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REPORT ON SAMPLING AND DIAMOND DRILLING JULY TO NOVEMBER 1999

LAREDO CLAIM GROUP
ARISTAZABAL ISLAND, BRITISH COLUMBIA

Skeena Mining Division
British Columbia

Latitude 52° 41' N   Longtitude 129° 03' W

NTS 103 A/11E

OWNER: NORTH PACIFIC STONE LTD.
12935-21B Ave, Surrey, B.C.

OPERATOR: ORINDA INVESTMENTS LTD.
3691 Lower River Road, Youngstown, New York, U.S.A.

CONSULTANT: R. F. MCINTYRE, P. GEO.
16691 Mapletree Close, Surrey, B.C.

January 25, 2000

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

26,163

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1.0 SUMMARY

The Laredo limestone deposit is located on the eastern side of Aristazabal Island, immediately offshore of the mainland of British Columbia, east of the southern tip of the Queen Charlotte Islands. The property is owned and operated by North Pacific Stone Ltd. of Vancouver, B.C.

The property was initially quarried in 1899. Significant development and production took place in the middle 1950's. It received only sporadic interest until 1989-1990 when Laredo Limestone Ltd. sponsored an extensive program of investigation, including diamond drilling, which defined large limestone resources for the first time. A detailed surface sampling program in 1994 outlined areas of very high-purity limestone.

A 1999 program of surface sampling extended the 1994 grids to fill in the gap between two sampled areas. A substantial number of samples were selected for brightness testing of the more promising zones. The results demonstrated continuity of limestone throughout the sampled area and identified additional zones of high and very high grade stone. On this basis a program of diamond drilling was undertaken. Topographic base maps were prepared in September, drilling initiated in October and the program completed in December of 1999. Further work has continued past these dates.

2.0 INTRODUCTION

2.1: GENERAL

The Laredo Property is owned by North Pacific Stone Ltd. of 12935-21B Ave, Surrey, British Columbia. Extensive geological exploration work by North Pacific and other companies was documented in a series of reports dating since 1989. The current phase of work was sponsored by Orinda Investments of 3961 Lower River Road, Youngstown, New York, U.S.A., who have an option to purchase the property. This report documents property investigations conducted in 1999, for Assessment Credits under Section C of the Mineral Tenure Act Regulations.

All investigations to date have centered on the high purity, white limestone that underlies much of the claim group. Because of the deposit's unusual combination of low percentages of contaminants with uniform white color, the present operator is focussing efforts on the high brightness $CaCO_3$ market.

