOR SOME PREVIOUS DRILL HOLES OF THE QUATSINO FORMATION, NEAR NIMPKISH LAKE BRITISH COLUMBIA

Notes: Drill log for hole PT-88-1 modified after Coffin and Soux (1988).
Samples were collected from limestone intervals and andesite dykes, but no analytical data were provided.

DRILLHOLE PT-88-1

Client: Industrial Fillers Ltd.
Project: Tsulton
Azimuth/Inclination: vertical
Operator: Vanguard Consulting Ltd.
Logged by C.L. Soux
Date: Aug. 9, 1988

Interval (m)		Thick.	Formation /	Description
From	To	(m)	Unit	
0.00	1.83	1.83	-	*casing*
1.83	17.07	15.24	Quatsino	**Limestone**, light-grey
17.07	17.98	0.91	Tertiary(?) Dyke	**Andesite** pinkish-grey to grey silicified andesitic rock. Contains abundant pyrite.
17.98	19.20	1.22	Quatsino	**Limestone**, white
19.20	23.16	3.96	Tertiary(?) Dyke	**Andesite** grey silicified andesite veined by calcite. Pyrite veinlets and clusters.
23.16	25.30	2.13	Quatsino	**Limestone**, white with grey patches.
25.30	27.43	2.13	Tertiary(?) Dyke	**Andesite**, silicified andesite. Contains pyrite in veinlets and disseminated.
27.43	101.80	74.37	Quatsino	**Limestone**, variably light-grey, grey, and white; with few yellow stained fractures and patches.
101.80	102.11	0.30	Quatsino	*fault*
102.11	134.42	32.31	Quatsino	**Limestone**, light-grey to white.
134.42	135.33	0.91	Karmutsen	**Andesite?**, dark greenish grey amydaloiodal andesitic volcanic rock. Contains some pyrite in veinlets and disseminated.
135.33	137.46	2.13	Karmutsen	**Limestone**, greyish white.
137.46	152.40	14.94	Karmutsen	**Andesite**, dark greenish grey andesitic rock. Locally strongly chloritized and epidotized. Pervasive chloritization? Contains disseminated pyrite.
		152.40		

APPENDIX 2: CONTINUED

Notes: Drill log for hole PT-88-2 modified after Coffin and Soux (1988).
Samples were collected from limestone intervals and andesite dykes, but no analytical data were provided.

DRILLHOLE PT-88-2

Client: Industrial Fillers Ltd.
Project: Tsulton
Azimuth/Inclination: vertical
Operator: Vanguard Consulting Ltd.
Logged by C.L. Soux
Date: Aug. 8, 1988

Interval (m)		Thick.	Formation /	Description
From	To	(m)	Unit	
0.00	1.83	1.83	-	*casing*
1.83	65.23	63.40	Quatsino	**Limestone**, variably dark-grey, grey, and greyish white, with some limonitic streaks. Several intervals with thin disseminated pyrite. Partly recrystallized.
65.23	66.45	1.22	Karmutsen	**Andesite?**, greenish grey, fine grained andesitic dyke containing disseminated pyrite.
66.45	68.28	1.83	Karmutsen	**Limestone**, white and grey.
68.28	74.07	5.79	Karmutsen	**Andesite?**, greenish grey, altered, some pyrite disseminations and veinlets.
74.07	77.72	3.66	Karmutsen	**Limestone**, white to grey intercalated. Contains some pyrite in fissures.
77.72	79.86	2.13	Karmutsen	**Andesite**, green andesitic volcanics. Contains abundant calcite veinlets.
79.86	87.78	7.92	Karmutsen	**Limestone**, white to light grey with some yellowish limonitic streaks.
87.78	152.40	64.62	Karmutsen	**Andesite**, grey to dark greenish grey. Pervasive chloritization. Locally epidotized and veined by calcite. Some pyrite disseminations.green andesitic volcanics. Contains abundant calcite veinlets.
		152.40		

APPENDIX 3: ANALYTICAL PROCEDURES IN THE CENTRAL ANALYTICAL LABORATORY OF CONTINENTAL LIME INC. FOR FUSIONS METHOD FOR ICP ANALYSIS

Fusions Method For ICP Analysis

Lithium metaborate, which melts at 845°C, is used for sample dissolution. Lithium metaborate is well suited for attacking and dissolving acidic oxides. The procedure for fusion with lithium metaborate is as follows:

1. Weigh a 0.5 g sample of powdered rock pulverized to minus 100 mesh, into a graphite crucible of approximately 30 ml capacity. Graphite crucibles must be manufactured from high-purity graphite, and they have a limited lifetime.

2. Add anhydrous lithium metaborate to the crucible and mix the contents well. The ratio of flux to sample should be 4:1. If resistant minerals such as zircon are present, a larger ratio must be used for a successful attack.

3. Fuse the mixture in a muffle furnace at 900°C for 15 minutes. Remove the crucible and swirl the contents. Replace the crucible in the muffle furnace for an additional 15 minutes at 900°C.

4. Remove the crucible from the muffle furnace and allow the fusion to cool to room temperature. Leave any graphite dust in the crucible. Immerse the crucible in a solution of 165 ml of concentrated nitric acid. An internal standard, cobalt, is added at this point. The solids will dissolve in 1-2 hrs.

The following analytical lines are used for ICP analysis:

P	213.618	Ti	334.941
Si	251.611	Al	396.152
Mn	257.610	Sr	407.771
Fe	259.940	Ba	455.403
Mg	280.270	Na	589.592
Ca	317.933	K	766.491

APPENDIX 4: ANALYTICAL REPORTS FROM THE QUALITY ASSURANCE LABORATORY OF CONTINENTAL LIME INC. FOR SAMPLES COLLECTED IN 1999 *

10/Can Geo/Nimpkish Lake

Sample	%	%	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
	CaCO3	MgCO3	Fe2O3	Al2O3	SrCO3	MnO	SiO2	BaO	K2O	Na2O	P2O5	TiO2	Total
C-5101	97.89	0.27	0.394	0.039	582	312	0.21	7	39	25	220	51	98.93
C-5102	99.00	0.25	0.063	0.019	589	263	0.29	6	30	<20	286	102	99.74
C-5103	98.10	0.29	0.110	0.037	621	219	0.37	8	29	29	<100	140	99.01
C-5104	97.97	0.25	0.071	0.033	926	174	0.30	7	38	<20	248	96	98.77
C-5105	99.15	0.33	0.109	0.029	679	251	0.18	8	<30	<20	394	67	99.94
C-5106	99.03	0.37	0.199	0.035	687	221	0.11	7	32	<20	577	31	99.90
C-5107	97.95	0.33	0.075	0.038	713	183	0.20	7	39	<20	535	78	98.76
C-5108	98.83	0.40	0.083	0.091	641	96	0.32	9	222	20	1021	65	99.93
C-5109	98.78	0.42	0.080	0.042	658	80	0.34	7	77	21	1775	81	99.94
C-5110	98.11	0.39	0.246	0.066	709	166	0.39	9	103	29	901	64	99.40
C-5111	97.64	0.49	0.086	0.048	725	254	0.83	8	61	29	1418	96	99.35
C-5112	90.75	7.97	0.107	0.039	510	246	0.63	8	22	21	<100	76	99.59
C-5113	92.57	6.71	0.122	0.060	573	278	0.38	9	33	20	<100	64	99.94
C-5114	99.14	0.40	0.148	0.033	542	138	0.08	10	64	<20	109	113	99.90
C-5115	98.93	0.59	0.068	0.044	2002	85	0.11	7	77	29	<100	174	99.97
C-5116	98.44	0.47	0.033	0.019	1164	120	0.83	10	<30	20	129	228	99.96
C-5117	99.03	0.51	0.041	0.041	640	111	0.21	10	<30	<20	<100	114	99.91
C-5118	98.60	0.41	0.050	0.038	905	252	0.73	6	37	26	162	84	99.98
C-5119	98.13	0.58	0.152	0.073	1325	49	0.87	9	166	25	151	109	99.99
C-5120	98.24	0.42	0.060	0.057	1430	66	0.95	9	140	23	123	185	99.93
C-5121	98.99	0.48	0.141	0.027	679	121	0.18	7	30	<20	<100	103	99.91
C-5122	98.45	0.56	0.130	0.120	684	139	0.57	9	31	33	<100	85	99.92
C-5123	99.31	0.34	0.070	0.035	688	109	0.13	6	<30	<20	143	44	99.98
C-5124	99.09	0.40	0.070	0.027	613	123	0.26	8	30	<20	158	66	99.95
C-5125	98.06	0.85	0.217	0.037	1192	86	0.63	8	31	26	<100	29	99.93
C-5126	98.58	0.48	0.052	0.031	664	159	0.74	6	37	<20	<100	68	99.97
C-5127	98.45	0.62	0.274	0.045	450	96	0.46	8	32	<20	<100	32	99.91
C-5128	90.94	6.95	0.248	0.037	355	398	0.44	7	<30	31	131	88	98.72
C-5129	99.30	0.45	0.038	0.029	400	101	0.10	7	<30	<20	<100	72	99.97

* As received by e-mail.

APPENDIX 4: CONTINUED

10/Can Geo/Nimpkish Lake

Sample	%	%	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
	CaCO3	MgCO3	Fe2O3	Al2O3	SrCO3	MnO	SiO2	BaO	K2O	Na2O	P2O5	TiO2	Total
C-5130	99.04	0.41	0.036	0.042	497	184	0.26	8	69	<20	239	74	99.90
C-5131	98.46	0.37	0.032	0.064	517	156	0.91	4	74	<20	216	134	99.94
C-5132	98.43	0.35	0.310	0.043	554	324	0.64	9	35	<20	237	31	99.90
C-5133	99.36	0.31	0.066	0.034	484	61	0.15	8	39	33	<100	48	99.99
C-5134	95.84	0.89	0.233	0.453	1279	195	2.12	14	1638	44	149	270	99.90
C-5135	96.58	0.62	0.134	0.375	1214	208	1.95	15	1139	74	120	304	99.96
C-5136	98.72	0.52	0.110	0.040	888	245	0.37	10	67	24	298	73	99.92
C-5137	98.86	0.52	0.082	0.035	938	170	0.33	8	48	22	107	66	99.96
C-5138	98.76	0.51	0.061	0.037	841	198	0.08	6	30	<20	145	120	99.58
C-5139	98.75	0.55	0.232	0.080	817	428	0.21	9	101	38	<100	44	99.97
C-5140	98.86	0.53	0.053	0.034	716	267	0.36	5	43	20	<100	123	99.95
C-5141	49.43	35.55	0.766	0.027	342	476	8.58	8	<30	72	<100	112	94.46
C-5142	99.02	0.61	0.044	0.034	601	76	0.12	8	<30	21	<100	53	99.91
C-5143	98.78	0.57	0.090	0.028	815	107	0.34	8	<30	20	110	65	99.92
C-5144	98.78	0.55	0.084	0.052	731	191	0.30	9	44	<20	691	70	99.94
C-5145	99.01	0.52	0.189	0.039	707	100	0.08	8	77	20	291	47	99.96
C-5146	98.84	0.52	0.111	0.045	680	126	0.33	8	88	21	<100	100	99.95
C-5147	99.02	0.46	0.069	0.088	520	84	0.23	9	167	22	146	104	99.97
C-5148	97.84	0.34	0.134	0.117	1259	133	1.35	24	326	21	<100	123	99.97
C-5149	97.83	0.54	0.228	0.066	1485	57	1.07	11	178	20	109	53	99.92
C-5150	97.96	0.50	0.057	0.074	1166	61	1.19	9	167	20	<100	133	99.95
C-5151	98.32	0.48	0.060	0.074	3020	78	0.65	19	171	21	<100	115	99.93
C-5152	98.09	0.48	0.187	0.072	5135	60	0.58	40	179	23	<100	51	99.96
C-5153	98.24	0.49	0.090	0.051	228	126	0.40	133	111	24	366	103	99.39
C-5154	98.01	0.54	0.110	0.114	4583	83	0.59	32	312	28	329	124	99.91
C-5155	98.57	0.61	0.068	0.061	228	66	0.49	49	151	42	433	81	99.90
C-5156	98.14	0.58	0.057	0.068	4847	75	0.49	225	178	24	321	118	99.91
C-5157	98.66	0.47	0.091	0.092	1147	104	0.47	14	253	<20	108	78	99.95
C-5158	97.94	0.48	0.103	0.109	5794	79	0.49	68	286	31	<100	145	99.77
C-5159	98.95	0.32	0.062	0.137	916	119	0.32	9	266	<20	<100	228	99.94
C-5160	97.22	0.41	0.202	0.194	2603	166	1.54	33	481	44	<100	97	99.91
C-5161	98.79	0.45	0.144	0.065	617	145	0.45	8	107	<20	<100	60	99.99
C-5162	98.61	0.42	0.216	0.040	589	125	0.62	12	31	<20	<100	46	99.99

APPENDIX 4: CONTINUED

10/Can Geo/Nimpkish Lake

Sample	% CaCO3	% MgCO3	% Fe2O3	% Al2O3	ppm SrCO3	ppm MnO	% SiO2	ppm BaO	ppm K2O	ppm Na2O	ppm P2O5	ppm TiO2	% Total
C-5163	98.49	0.56	0.085	0.116	607	114	0.58	8	160	22	106	125	99.95
C-5164	97.87	1.34	0.197	0.048	656	121	0.35	13	34	23	<100	60	99.90
C-5165	93.20	5.90	0.130	0.126	538	80	0.49	6	<30	24	<100	200	99.92
C-5166	89.43	9.82	0.186	0.046	488	80	0.25	8	<30	27	<100	118	99.80
C-5167	92.55	6.69	0.053	0.061	608	55	0.22	4	<30	22	<100	200	99.65
C-5168	89.94	9.42	0.130	0.020	541	98	0.32	8	<30	21	<100	51	99.90
C-5169	81.79	17.35	0.218	0.036	432	105	0.53	8	<30	29	<100	57	99.99
C-5170	96.32	3.10	0.111	0.035	592	80	0.32	7	<30	<20	<100	59	99.97
C-5171	95.81	3.54	0.070	0.070	646	62	0.39	7	<30	<20	<100	150	99.96
C-5172	96.29	2.96	0.063	0.049	664	62	0.48	7	<30	<20	<100	49	99.92
C-5173	97.24	2.04	0.113	0.037	717	71	0.40	7	<30	24	<100	54	99.91
C-5174	96.57	2.77	0.123	0.054	691	87	0.38	6	<30	<20	<100	50	99.98
C-5175	97.37	1.72	0.174	0.045	633	103	0.56	11	<30	<20	<100	73	99.96
C-5176	94.14	4.71	0.199	0.222	630	210	0.55	9	200	24	115	140	99.95
C-5177	72.57	25.88	0.476	0.126	385	404	0.30	6	<30	30	179	161	99.47
C-5178	84.87	11.80	0.199	0.050	510	214	2.95	7	<30	30	122	140	99.97
C-5179	98.08	0.62	0.198	0.060	677	127	0.92	9	120	20	<100	48	99.98
C-5180	98.77	0.40	0.215	0.041	617	76	0.47	12	70	20	<100	36	99.98
C-5181	98.98	0.41	0.222	0.029	624	42	0.22	9	46	<20	<100	35	99.93
C-5182 A	93.25	5.98	0.151	0.041	554	77	0.41	10	70	23	<100	93	99.91
C-5182 B	79.53	19.14	0.414	0.120	427	284	0.59	10	79	31	169	68	99.90
C-5183	94.30	4.93	0.065	0.102	596	82	0.44	7	160	32	<100	73	99.93
C-5184	96.51	2.37	0.092	0.060	665	202	0.78	8	102	23	107	81	99.93
C-5185	94.47	4.93	0.136	0.049	605	77	0.30	10	117	27	<100	60	99.97
C-5186	94.30	5.01	0.146	0.043	724	68	0.35	9	68	22	<100	42	99.94
C-5187	93.65	5.45	0.268	0.039	667	92	0.45	9	86	22	<100	33	99.95
C-5188	95.54	3.71	0.146	0.072	735	59	0.41	6	110	<20	<100	50	99.98
C-5189	98.12	0.75	0.235	0.067	846	262	0.63	8	39	26	105	50	99.93
C-5190	98.51	0.58	0.287	0.038	863	67	0.45	9	47	20	<100	33	99.97
C-5191	98.70	0.44	0.072	0.051	2561	49	0.36	6	33	47	125	40	99.91
C-5192	98.63	0.73	0.087	0.028	1045	59	0.34	7	<30	<20	<100	50	99.92
C-5193	90.46	8.08	0.132	0.048	634	134	0.59	6	<30	<20	130	70	99.41
C-5194	97.92	0.84	0.129	0.054	892	298	0.81	7	58	<20	162	33	99.90