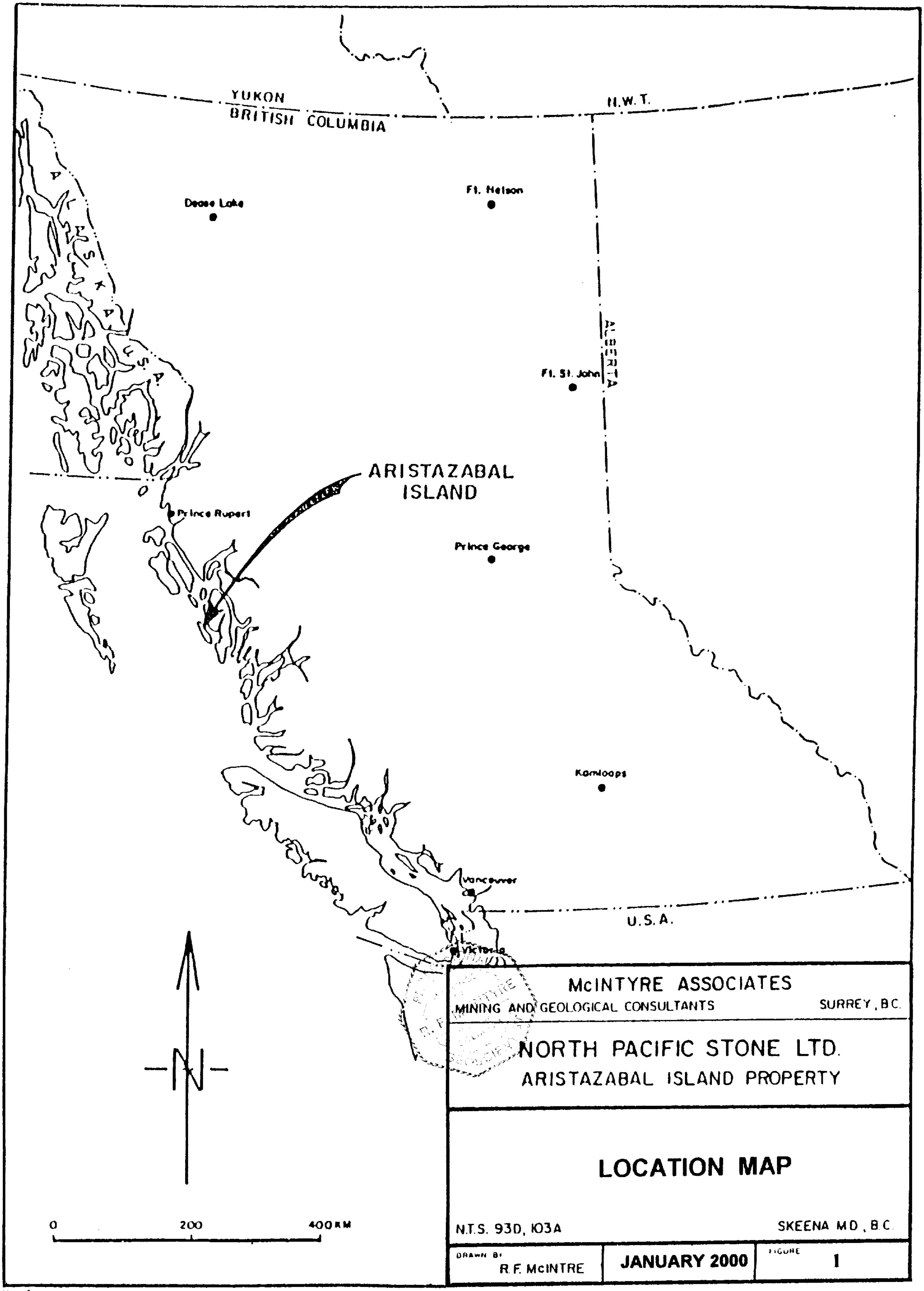
2.2: LOCATION AND ACCESS

The property is located on the eastern side of Aristazabal Island on the north coast of B.C. (See Figure 1) within the Skeena Mining Division. It is situated at Latitude 52° 41' North / Longtitude 129° 03' West and lies about midway between Bella-Bella and Prince Rupert. The relevant map sheet is NTS 103 A/11E. Access to the site can be gained by floatplane from Bella-Bella (90km) or Port Hardy (250km), or by boat. The nearest community is the village of Klemtu some 40 km to the southeast which is served by B.C. Ferries on a weekly basis.

2.3: HISTORY

A quarry license was obtained in 1899 for D.L.299 on Aristazabal Island. Two quarries were worked in subsequent years at different times and records indicate that in 1954 some 12,000 tons of limestone were shipped to a pulp mill at Prince Rupert. Intermittent shipments took place until operations ended sometime in the late 1960's or early 1970's.

The property was acquired by Laredo Limestone Ltd. in 1983. They conducted a variety of economic and engineering studies in the following years. Beginning in 1989 Laredo Limestone undertook a more comprehensive program of exploration. In January of 1989 a reconnaissance mapping and surface bedrock sampling program was completed. During April-May 1989 a program consisting of line cutting,



McINTYRE ASSOCIATES
MINING AND GEOLOGICAL CONSULTANTS SURREY, B.C.

NORTH PACIFIC STONE LTD.
ARISTAZABAL ISLAND PROPERTY

LOCATION MAP

N.T.S. 93D, 103A SKEENA M.D., B.C.

DRAWN BY		FIGURE
R.F. McINTRE	JANUARY 2000	1

diamond drilling, core logging, surface sampling and geological mapping was completed, and in December of 1990 one additional diamond drill hole was drilled.

The ownership of the property passed to North Pacific Stone Ltd., for whom the author completed a surface sampling program in October of 1994. A total of 304 limestone samples were collected from three detailed grids.

These periods of work are fully reported in Assessment and other reports listed in the References, below.