APPENDIX 4: CONTINUED

10/Can Geo/Nimpkish Lake

Sample	% CaCO3	% MgCO3	% Fe2O3	% Al2O3	ppm SrCO3	ppm MnO	% SiO2	ppm BaO	ppm K2O	ppm Na2O	ppm P2O5	ppm TiO2	% Total
C-5195	98.84	0.51	0.140	0.034	811	297	0.25	7	<30	<20	112	66	99.90
C-5196	98.70	0.52	0.113	0.041	837	210	0.41	7	37	<20	<100	27	99.90
C-5197	98.83	0.54	0.085	0.027	983	157	0.36	6	<30	<20	<100	24	99.96
C-5198	98.56	0.48	0.213	0.019	1587	113	0.47	8	<30	<20	<100	24	99.92
C-5199	94.89	3.94	0.069	0.049	637	58	0.34	5	99	22	162	25	99.38
C-5200	94.32	4.89	0.138	0.051	713	93	0.39	8	112	<20	<100	36	99.89
C-5201	92.71	6.19	0.277	0.044	636	71	0.35	7	90	21	<100	30	99.66
C-5202	95.48	4.05	0.306	0.026	670	69	0.06	9	<30	20	<100	25	99.99
C-5203	89.01	9.86	0.458	0.052	589	114	0.45	8	59	25	105	36	99.93
C-5204	98.03	0.38	0.273	0.071	5171	139	0.39	10	169	<20	448	43	99.75
C-5205	98.14	0.36	0.129	0.068	4242	128	0.49	7	184	<20	414	48	99.68
C-5206	98.31	0.57	0.251	0.096	1944	61	0.35	7	232	31	829	52	99.90
C-5207	98.32	0.57	0.102	0.069	2180	87	0.59	7	114	<20	606	44	99.97
C-5208	97.64	0.64	0.219	0.080	2741	73	0.39	6	163	38	672	61	99.34
C-5209	97.89	0.65	0.041	0.036	2757	40	0.22	8	66	20	477	112	99.19
C-5210	98.89	0.25	0.054	0.073	1504	65	0.44	5	154	25	442	105	99.93
C-5211	97.95	0.50	0.165	0.117	2722	61	0.87	52	260	35	390	97	99.96
C-5212	98.09	0.51	0.059	0.056	3244	45	0.46	39	115	20	361	62	99.57
C-5213	98.01	0.56	0.254	0.089	5008	38	0.52	23	189	28	255	57	99.99
C-5214	97.80	0.53	0.047	0.089	2710	33	0.72	20	170	32	157	102	99.51
C-5215	97.65	0.58	0.314	0.153	228	51	0.68	33	301	57	144	70	99.47
C-5216	98.61	0.58	0.132	0.081	2586	47	0.21	29	175	28	342	64	99.94
C-5217	98.37	0.41	0.148	0.070	3084	39	0.55	24	137	20	303	58	99.91
C-5218	98.14	0.50	0.271	0.099	1188	53	0.70	9	235	22	419	59	99.90
C-5219	98.11	0.50	0.272	0.119	3761	69	0.53	47	268	42	315	63	99.99
C-5220	99.01	0.47	0.118	0.029	1571	45	0.11	8	47	<20	258	68	99.94
C-5221	93.90	0.37	0.206	0.267	1723	166	4.95	8	459	31	369	116	99.98
C-5222	95.56	0.41	0.143	0.352	1420	96	3.26	10	406	31	102	148	99.94
C-5223	95.64	0.42	0.178	0.147	1365	99	3.36	11	439	24	<100	135	99.95
C-5224	97.02	0.37	0.329	0.196	930	102	1.87	9	536	<20	<100	87	99.95
C-5225	96.59	0.44	0.161	0.206	671	89	2.37	8	728	21	148	106	99.95

APPENDIX 5: DESCRIPTIONS AND COMPOSITIONS OF THE SAMPLES COLLECTED IN 1999 FROM NEAR NIMPKISH LAKE

Note: Stratigraphic thicknesses are based on measured attitudes of bedding as listed below with appropriate interpolations. Samples are listed in order from Stratigraphic top to bottom. They consist of chips at intervals of 20 to 30 cm. Attitudes of planar features are strike and dip. See Figure 3.1 for sample locations and Appendix 4 for analytical results.

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-1 (Claim Nim 4) - North End of Centre Ridge										
C5144	¼	Limestone, massive, brownish-grey weathered, black fresh, micritic, possible bedding attitude 91°/16°N	98.78	0.55	0.30	0.052	0.084	731	191	691
-	18¾	covered	-	-	-	-	-	-	-	-
C5145	2	Limestone, buff weathered, very dark-grey to black fresh, micritic; outcrop below 1 m covered interval: medium-grey fresh, partly recrystallized	99.01	0.52	0.08	0.039	0.189	707	100	291
-	6¼	covered	-	-	-	-	-	-	-	-
C5146	½	Limestone, massive, black fresh, micritic	98.84	0.52	0.33	0.045	0.111	680	126	<100
-	64¼	covered	-	-	-	-	-	-	-	-
C5147	1½	Limestone, buff weathered, very dark-grey fresh, cryptocrystalline to recrystallized, very fractured, possible bedding attitude 119°/17°SW	99.02	0.46	0.23	0.088	0.069	520	84	146
Section 99-2 (Claim Nim 4) - Eastern Part of Centre Ridge										
C5143	grab	Limestone, massive, buff-grey weathered, very dark-grey to black fresh with a few dark brownish-grey mottles, micritic	98.78	0.57	0.34	0.028	0.090	815	107	110
-	71	covered	-	-	-	-	-	-	-	-
C5142	½	Limestone, massive, greyish-brown weathered, very dark-grey to black fresh, micritic, very fractured	99.02	0.61	0.12	0.034	0.044	601	76	<100
-	36¼	covered	-	-	-	-	-	-	-	-
C5141	½	Limestone, massive, buff weathered, light- to very dark-grey fresh, micritic but mostly recrystallized, bedding attitude 69°/08°SE	49.43	35.55	8.58	0.027	0.766	342	476	<100
-	32¼	covered	-	-	-	-	-	-	-	-
C5139	½	Limestone, massive, buff weathered, very dark-grey fresh, cryptocrystalline to micritic, partly recrystallized, cleavage attitude 80°/48°S	98.75	0.55	0.21	0.080	0.232	817	428	<100
C5140	½	Limestone, massive, buff weathered, medium-grey fresh with brownish-grey mottles, recrystallized	98.86	0.53	0.36	0.034	0.053	716	267	<100
-	15¼	covered	-	-	-	-	-	-	-	-
C5138	1¾	Limestone, massive to thick-bedded, buff-grey weathered, black fresh, microcrystalline, abundant cleavages with attitudes 61°/70°SE, 105°/55°SW	98.76	0.51	0.08	0.037	0.061	841	198	145
-	7¾	covered	-	-	-	-	-	-	-	-