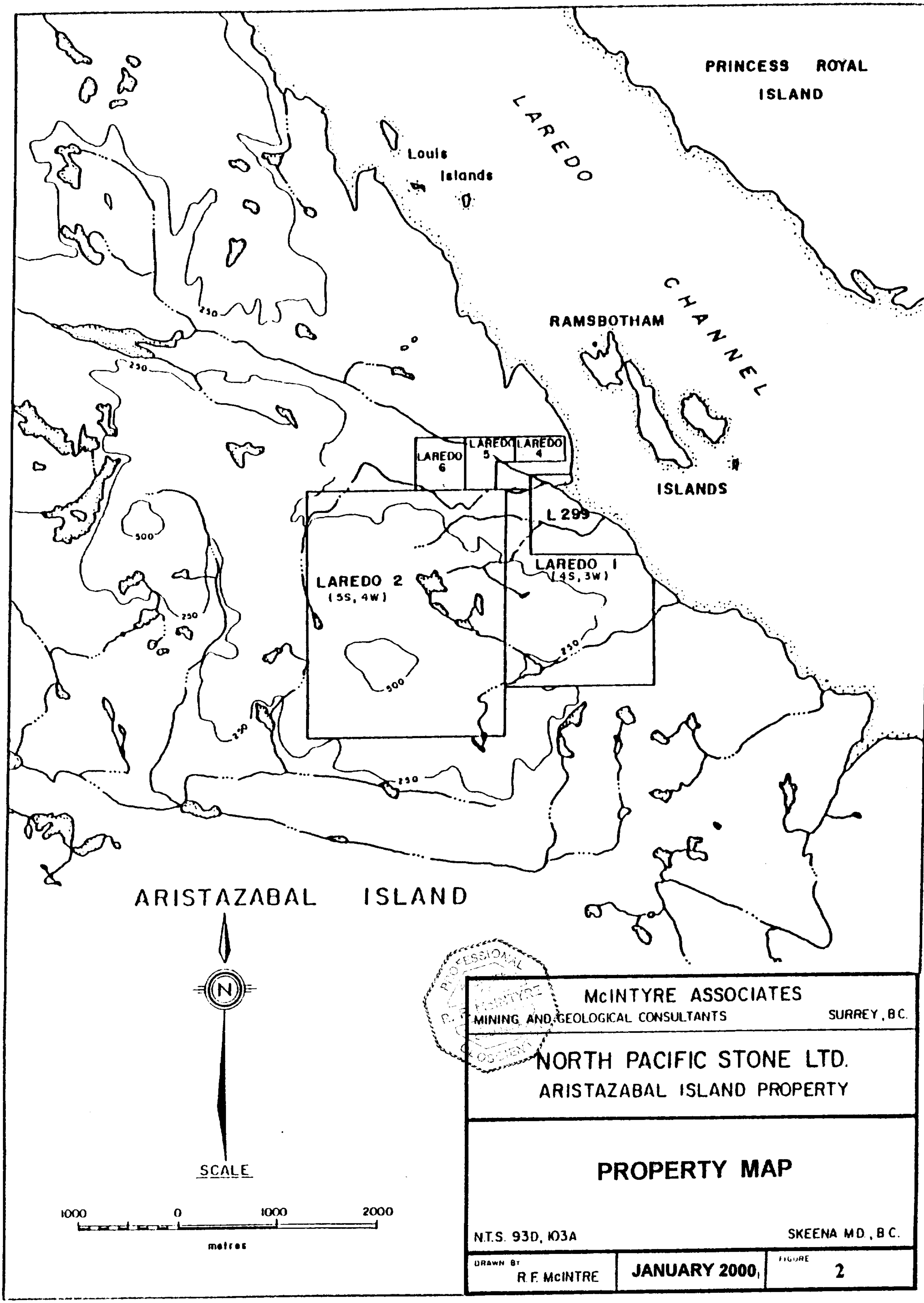
2.4: PROPERTY

The property is known as the Laredo Group and consists of five mineral claims, Laredo 1,2,4,5 and 6, totaling 35 contiguous units. The configuration of these claims is shown in Figure 2. These claims are in good standing and the work described in this report will maintain them for an additional five years.

At present the Laredo property is in an advanced stage of exploration. Ongoing work is aimed at definition of sufficient ore reserves to support a production decision.

2.5: SUMMARY OF 1999 WORK

The 1999 work took place on the Laredo 1 mineral claim and proceeded in two episodes. The first was a program of surface bedrock sampling which filled in the gap between two of the 1994 sampling grids. This was completed in July, with a total of 151 samples taken. The second was a program of diamond drilling that took place during October-December of 1999. Results of the first 13 holes, all completed before November 6, 1999, are reported herein. These were all of BTW size and varied in depth from 3 to 32 meters. Some interpretations, including calculation of reserves, are still in process and are not available at the time of this writing.


PRINCESS ROYAL
ISLAND
LAREDO
CHANNEL
Louis
Islands
RAMSBOTHAM
ISLANDS
LAREDO 6
LAREDO 5
LAREDO 4
L 299
LAREDO 1
(4S, 3W)
LAREDO 2
(5S, 4W)
250
500
ARISTAZABAL ISLAND
N
SCALE
1000
0
1000
2000
metres
McINTYRE ASSOCIATES
MINING AND GEOLOGICAL CONSULTANTS
SURREY, B.C.
NORTH PACIFIC STONE LTD.
ARISTAZABAL ISLAND PROPERTY
PROPERTY MAP
N.T.S. 93D, 103A
SKEENA M.D., B.C.
DRAWN BY
R.F. McINTRE
JANUARY 2000
FIGURE
2

3.0 GEOLOGY

3.1: REGIONAL GEOLOGY

Aristazabal Island is located at the western contact of the Mesozoic intrusive masses of the Coast Plutonic Complex and the sediment-dominated Paleozoic rocks of the Alexander Terrane. Carbonate rocks within this area are likely to be Silurian or older in age and are underlain by granitoid gneiss and overlain by mafic volcanics, now metamorphosed to amphibolitic gneiss (Baer, 1972). Regionally, the occurrence of pure limestone units is extremely limited. Typically, the carbonates are thinly interbedded with quartz-rich and argillaceous sediments and so are unlikely to form high quality limestone. The Laredo limestone deposit of Aristazabal Island appears to be the exception to this general rule in that it is largely free from significant clastic sedimentary contaminants.

Structurally, a north by northwest trend is predominant within the project area. A northwest striking dextral fault, the Principe-Laredo Fault, projects through Laredo Channel and forms the dominant structural feature in the area. Strike relations of supracrustal rocks are subparallel to this structure, trending southeastward and dipping 30° to 50° southwesterly. Bedding attitudes are locally contorted due to the inherent ductility of the carbonate units and to the intensity of regional, upper greenschist to lower amphibolite facies metamorphism. Tight isoclinal, northwest-trending folds are documented within the sediments at the regional scale and are suggested to be the oldest deformation structures in the map area.

3.2: PROPERTY GEOLOGY

Three principal rock units are identified on the Laredo property (See Figure 3). Most of the claim group is underlain by homogeneous, white, coarse-grained limestone. This carbonate unit has the appearance of a limestone roof pendant bounded by intrusive rocks. A pronounced west/northwest-trending drainage system locally known as Limestone Creek drains into Quarry Bay and defines a faulted diorite-limestone contact to the north. A second major drainage system on the property located in the southeast corner follows along another faulted intrusive-limestone contact. South of this drainage a moderately foliated hornblende diorite abuts the Laredo limestone (Fig. 3). Contact relations on the western margins of the property are not as well defined. Approximately 2.5km. west of the main (south) quarry interdigitated granodiorite-limestone contacts predominate.