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-2 (CONTINUED)										
C5137	1¼	**Limestone**, massive, rubbly, medium- to dark-grey weathered, black fresh, microcrystalline, brown clayey material lining fractures	98.86	0.52	0.33	0.035	0.082	938	170	107
-	1¾	**covered**	-	-	-	-	-	-	-	-
C5136	1¼	**Limestone**, massive, medium-grey weathered, very dark-grey to black fresh, microcrystalline, a few "ghostly" outlines of larger grains, cleavage attitude 121°/52°NE	98.72	0.52	0.37	0.040	0.110	888	245	298
Section 99-3 (Claim Nim 4) - Along Former Logging Trail on Centre Ridge										
C5216	2¼	**Limestone**, massive, dark-grey weathered, black fresh, micritic, strong fetid odor	98.61	0.58	0.21	0.081	0.132	2586	47	342
-	30-50	**covered**	-	-	-	-	-	-	-	-
C5219	2¾	**Limestone**, massive, pale-grey weathered, medium-grey to black fresh, locally brecciated with patchy recrystallization, some unaltered micritic limestone	98.11	0.50	0.53	0.119	0.272	3761	69	315
C5218	2¾	**Limestone**, beds ¼ - 1 m thick, medium-grey weathered, medium- to dark-grey fresh, partly recrystallized	98.14	0.50	0.70	0.099	0.271	1188	53	419
C5217	2¾	**Limestone**, massive, pale-grey weathered, patchy light- to medium-grey at base grading upward into dark-grey fresh, recrystallized, abundant vugs and dissolution features, rusty-brown material lining fractures and vugs, bedding attitude 99°/09°N, well-developed foliation parallel to fault zone at 120°/52°NE	98.37	0.41	0.55	0.070	0.148	3084	39	303
Section 99-4 (Claim Nim 4) - Along Former Logging Trail on Centre Ridge										
C5207	1¼	**Limestone**, massive, dark-grey weathered, very dark-grey to black fresh, micritic, rare off-white calcite stringers and blebs	98.32	0.57	0.59	0.069	0.102	2180	87	606
-	2	**covered**	-	-	-	-	-	-	-	-
C5208	2	**Limestone**, massive, dark-grey weathered with irregular nodules or masses weathering slightly brownish, black fresh, micritic, few off-white calcite stringers and blebs, rusty-brown material coating fractures	97.64	0.64	0.39	0.080	0.219	2741	73	672
C5209	1½	**Limestone**, massive, medium- to dark-grey weathered, black fresh, micritic, few irregular brownish-weathered patches or masses of chert to 2 cm across (probably replacement of bioclasts), one horn coral noted	97.89	0.65	0.22	0.036	0.041	2757	40	477
-	10	**covered**	-	-	-	-	-	-	-	-
C5210	1	**Limestone**, massive, medium-grey weathered, off-white fresh, recrystallized, intruded by a 10 cm thick randomly oriented dyke	98.89	0.25	0.44	0.073	0.054	1504	65	442
-	26¾	**covered**	-	-	-	-	-	-	-	-

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-4 (CONTINUED)										
C5212	1¼	**Limestone**, massive, rubbly, medium-grey weathered, black fresh, micritic, abundant chert masses and patches to 2 cm across	98.09	0.51	0.46	0.056	0.059	3244	45	361
-	1¼	**covered**	-	-	-	-	-	-	-	-
C5211	2	**Limestone**, massive, medium-grey weathered, black fresh, micritic, few chert masses and patches to 1 cm across	97.95	0.50	0.87	0.117	0.165	2722	61	390
C5213	1¾	**Limestone**, massive, medium-grey weathered, may be partly equivalent to C5211, probable bedding attitude 107°/14°N	98.01	0.56	0.52	0.089	0.254	5008	38	255
C5215	2½	**Limestone**, beds ¼ - 1 m thick, medium- to buff-grey weathered, black fresh, micritic, abundant (up to 5%) irregular white chert masses and patches to 2 cm across (possible replacement of bioclasts)	97.65	0.58	0.68	0.153	0.314	228	51	144
C5214	2¼	**Limestone**, massive to thick-bedded, medium-grey weathered, black fresh, micritic, abundant (up to 5%) irregular white chert masses and patches to 2 cm across (possible replacement of bioclasts), one horn coral noted, bedding attitude 113°/17°NE	97.80	0.53	0.72	0.089	0.047	2710	33	157
Section 99-5 (Claim Nim 4) - Southern Flank of Centre Ridge										
C5206	¾	**Limestone**, massive, brownish-grey weathered, black fresh, micritic, few off-white carbonaceous stringers and blebs, rare brownish-grey mottle to 2 cm across	98.31	0.57	0.35	0.096	0.251	1944	61	829
C5205	2¼	**Limestone**, massive, dark-grey weathered, medium- to dark-grey recrystallized at base grading upward into black micritic	98.14	0.36	0.49	0.068	0.129	4242	128	414
C5204	3¾	**Limestone**, massive, medium-grey weathered, off-white at base grading upward into medium-grey fresh with off-white marbleized patches, recrystallized, buff mottles and irregular patches to 2 cm across, bedding attitude 143°/17°NE, moderate cleavage at 42°/85°SE	98.03	0.38	0.39	0.071	0.273	5171	139	448
-	16¼	**covered**	-	-	-	-	-	-	-	-
C5157	1¼	**Limestone**, massive, buff-grey weathered, dark-grey fresh with brownish-grey mottles, very strong cleavages with attitude 24°/85°SE	98.66	0.47	0.47	0.092	0.091	1147	104	108
-	26¼	**covered**	-	-	-	-	-	-	-	-
C5158	2	**Limestone**, massive, buff-grey weathered, very dark-grey to black fresh, abundant secondary white calcite blebs to ¼ cm in size, rare stringer, possible horizontal bedding	97.94	0.48	0.49	0.109	0.103	5794	79	<100
-	19½	**covered**	-	-	-	-	-	-	-	-
C5159	1¼	**Limestone**, massive, buff-grey weathered, black fresh, abundant secondary white calcite as blebs and stringers, and veins with predominately vertical orientations	98.95	0.32	0.32	0.137	0.062	916	119	<100