Much of the claim group is underlain by medium to coarse-grained limestone. The rock weathers grey to buff but on the fresh surface it is typically white, and occasionally streaked with thin, discontinuous grey zones. Grey limestone zones are estimated to comprise less than 10 percent of the Laredo limestone. Samples taken in January 1989 along six traverse lines across the property indicated a general homogeneity and purity of the limestone that is a distinctive feature of this deposit. None of the specimens contained micas or phyllosilicates, calc-silicates or silica-rich interbeds. Limited sulfide contamination, generally less than 0.5% may occur near the major intrusive contacts and in zones of lower overall purity. Sparsely disseminated pyrite was noted in the southeast corner of the map area and in a fairly narrow band on the southwest edge of the large detailed sampling grid. The major impurity encountered is dolomite $[CaMg[CO_3]_2)$; no evidence of widespread silica or alumina contamination of this carbonate unit has been found.

Local fine-grained diorite and diabase dikes occur within the limestone unit. Contact relations suggest more than a single stage of dike emplacement. Volumetrically these intrusive units are generally not significant; a shoreline traverse between the north and south limestone quarries indicates that mafic dikes account for approximately 4 percent of the total rock volume. This compares closely to the estimate from the older diamond drilling on the property (Fawley, 1969). Dikes are generally less than 5 meters in true thickness, display well-developed chilled contacts and are preferentially orientated subparallel to the bedding. A subordinate dike set locally truncates the older dikes at high angles. These intrusive bodies are locally boudinaged and deformed into tight southwest-plunging fold structures.

Moderately foliated hornblende granodiorite is the dominant rock unit on the extreme southern and western portions of the map area. Planar fabric development is relatively weak and foliation measurements are difficult to obtain. This medium-crystalline intrusive appears to be generally homogenous, does not show widespread quartz veining and lacks significant sulfide or oxide development. Granodiorite exposures occur most commonly on several topographic highs in the western portions of the property.

Within the boundaries of the property only general structural trends have been identified in the mapping completed to date. The massive nature of the limestone prevents accurate assessment of bedding attitudes in most outcrops. Where impurities exist clear measurements are sometimes attainable. Bedding or parallel compositional banding is prominently exposed in the tidal shore southeast of the 1954 quarry, generally striking east-west and dipping about 45° to the south. A similar orientation is displayed by mafic bodies (interpreted as amphibolite-metamorphosed clastic lenses) found on the shoreline about 300-400 meters northwest of the 1954 quarry. The regional northwest structural trend is strongly expressed on the property in a series of tension faults parallel to the dextral Limestone Creek fault. Along these a small-scale horst-and–graben topography has developed.

The high-purity $CaCO_3$ areas are characterized by extensive solution erosion along jointing, which produces a very rough and abrupt solution micro-topography with a high proportion of bare outcrop. Soils are thin to absent on areas underlain by pure limestone, consisting of moss and residual organics with little insoluble mineral matter. Conversely, low-purity limestones are typically identified by the presence of developed soils. Dikes easily escape notice because they are always covered by a layer of mineral soil and tend not to stand out topographically.

4.0 1999 FIELD WORK

4.1: SURFACE SAMPLING PROGRAM

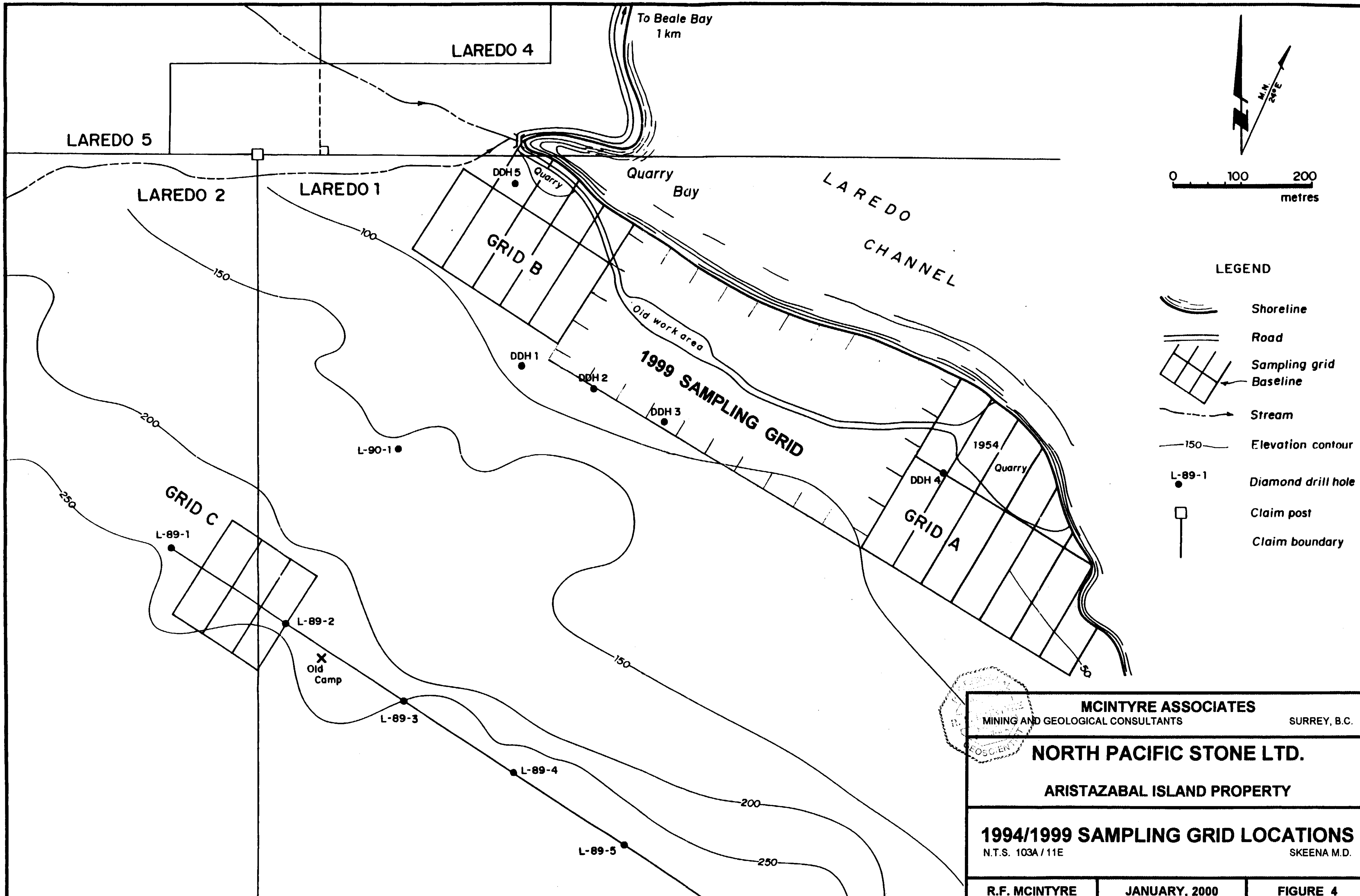
This phase of work is an extension of the detailed surface sampling done in 1994 and was conducted by the author during the period of July 3-19, 1999. The gap between 1994 grids A and B was sampled to complete a contiguous area of approximately 26.8 hectares, as shown on Figure 4.