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-5 (CONTINUED)										
-	27¾	covered	-	-	-	-	-	-	-	-
C5160	¾	Limestone, brown weathered, black fresh, cryptocrystalline to micritic, brownish-grey mottles and calcite blebs aligned along possible bedding (cleavage?) planes with attitude 108°/28°N	97.22	0.41	1.54	0.194	0.202	2603	166	<100
Section 99-6 (Claim Nim 4) - Southeastern Flank of Centre Ridge										
C5155	1¾	Limestone, as above, lower 1 m contain dark brownish-grey mottles to 1½ cm in size, very poorly-developed (bedding?) surface with attitude 112°/04°	98.57	0.61	0.49	0.061	0.068	228	66	433
-	7	covered	-	-	-	-	-	-	-	-
C5156	1	Limestone, massive, grey weathered, dark- to very dark-grey fresh, micritic, rare white calcite bleb to ¼ cm in size	98.14	0.58	0.49	0.068	0.057	4847	75	321
C5154	1¾	Limestone, massive, grey weathered, black fresh, micritic, white to off-white secondary blebs (dolomite fossil replacements?) to ¾ cm in size	98.01	0.54	0.59	0.114	0.110	4583	83	329
-	1	covered	-	-	-	-	-	-	-	-
C5153	1	Limestone, grey weathered, very dark-grey fresh, micritic, tectonized, coarse white calcite bleb as bivalve replacement	98.24	0.49	0.40	0.051	0.090	228	126	366
-	3¼	covered	-	-	-	-	-	-	-	-
C5152	3	Limestone, massive, rubbly, medium-grey weathered, black fresh, micritic, rare white calcite bleb to ¼ cm in size, bedding attitude 116°/34°NE, strong cleavages with various orientations	98.09	0.48	0.58	0.072	0.187	5135	60	<100
-	4½	covered	-	-	-	-	-	-	-	-
C5151	1½	Limestone, massive, grey to dark-grey weathered, very dark-grey to black fresh, micritic, brown material coating fractures, rare white calcite bleb to ¼ cm in size, possible bedding attitude 78°/22°N	98.32	0.48	0.65	0.074	0.060	3020	78	<100
-	6¼	covered	-	-	-	-	-	-	-	-
C5150	½	Limestone, grey weathered, black fresh, micritic, cleavage (or bedding?) attitude 120°/31°NE	97.96	0.50	1.19	0.074	0.057	1166	61	<100
-	4	covered	-	-	-	-	-	-	-	-
C5149	¼	Limestone, massive, buff-grey weathered, black fresh, micritic, cleavage (or bedding?) attitude 118°/40°NE	97.83	0.54	1.07	0.066	0.228	1485	57	109
-	38½	covered	-	-	-	-	-	-	-	-
C5148	1	Limestone, buff-grey weathered, medium-grey fresh with a cleavage-parallel brownish-grey mottles to 2 cm in size, tectonized, very strong cleavage with attitude 146°/48°NE, weaker cleavage with attitude 109°/63°S	97.84	0.34	1.35	0.117	0.134	1259	133	<100

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-7 (Claim Nim 4) - Between Centre Ridge and East Ridge										
C5119	2	**Limestone**, massive, medium- to dark-grey weathered, dark-grey fresh, microcrystalline, highly tectonized with strong easterly dipping fabric, cleavage attitude 160°/64°E	98.13	0.58	0.87	0.073	0.152	1325	49	151
C5120	3	**Limestone**, as above but light- to medium-grey fresh surface	98.24	0.42	0.95	0.057	0.060	1430	66	123
Isolated Sample on East Shore of Nimpkish Lake										
C5220	3½	**Limestone**, beds ½ - 2 m thick, dark-grey weathered, black fresh, micritic, rare off-white carbonaceous blebs, buff material on weathered surfaces and lining fractures	99.01	0.47	0.11	0.029	0.118	1571	45	258
Section 99-8 (Claim Nim 4) - North End of East Ridge										
C5104	1	**Limestone**, massive, rusty-grey weathered, light-grey fresh, cryptocrystalline, tectonized with abundant cleavages with attitude 115°/60°SW	97.97	0.25	0.30	0.033	0.071	926	174	248
C5103	2	**Limestone**, buff rusty-grey weathered, light greyish-white to medium-grey fresh, cryptocrystalline, tectonized	98.10	0.29	0.37	0.037	0.110	621	219	<100
-	2¾	**covered**	-	-	-	-	-	-	-	-
C5102	2½	**Limestone**, massive, light-buff weathered, light greyish-white fresh with a few dark-grey patches, cryptocrystalline to recrystallized, moderately tectonized with abundant variable cleavages, possible bedding attitude 97°/09°S	99.00	0.25	0.29	0.019	0.063	589	263	286
C5101	2¼	**Limestone**, as above	97.89	0.27	0.21	0.039	0.394	582	312	220

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-9 (Claim Nim 4) - East Flank of East Ridge										
C5132	2	**Limestone**, as above, dolomitic, with dark brownish-grey mottles, rare rusty bleb to ½ cm in size	98.43	0.35	0.64	0.043	0.310	554	324	237
-	1¾	**covered**	-	-	-	-	-	-	-	-
C5131	½	**Limestone**, massive, buff-grey weathered, black to very dark-grey fresh, micritic	98.46	0.37	0.91	0.064	0.032	517	156	216
-	1¾	**covered**	-	-	-	-	-	-	-	-
C5130	¼	**Limestone**, massive, buff weathered, light- to medium-grey fresh, cryptocrystalline to recrystallized, possible bedding attitude 95°/04°N	99.04	0.41	0.26	0.042	0.036	497	184	239
-	21¼	**covered**	-	-	-	-	-	-	-	-
C5129	¾	**Limestone**, massive, greyish-white weathered, medium-grey fresh with a few very dark grey to black patches to 1 cm in size, cryptocrystalline to recrystallized, possible bedding attitude 172°/13°E	99.30	0.45	0.10	0.029	0.038	400	101	<100
Section 99-10 (Claim Nim 4) - West Flank of East Ridge										
C5105	¾	**Limestone**, massive? (poorly defined beds possibly 10 cm thick), brownish-grey weathered, very light-grey to white fresh, recrystallized, possible bedding attitude 06°/54°E	99.15	0.33	0.18	0.029	0.109	679	251	394
-	11¾	**covered**	-	-	-	-	-	-	-	-
C5106	¾	**Limestone**, massive, brown weathered, very light-grey to light greyish-white fresh, recrystallized to cryptocrystalline, rust-lined fractures and cleavages	99.03	0.37	0.11	0.035	0.199	687	221	577
-	4½	**covered**	-	-	-	-	-	-	-	-
C5107	1	**Limestone**, massive, brownish-grey weathered, very light-grey fresh, cryptocrystalline to very finely-crystalline, recrystallized	97.95	0.33	0.20	0.038	0.075	713	183	535
-	23	**covered**	-	-	-	-	-	-	-	-
C5108	2¼	**Limestone**, thick-bedded (>1½ m), light-grey weathered, very dark-grey fresh, microcrystalline, probable bedding attitude 167°/12°E	98.83	0.40	0.32	0.091	0.083	641	96	1021
-	33½	**covered**	-	-	-	-	-	-	-	-
C5109	2¼	**Limestone**, massive, grey weathered, very dark-grey to black fresh, microcrystalline	98.78	0.42	0.34	0.042	0.080	658	80	1775
-	18	**covered**	-	-	-	-	-	-	-	-
C5110	11¼	**Limestone**, massive to thick-bedded, brownish-grey weathered, very dark to dark-grey fresh, microcrystalline, abundant joints and cleavages	98.11	0.39	0.39	0.066	0.246	709	166	901
-	3¼	**covered**	-	-	-	-	-	-	-	-

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-10 (CONTINUED)										
C5111	2	Limestone, as above	97.64	0.49	0.83	0.048	0.086	725	254	1418
-	37½	covered	-	-	-	-	-	-	-	-
C5112	2¼	Limestone, as above, strong cleavages with attitude 43°/72°NW, possible bedding attitude 122°/16°NE	90.75	7.97	0.63	0.039	0.107	510	246	<100
-	1¾	covered	-	-	-	-	-	-	-	-
C5113	2¾	Limestone, as above	92.57	6.71	0.38	0.060	0.122	573	278	<100
Section 99-11 (Claim Nim 4) - Across Central Part of East Ridge										
C5126	½	Limestone (altered?), rubbly, buff weathered, light-grey fresh with black blotches to ¼ cm near contact with dyke, darker-grey away from contact, microcrystalline, attitude of dyke/ limestone contact 172°/90°E	98.58	0.48	0.74	0.031	0.052	664	159	<100
-	4¾	covered	-	-	-	-	-	-	-	-
C5127	¾	Limestone, massive, light-grey weathered, very dark-grey fresh, microcrystalline	98.45	0.62	0.46	0.045	0.274	450	96	<100
C5128	1	Limestone, as above, grading downward into marbleized, whitish-grey, fine- to coarsely crystalline unit with rust-lined fractures	90.94	6.95	0.44	0.037	0.248	355	398	131
-	58¼	covered	-	-	-	-	-	-	-	-
C5125	3¼	Limestone, beds to 1 m thick, grey weathered, dark-grey fresh, microcrystalline, possible bedding attitude 132°/11°NE	98.06	0.85	0.63	0.037	0.217	1192	86	<100
-	13¾	covered	-	-	-	-	-	-	-	-
C5124	¾	Limestone, as above, abundant jointing and cleavages	99.09	0.40	0.26	0.027	0.070	613	123	158
-	7¾	covered	-	-	-	-	-	-	-	-
C5123	¼	Limestone, as above	99.31	0.34	0.13	0.035	0.070	688	109	143
-	8¾	covered	-	-	-	-	-	-	-	-
C5122	¾	Limestone, massive, brownish-buff weathered, very dark-grey fresh, microcrystalline	98.45	0.56	0.57	0.120	0.130	684	139	<100
-	9¼	covered	-	-	-	-	-	-	-	-
C5121	3½	Limestone, rubbly, beds 10 cm to 1 m thick, grey weathered, dark-grey fresh but lighter toward top, microcrystalline, strong foliation, possible bedding attitude 53°/12°SE	98.99	0.48	0.18	0.027	0.141	679	121	<100
-	13	covered	-	-	-	-	-	-	-	-
C5118	4	Limestone, massive, grey weathered, dark-grey fresh above covered interval, light-grey fresh below covered interval, cryptocrystalline, possible bedding attitude 109°/16°N	98.60	0.41	0.73	0.038	0.050	905	252	162

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-12 (Claim Nim 4) - Along Road at South End of East Ridge										
C5225	2¾	**Limestone**, beds 15 cm to 1½ m thick, medium-grey weathered, very dark-grey to black fresh, grades upward into micritic black limestone, foliated, partly recrystallized, cavities, vugs, and fractures lined with rusty-brown material, bedding attitude 118°/23°NE	96.59	0.44	2.37	0.206	0.161	671	89	148
C5224	2	**Limestone**, beds 15 cm to 1½ m thick, medium-grey weathered, very dark-grey to black fresh, foliated, partly recrystallized, cavities, vugs, and fractures lined with rusty-brown material	97.02	0.37	1.87	0.196	0.329	930	102	<100
C5223	2¼	**Limestone**, beds 15 cm to 1½ m thick, medium-grey weathered, light- to medium-grey fresh with darker patches, foliated, partly recrystallized, cavities, vugs, and fractures lined with rusty-brown material	95.64	0.42	3.36	0.147	0.178	1365	99	<100
C5222	2½	**Limestone**, beds 1½ m thick to massive, pale-grey weathered, medium-grey fresh with darker patches, foliated, partly recrystallized, tectonized, bedding attitude 171°/16°E	95.56	0.41	3.26	0.352	0.143	1420	96	102
C5221	1¾	**Limestone**, massive, pale-grey weathered, black fresh, micritic, fractured, foliated, buff-brown material on weathered surfaces, very dark-grey laminae, partly recrystallized, tectonized	93.90	0.37	4.95	0.267	0.206	1723	166	365
Section 99-13 (Claim Nim 4) - Along Road at South End of East Ridge										
C5135	3	**Cherty limestone**, beds 10 cm thick to massive at base, grey weathered, very dark-grey to black fresh, microcrystalline, rusty chert nodules to 1 cm across evident on weathered surfaces in lowermost 1½ m	96.58	0.62	1.95	0.375	0.134	1214	208	120
C5134	1½	**Cherty limestone**, beds to 10 cm thick, medium-grey weathered, very dark-grey to black fresh, microcrystalline, shaly partings or cleavage planes, bedding attitude 91°/35°N shallowing to 111°/14°N about 20 m east	95.84	0.89	2.12	0.453	0.233	1279	195	149
Isolated Samples on East Ridge										
C5114	1½	**Limestone**, massive, light-grey weathered, medium- to dark-grey fresh, microcrystalline, strongly jointed	99.14	0.40	0.08	0.033	0.148	542	138	109
C5115	grab	**Limestone**, grey weathered, very dark-grey to black fresh, cryptocrystalline, possible bedding attitude 115°/31°NE	98.93	0.59	0.11	0.044	0.068	2002	85	<100
C5116	¼	**Limestone**, massive, buff-grey weathered, black fresh, microcrystalline	98.44	0.47	0.83	0.019	0.033	1164	120	129
C5117	¼	**Limestone**, massive, marbleized, buff-grey weathered, very light-grey to greyish-white fresh with rust-lined fractures, recrystallized	99.03	0.51	0.21	0.041	0.041	640	111	<100
C5133	grab	**Limestone**, very dark-grey to black fresh, microcrystalline, rare white calcite stringer to 1 mm thick	99.36	0.31	0.15	0.034	0.066	484	61	<100