The baseline from Grid A was extended on an azimuth of 302° True, and intersected Grid B at B.L.907 meters North, at a point offset 124 meters west of the baseline of Grid B. All baselines were brushed out with a chainsaw and re-flagged for easier future use. Stations were established at 50 meter intervals, flagged and marked with 1.2m wooden pickets. Flagged cross lines were run at right angles to the baseline in both directions (032°/212°) from each station. Samples were taken at baseline stations and every 20 meters on cross lines.

As in 1994, the sample was collected from the bedrock exposure closest to the flagged station. Material was taken below the surface with a heavy hammer in order to avoid surface contaminants. When a sample was taken within 3 meters of the flagged station no location adjustment was noted; however any offset greater than this was recorded and the true location of the sample plotted on the Sampling Grid Plan (Figure 5). Where bogs, overburden or rubble were encountered no samples were taken. Intrusive dikes were occasionally found at the sampling stations but were not sampled. Instead the nearest limestone exposure was sampled and the offset treated as above. A total of 151 samples were gathered.

The 1999 samples contain only limestone bedrock. The rock is of such high purity that small amounts of soil or other contaminants could significantly bias a sample to the low side. Therefore care was taken in sampling to include only fresh, unweathered limestone. Soils, weathered rock surfaces and near-surface fracture filling, etc. were excluded. As much as possible each sample was derived from a single spot location; thus these are neither chip nor grab samples but are bedrock samples taken from specific locations.

The samples were delivered to TSL Assayers (Vancouver, B.C.) on July 21,1999 and analyzed by whole rock fusion for 16 elements, plus loss on ignition, and for total sulfur. Check assaying revealed significant systematic errors in reporting the critical CaO value and consequently the entire series of samples was re-assayed for the same parameters at the Cominco Exploration Research Laboratory in



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NORTH PACIFIC STONE LTD. ARISTAZABAL ISLAND PROPERTY		
1994/1999 SAMPLING GRID LOCATIONS N.T.S. 103A / 11E SKEENA M.D.		
R.F. MCINTYRE	JANUARY, 2000	FIGURE 4

Vancouver. Only the Cominco results are included in this report. Assay results are presented in Appendix 1, and shown on Figure 5.

From the 1999 samples and the 1994 samples a selection of representative locations (totaling 96 samples) was taken and the pulps shipped to the Cominco Laboratory for brightness testing. This constitutes by far the most comprehensive brightness testing ever done on the property and establishes this parameter over the entire detailed sample grid. Results are presented in Appendix 4.

4.2: DIAMOND DRILLING PROGRAM

Following the positive results of the surface sampling the Operator decided to proceed with a program of diamond drilling in order to demonstrate continuity of limestone grade to depth and prove the existence of ore reserves. To aid this process they engaged the services of Watts, Griffis and McOuat Limited, Consulting Geologists and Mining Engineers, of Toronto, Ontario (abbreviated WGM). They provided senior program design and oversight throughout the diamond drilling program and are responsible for ongoing interpretation of the results. Several drawings prepared by WGM have been used as the basis for illustrations included herein, with permission.

To provide a base for detailed planning a new small scale topographic map of the property was commissioned. This was prepared by McElhanney Consulting Services Ltd. of Vancouver, B.C. The completed map is on a scale of 1:2,500 with a contour interval of 2 meters, and is included herein in two sheets as Figures 10 and 11.

Early in the planning phase it was evident that work would experience greater costs and proceed more slowly the later it extended into the fall and winter. Also, given a shortage of reliable information on continuity of grade a drill hole grid tightly spaced at 50 meters by 50 meters was deemed appropriate for the goal of establishing a substantial quantity of proven reserves. Since mature coastal timber covers most of the area of interest it became apparent that a sizable percentage of the forest would be lost if either adequate helicopter clearings or ordinary road/trail access were employed with a conventional diamond drill. This would not only have been wasteful and expensive to undertake on a site with no road access but would have likely resulted in delayed permitting of the program. It was therefore decided to repeat the method used in 1989 by Dolmage Campbell Ltd. in their drilling further inland on the property. This involved the use of a man-portable (Winkie) drill moved by hand on trails cut by chainsaw.

Equipment and personnel were mobilized from Bella-Bella by boat charter and arrived on Aristazabal Island on October 4. A tent frame camp was established and the first hole collared on October

5. This report is limited to the period prior to November 6, 1999 and to that date a total of thirteen holes were completed, numbered DDH-99-1 through DDH-99-11A. Two of these, holes 10 and 11, were abandoned at shallow depths after being inadvertently collared in intrusive rocks. The remainder were completed to their target depths ranging from 15 to 32 meters. Each hole ended at approximately zero meters elevation MSL because the high tide level is presently considered a practical depth limit for quarrying from a drainage perspective. All holes were vertical and were cored with B-Thinwall equipment, to a diameter of roughly 32 millimeters. Locations of holes and cross sections are shown on Figure 6.

All of the eleven holes collared on limestone encountered limestone throughout most of their length. All ended in limestone and the deposit remains open at depth. All holes intersected intrusive dikes of varying sizes, though the proportions of intrusive rock encountered were generally low. Detailed logs were prepared by this author and are included below in Appendix 2.

The core was split, with one half taken for assay and the other retained for future reference. The retained core is currently in storage at the 1999 campsite on Aristazabal Island.

Sample intervals ranged from one to four meters and corresponded to the lithological units found in the logging. Only limestone was sampled since the chemistry of non-carbonate units is not of primary interest. The waste intervals of silicate rocks are shown on the cross sections and fully detailed in the drill logs.

Samples were shipped to the Cominco Exploration Research Lab and analyzed for major oxides and loss on ignition. Results are included below in Appendix 3, and are shown on the Cross Sections, Figures 7,8 and 9. Values are similar to those found in earlier surface sampling.

The drilling program continued until a total of 28 holes were completed, and the program was demobilized on December 10. The camp was left in a clean and tidy condition, with all tents and drilling equipment removed from the site.

4.3: ANALYTICAL TECHNIQUE

Details of the analytical procedures used in this program are included below in Appendices 1, 2 and 3. Wherever $CaCO_3$ values are given they have been calculated from CaO percentages multiplied by a factor of 1.7850. This is believed to be an accurate methodology because significant quantities of non-carbonate Ca bearing minerals have not been found in the Laredo limestones.

5.0 DISCUSSION

5.1: SURFACE SAMPLE GRADES

The 1994 and 1999 surface sampling was directed at areas known from 1989-90 chip sampling to include high grade limestone. The numbers and percentages of samples of various grades are presented in Table 1, below.

TABLE 1

1994 AND 1999 SURFACE SAMPLE GRADES

	% $CaCO_3$	<90%	90-95%	95-96%	96-97%	97-98%	98-98.5%	+98.5%	Total
GRID A -	**Number**	14	27	9	18	41	22	9	140
	Percentage	10	19.3	6.4	12.9	29.3	15.7	6.4	
GRID B -	**Number**	12	12	4	15	24	16	19	102
	Percentage	11.8	11.8	3.9	14.7	23.5	15.7	18.6	
GRID C	**Number**	3	17	6	12	4	5	11	58
	Percentage	5.1	29.3	10.3	20.7	6.9	8.6	19	
1999	**Number**	13	15	11	11	19	29	53	151
	Percentage	8.6	9.9	7.3	7.3	12.6	19.2	35.1	

The 1999 sampling filled in the 600 meter gap between 1994 Grids A and B. Average $CaCO_3$ grades substantially exceed the 1994 values and are presented on Figure 5. This shows a broad and continuous band of high and very high (+96% and +98% $CaCO_3$) grade limestone joining the corresponding zones found in Grids A and B in 1994. The high-grade zone is bounded on the south by relatively narrow zones of low grade (minus 92% $CaCO_3$) limestone, a feature also seen in both of the 1994 grids.

5.2: BRIGHTNESS TESTS

A representative selection of 96 samples covering the higher $CaCo_3$ portions of the 1994/1999 grid was taken. These were tested for brightness by the Cominco Exploration Research Laboratory in Vancouver, B.C. The range of values is comparable to those of high brightness limestone deposits in commercial production. Results are included below in Appendix 5 and are summarized here in Table 2.

TABLE 2

HUNTER "L" BRIGHTNESS

								TOTAL
No. of Samples	6	8	10	31	31	10	0	96
Hunter "L"	<93	93-94	94-95	95-96	96-97	97-98	+98	

5.3: DRILL CORE SAMPLE RESULTS

Analytical results are presented here from 125 samples taken from those eleven of the thirteen drill holes that encountered limestone. Comparing Table 3 below with Table 1 above the distribution of grades is very similar to that of the 1999 surface samples. A high proportion of samples return $CaCO_3$ values above 98%. Cut-off grades for mining can be expected to lie between 95 and 96% $CaCO_3$ so a large percentage of samples can be considered to be of ore grade. Discrete waste and ore zones are apparent and are expected to be readily separable.