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-14 (Claim Nim 1) - South of First Switchback on Bear Ridge										
C5164	3¾	**Limestone**, massive, grey to buff-grey weathered, black fresh, micritic, top ½ m contains abundant off-white calcite veinlets and stringers to ¼ cm across, attitudes of possible bedding 138°/08°NE and 164°/21°E	97.87	1.34	0.35	0.048	0.197	656	121	<100
C5163	2½	**Limestone**, as above, brownish material lining fractures, possible bedding attitude 170°/11°E; top ¾ m inaccessible	98.49	0.56	0.58	0.116	0.085	607	114	106
C5162	2½	**Limestone**, massive, grey weathered, very dark-grey to black fresh, micritic, numerous solution cavities up to 20 cm across, abundant cleavages with attitude 49°/63°NW	98.61	0.42	0.62	0.040	0.216	589	125	<100
C5161	3	**Limestone**, massive, grey weathered, black fresh, micritic, very strong cleavage with attitude 33°/73°NW, weaker cleavages at 153°/56°NE and 159°/51°E, very fractured	98.79	0.45	0.45	0.065	0.144	617	145	<100
-	4	**covered**	-	-	-	-	-	-	-	-
C5175	1¼	**Limestone**, massive, dark-grey weathered, black fresh, micritic, few off-white carbonaceous veinlets and stringers, variable cleavages	97.37	1.72	0.56	0.045	0.174	633	103	<100
C5174	2½	**Limestone**, as above with abundant pinkish-white carbonaceous veinlets and stringers, dissolution vugs or cavities in top metre, probable bedding attitude 20°/05°W, another possible orientation at 160°/20°W	96.57	2.77	0.38	0.054	0.123	691	87	<100
C5173	3½	**Limestone**, as above	97.24	2.04	0.40	0.037	0.113	717	71	<100
C5172	3	**Limestone**, massive, dark-grey weathered, very dark-grey to black fresh, micritic, strong cleavages with attitudes 47°/90°SE and 84°/90°S, possible bedding attitude 148°/23°NE	96.29	2.96	0.48	0.049	0.063	664	62	<100
C5170	2½	**Limestone**, thick-bedded, dark-grey weathered with buff-grey patches, very dark-grey to black fresh, micritic, off-white stringers and veinlets to 2 mm thick, rare brownish mottle 1 to 2 cm across, possible bedding attitude 150°/15°NE	96.32	3.10	0.32	0.035	0.111	592	80	<100
C5171	1½	**Limestone**, rubbly, dark-grey weathered, black fresh, brown mottles to 3 cm across, few calcite veinlets and stringers 1 to 3 mm thick with approximate attitude 59°/90°SE	95.81	3.54	0.39	0.070	0.070	646	62	<100
C5183	1¼	**Limestone**, rubbly, grey weathered, black fresh, micritic	94.30	4.93	0.44	0.102	0.065	596	82	<100
C5184	1¼	**Limestone**, massive, rubbly, medium-grey weathered, black fresh, micritic	96.51	2.37	0.78	0.060	0.092	665	202	107
C5166	1¼	**Limestone**, massive, dark-grey weathered with resistant brownish mottles up to 3 cm across, very dark-grey to black fresh with buff-brown mottles, micritic, buff- to brownish orange material lining fractures	89.43	9.82	0.25	0.046	0.186	488	80	<100
C5165	1¼	**Limestone**, as above, medium- to buff-grey weathered, generally horizontal bedding	93.20	5.90	0.49	0.126	0.130	538	80	<100
-	2½	**covered**	-	-	-	-	-	-	-	-

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-14 (CONTINUED)										
C5167	3½	**Limestone**, grey weathered, black fresh, micritic, attitude of possible bedding (cleavage?) 97°/16°N	92.55	6.69	0.22	0.061	0.053	608	55	<100
C5168	2½	**Limestone**, dark-grey weathered, black fresh, micritic, rare white calcite veinlets and stringers to ¼ cm thick, few brownish mottles to 1 cm across, possible baculities to 4 cm long preserved near top	89.94	9.42	0.32	0.020	0.130	541	98	<100
C5169	1	**Limestone**, massive, dark-grey weathered with brownish mottles, brownish-buff fresh with up to 5% mottles to 2 cm across, micritic, possible bedding attitude 91°/14°N	81.79	17.35	0.53	0.036	0.218	432	105	<100
Section 99-15 (Nim 1) - Along Road on Northeastern Part of Bear Ridge (Note: Beds are assumed to dip 24° northerly)										
C5181	1¼	**Limestone**, massive, cherty, medium-grey weathered, very dark-grey to black fresh, micritic, cleavage attitude 91°/75°N	98.98	0.41	0.22	0.029	0.222	624	42	<100
-	1	**covered**	-	-	-	-	-	-	-	-
C5180	1¼	**Limestone**, massive, rubbly, dark-grey weathered, micritic, few chips with grainy appearance, few remnant bioclasts, few black circular pelletoids 2 - 3 mm across	98.77	0.40	0.47	0.041	0.215	617	76	<100
C5179	2¼	**Wackestone**, massive, grey weathered, very dark-grey to black fresh, micritic matrix, few remnant bioclasts	98.08	0.62	0.92	0.060	0.198	677	127	<100
-	2¾	**covered**	-	-	-	-	-	-	-	-
C5182	¼	**Dolomitic limestone**, massive, buff-grey weathered, dark-grey to black fresh, micritic	93.25	5.98	0.41	0.041	0.151	554	77	<100
-	3¼	**covered**	-	-	-	-	-	-	-	-
C5178	2¼	**Dolomite**, grey weathered, dark-grey fresh, fine-grained, sugary texture	84.87	11.80	2.95	0.050	0.199	510	214	122
C5177	½	**Dolomitic limestone**, buff-brown weathered, light brownish-grey fresh, laminated, bedding attitude 129°/25°NE	72.57	25.88	0.30	0.126	0.476	385	404	179
C5176	1½	**Limestone**, as above	94.14	4.71	0.55	0.222	0.199	630	210	115

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-16 (Nim 1) - Central Part of Bear Ridge										
C5185	2	Limestone, massive, grey weathered, very dark-grey to black fresh with few black patches, rare brownish mottle and off-white carbonaceous stringer to 2 mm thick, abundant dissolution features in upper ¾ m, strong cleavage with attitude 77°/85°S, probable bedding attitude 92°/19°N, very fractured	94.47	4.93	0.30	0.049	0.136	605	77	<100
C5184A	1	Limestone, rubbly, medium-grey weathered with buff patches, very dark-grey to black fresh, micritic, buff mottles and irregular patches to 2 cm across, possible bedding attitude 97°/12°S	96.51	2.37	0.78	0.060	0.092	665	202	107
-	1	covered	-	-	-	-	-	-	-	-
C5199	1	Limestone, massive, medium-grey weathered, black fresh, micritic, possible cleavage (bedding?) attitude 50°/18°NW	94.89	3.94	0.34	0.049	0.069	637	58	162
-	2¼	covered	-	-	-	-	-	-	-	-
C5201	2¼	Limestone, massive, dark-grey weathered with abundant dissolution features, variably medium-grey to black fresh, micritic, brown material lining fractures, possible bedding attitude 95°/08°N	92.71	6.19	0.35	0.044	0.277	636	71	<100
C5200	4	Limestone, massive, dark-grey weathered with abundant dissolution features, variably medium-grey to black fresh, micritic, irregular brownish mottles and patches to 2 cm across, brown material lining fractures, belmenite? observed near top	94.32	4.89	0.39	0.051	0.138	713	93	<100
-	¾	covered	-	-	-	-	-	-	-	-
C5202	1	Limestone, massive, partly rubbly, medium-grey weathered, black fresh, micritic	95.48	4.05	0.06	0.026	0.306	670	69	<100
-	7½	covered	-	-	-	-	-	-	-	-
C5203	1½	Limestone, massive, brownish-grey weathered, medium-grey fresh, partly recrystallized	89.01	9.86	0.45	0.052	0.458	589	114	105
Section 99-17 (Nim 1) - Southwestern Part of Bear Ridge										
C5186	1½	Limestone, massive, medium- to dark-grey weathered, black fresh, micritic, cleavage attitude 91°/75°N	94.30	5.01	0.35	0.043	0.146	724	68	<100
-	3	covered	-	-	-	-	-	-	-	-
C5187	1¼	Limestone, thick-bedded, dark-grey weathered with buff-grey patches, black fresh, micritic, probable bedding attitude 100°/23°N	93.65	5.45	0.45	0.039	0.268	667	92	<100
-	10	covered	-	-	-	-	-	-	-	-
C5188	½	Limestone, as above, grey weathered	95.54	3.71	0.41	0.072	0.146	735	59	<100

APPENDIX 5: CONTINUED

Sample	Strat. Thick. (m)	Description	$CaCO_3$ %	$MgCO_3$ %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	$SrCO_3$ ppm	MnO ppm	P_2O_5 ppm
Section 99-17 (CONTINUED)										
-	9	covered	-	-	-	-	-	-	-	-
C5189	2½	Limestone, as above, buff-colored material lining fractures	98.12	0.75	0.63	0.067	0.235	846	262	105
-	6¾	covered	-	-	-	-	-	-	-	-
C5190	¾	Limestone, as above, partly rubbly, dissolution features; lowest ¼ m medium- to dark-grey fresh, slightly recrystallized	98.51	0.58	0.45	0.038	0.287	863	67	<100
-	9¾	covered	-	-	-	-	-	-	-	-
C5191	1¼	Limestone, massive, dark-grey weathered, medium- to very dark-grey fresh, micritic, partly recrystallized, rare off-white carbonaceous bleb or stringer, cleavage attitude 37°/73°SE, possible bedding attitude 89°/14°N	98.70	0.44	0.36	0.051	0.072	2561	49	125
-	6½	covered	-	-	-	-	-	-	-	-
C5192	2¼	Limestone, massive, partly rubbly, medium-grey weathered, very dark-grey to black fresh, micritic, partly recrystallized, cleavage attitude 138°/69°SW	98.63	0.73	0.34	0.028	0.087	1045	59	<100
-	4¾	covered	-	-	-	-	-	-	-	-
C5193	1	Limestone, massive, medium-grey weathered, very dark-grey to black fresh, micritic, partly recrystallized	90.46	8.08	0.59	0.048	0.132	634	134	130
-	26¾	covered	-	-	-	-	-	-	-	-
C5194	¾	Limestone, rubbly, dark-grey weathered, black fresh with brownish-grey mottles, micritic, brownish-grey to brown material on fractures, few off-white carbonaceous stringers and blebs	97.92	0.84	0.81	0.054	0.129	892	298	162
-	24½	covered	-	-	-	-	-	-	-	-
C5195	¾	Limestone, rubbly, dark- to dark buff-grey weathered, medium- to dark-grey fresh, micritic, partly recrystallized, buff-brownish material on fractures	98.84	0.51	0.25	0.034	0.140	811	297	112
-	16½	covered	-	-	-	-	-	-	-	-
C5197	3	Limestone, as above	98.83	0.54	0.36	0.027	0.085	983	157	<100
C5196	1½	Limestone, massive, dark-grey weathered, medium- to dark-grey fresh, micritic, partly recrystallized, buff-brownish material on fractures, possible bedding (cleavage?) attitude 176°/29°W	98.70	0.52	0.41	0.041	0.113	837	210	<100
-	12¾	covered	-	-	-	-	-	-	-	-
C5198	2¾	Limestone, massive, partly rubbly, medium- to buff-grey weathered, light- to medium-grey fresh, micritic, partly recrystallized, slaty cleavage attitude 132°/78°NE, possible bedding attitude 79°/14°N, probable bedding attitude 76°/15°N	98.56	0.48	0.47	0.019	0.213	1587	113	<100

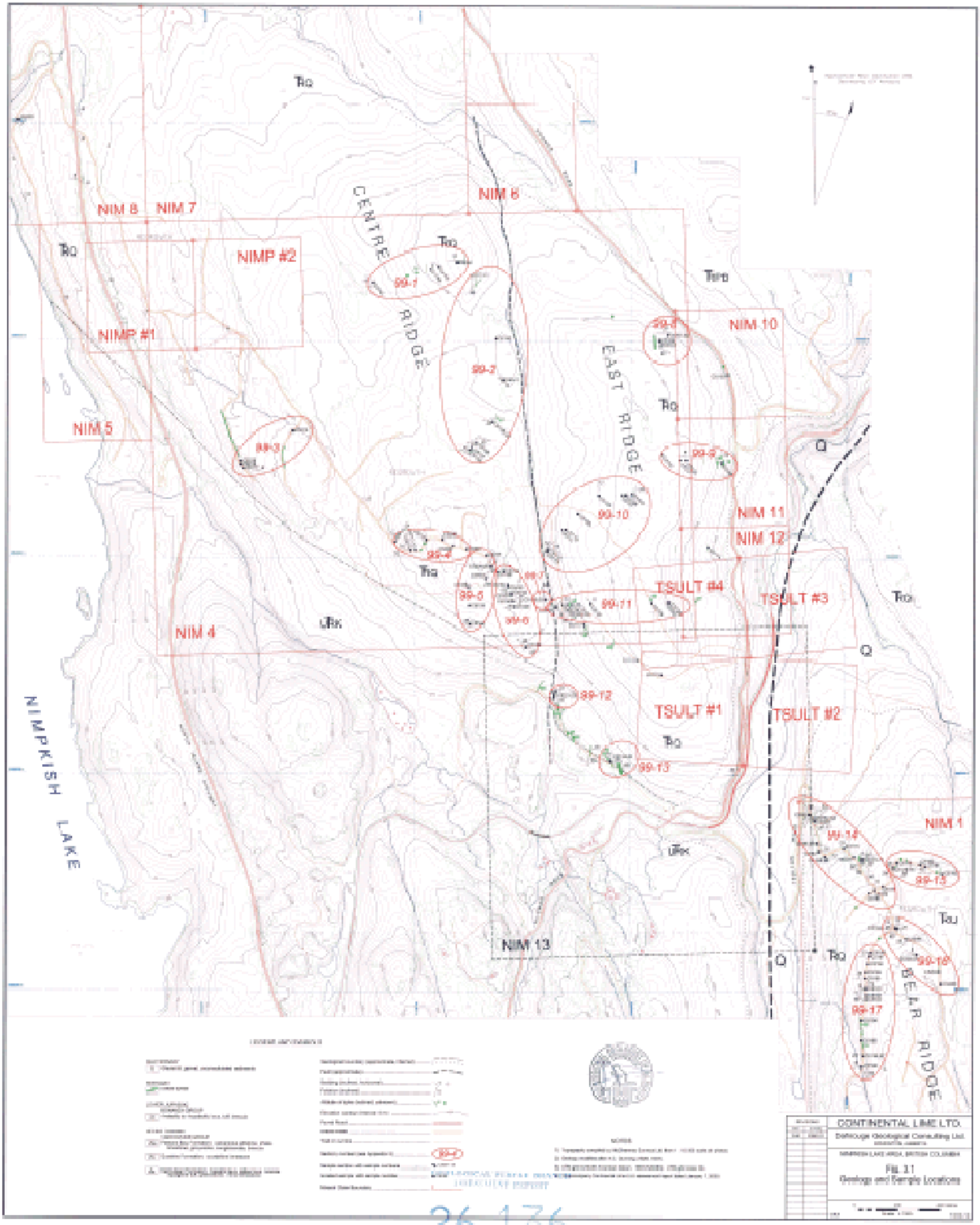
APPENDIX 6: STATEMENT OF QUALIFICATIONS

The field work described in this report was supervised by M.J. Gidluck with the assistance of J.R. Dahrouge. J.R. Dahrouge supervised the completion of the accompanying report.

M.J. Gidluck is the Division Geologist for Continental Lime Ltd. and is based in Calgary, Alberta. He graduated with a B.Sc. In Geology from the University of British Columbia in 1965 and has more than 35 years of experience in mineral exploration and development. He is a member of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta; the Association of Professional Engineers of Ontario; the Canadian Institute of Mining and Metallurgy and is a Fellow of the Geological Association of Canada.

J.R. Dahrouge is an independent 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.

D. I. Pană obtained a Diploma of Geological and Geophysical Engineer from the University of Bucharest in 1980 (equivalent to a M.Sc. in North America) and a Ph.D. in Structural Geology and Petrology at the University of Alberta, Edmonton in 1998. He has more than 15 years of experience in mineral exploration and regional mapping, including several years as a senior research geologist with the Geological Survey of Romania. He is a member of the Geological Society of America and the Edmonton Geological Society.



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CONTINENTAL LIME LTD.
NIMPKISH LAKE AREA, BRITISH COLUMBIA
Fig. 3.1
Geology and Sample Locations

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