TABLE 3

1999 CORE SAMPLE GRADES, DDH-99-1 to 11A

% $CaCO_3$	<90%	90-95%	95-96%	96-97%	97-98%	98-98.5%	+98.5%	Total
Number	2	16	15	17	20	21	34	125
Percentage	1.6	12.8	12.0	13.6	16.0	16.8	27.2	

These data are also presented on the Cross Sections, Figures 7,8 and 9. They demonstrate conclusively that ore grade limestone continues to depth.

It should be noted that the drill holes intersected 254.64 meters of bedrock of which 234.19m (92%) was limestone and 20.85m (8%) was intrusive rocks. Dikes were encountered in most holes and fell into two lithological categories. The most common are medium to fine grained, grey diorites which are generally heavily silicified. Less common are fine grained basic dikes which are usually altered brown and green and which were simply logged as greenstones. These appear to have been metamorphosed to amphibolite grade and are probably older than the diorites. Both drill hole and surface indications suggest that the diorites are most often steeply dipping (70-90°), narrower and planar while greenstones are found at intermediate dips (45-60°), are wider and are folded and boudinaged. Separation of dike material from limestone will be a critical aspect of grade control during mining. This is especially true of the greenstones since in addition to silicate contamination they would act to darken the product.

6.0 CONCLUSIONS

The 1999 sampling program established the continuity of limestone between two of the 1994 sampling grids. Additional areas of high to very high grade limestone were identified. Within a contiguous block of limestone 1000 meters long by 120-160 meters wide approximately 30% of the area returned samples of +98% $CaCO_3$ and approximately 70% of the area returned samples of +96% $CaCO_3$.

Brightness testing established that commercial standards of this parameter are met by limestones over a large area and correspond to zones of higher chemical purity.

Drilling has confirmed continuity of limestone to depths of 15 to 32 meters. Grades are very similar to those found in the surface sampling, with some 84% of core samples exceeding 96% $CaCO_3$.

The 1999 drilling reported herein has outlined significant resources of high brightness limestone. Later holes DDH-99-12 to 28 returned similar results to the data above and extend the resource to the northwest. The 1999 drilling covered roughly one third of the area of high-grade stone indicated by the 1994/1999 surface sampling and the likelihood of extending these resources is high. The deposit is open at depth.

Work presently underway is aimed at enhancing the drill hole data and demonstrating proven and probable reserves.

Respectfully Submitted,

Ronald F. McIntyre, P.Geo.

7.0 REFERENCES

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9) Adamson, R.S. and McIntyre, R.F, (1994): Geochemical Report Of The Laredo Property, Aristazabal Island, B.C.

CERTIFICATE

I, Ronald F. McIntyre hereby certify that:

1) I graduated from the University of British Columbia in 1977, receiving a Bachelor of Science degree in Geology.

2) I have practiced my profession as a Geologist since 1977.

3) I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of British Columbia.

4) I supervised and conducted the 1999 surface sampling program and provided planning and field supervision of the 1999 diamond drilling program.

5) I personally prepared the drill logs and took the core samples reported upon herin.

6) I neither have nor expect to receive any interest, direct or indirect, in the Laredo property, nor in North Pacific Stone Ltd., nor in Orinda Investments Ltd.

Dated in Surrey, B.C. this 25th day of January, 2000.

R. F. McINTYRE

Ronald F. McIntyre, P. Geo.

APPENDIX 1

SURFACE SAMPLE ANALYTICAL RESULTS

MCINTYRE ASSOCIATES-X99

Job V 99-0597R

CHECK SAMPLES (1994&1999)

Report date 2 SEP 1999

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba(4)	LOI	TOTAL
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
R9908968	#26 BL000W/50S	0.30	0.01	0.01	0.01		0.01	0.79	54.79	0.01	0.01	0.01	0.01	43.86	99.82
R9908969	#29 BL000W/80S	0.18	0.01	0.01	0.02		0.01	0.49	55.13	0.01	0.01	0.01	0.01	43.84	99.73
R9908970	#66 L50W/20S	0.21	0.01	0.01	0.01		0.01	0.50	55.20	0.01	0.01	0.01	0.01	43.77	99.76
R9908971	#98 L150W/20S	0.10	0.01	0.01	0.01		0.01	0.43	55.25	0.01	0.01	0.01	0.01	43.84	99.70
R9908972	#12 L200N/50W	0.10	0.01	0.01	0.01		0.01	0.43	55.09	0.01	0.01	0.01	0.01	43.83	99.53
R9908973	#23 BL200N	0.37	0.01	0.01	0.02		0.01	1.24	54.20	0.01	0.01	0.01	0.01	43.70	99.60
R9908974	#94 BL300N	0.50	0.01	0.01	0.05		0.01	0.56	55.02	0.01	0.01	0.01	0.01	43.50	99.70
R9908975	#109 L300N/60W	0.18	0.01	0.01	0.01		0.01	0.43	55.34	0.01	0.01	0.01	0.01	43.86	99.89
R9908976	BL350N	0.07	0.01	0.01	0.05		0.01	0.38	55.43	0.01	0.01	0.01	0.01	43.90	99.90
R9908977	L350N/60W	0.21	0.01	0.01	0.01		0.01	0.56	55.02	0.01	0.01	0.01	0.01	43.77	99.64
R9908978	L450N/20E	0.17	0.01	0.01	0.01		0.01	0.56	55.15	0.01	0.01	0.01	0.01	43.83	99.79
R9908979	L550N/20E	0.38	0.01	0.21	0.18		0.01	0.62	54.54	0.01	0.01	0.01	0.01	43.77	99.76
R9908980	L750N/20E	0.07	0.01	0.01	0.01		0.01	0.40	55.36	0.01	0.01	0.01	0.01	43.84	99.75
R9908981	L853N/20E	0.79	0.01	0.37	0.28		0.01	3.11	51.84	0.01	0.01	0.01	0.01	43.38	99.83
R9908982	L853N/40E	0.44	0.01	0.34	0.10		0.01	0.37	54.75	0.01	0.01	0.01	0.01	43.79	99.85

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised

If requested analyses are not shown ,results are to follow

ANALYTICAL METHODS

FeO determined by acid digestion /volumetric.LOI determined gravimetrically

Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3

MCINTYRE ASSOCIATES-X99

Job V 99-0639R

L350N TO L853N

Report date 16 SEP 1999

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba(4)	LOI	TOTAL
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
R9909457	L350N 40E	0.10	0.01	0.07	0.03		0.01	1.89	53.65	0.01	0.01	0.01	0.01	43.99	99.79
R9909458	L350N 80E	0.10	0.01	0.07	0.03		0.01	1.00	54.79	0.01	0.02	0.01	0.01	43.84	99.90
R9909459	L350N 100E	0.02	0.01	0.03	0.07		0.01	1.57	54.06	0.01	0.01	0.01	0.01	44.06	99.87
R9909460	L350N 123E	0.02	0.01	0.01	0.02		0.01	0.28	55.58	0.01	0.01	0.01	0.01	43.97	99.94
R9909461	L350N 20W	0.07	0.01	0.01	0.01		0.01	0.34	55.52	0.01	0.01	0.01	0.01	43.95	99.96
R9909462	L350N 80W	0.15	0.01	0.07	0.03		0.01	2.19	53.40	0.01	0.02	0.01	0.01	43.90	99.81
R9909463	L350N 100W	0.12	0.01	0.03	0.01		0.01	0.62	54.93	0.01	0.01	0.01	0.01	43.95	99.72
R9909464	L350N 128W	0.15	0.01	0.03	0.05		0.01	0.83	54.79	0.01	0.01	0.01	0.01	43.93	99.84
R9909465	L350N 140W	0.21	0.01	0.02	0.05		0.01	1.23	54.36	0.01	0.01	0.01	0.01	44.00	99.93
R9909466	L350N 158W	0.07	0.01	0.01	0.01		0.01	0.57	55.25	0.01	0.01	0.01	0.01	43.97	99.94
R9909467	L400N BL	0.07	0.01	0.01	0.01		0.01	0.36	55.43	0.01	0.01	0.01	0.01	44.00	99.94
R9909468	L400N 40E	0.21	0.01	0.02	0.02		0.01	0.89	54.61	0.01	0.01	0.01	0.01	44.04	99.85
R9909469	L400N 50E	0.74	0.01	0.14	0.05		0.01	1.97	53.09	0.01	0.10	0.01	0.01	43.63	99.77
R9909470	L400N 84E	0.34	0.01	0.07	0.05		0.01	2.79	52.61	0.01	0.01	0.01	0.01	44.02	99.94
R9909471	L400N 100E	0.07	0.01	0.01	0.01		0.01	0.47	55.20	0.01	0.01	0.01	0.01	44.00	99.82
R9909472	L400N 120E	0.10	0.01	0.01	0.03		0.01	0.68	54.95	0.01	0.01	0.01	0.01	44.04	99.87
R9909473	L400N 138E	0.28	0.01	0.01	0.01		0.01	0.34	55.25	0.01	0.01	0.01	0.01	43.84	99.79
R9909474	L400N 20W	0.18	0.01	0.01	0.03		0.01	0.34	55.34	0.01	0.01	0.01	0.01	43.97	99.93
R9909475	L400N 60W	0.02	0.01	0.01	0.03		0.01	0.70	55.04	0.01	0.01	0.01	0.01	43.95	99.81
R9909476	L400N 80W	0.44	0.01	0.07	0.05		0.01	1.51	53.95	0.01	0.01	0.01	0.01	43.72	99.80
R9909477	L400N 107W	0.10	0.01	0.07	0.07		0.01	0.56	55.09	0.01	0.01	0.01	0.01	43.95	99.90
R9909478	L400N 120W	0.02	0.01	0.01	0.01		0.01	0.44	55.31	0.01	0.01	0.01	0.01	43.95	99.80
R9909479	L400N 140W	0.15	0.01	0.01	0.03		0.01	1.59	54.08	0.01	0.01	0.01	0.01	44.02	99.94
R9909480	L400N 160W	2.00	0.02	0.15	0.89		0.01	5.63	48.18	0.01	0.01	0.01	0.01	42.43	99.35
R9909481	L450N BL	0.15	0.01	0.01	0.02		0.01	0.67	54.97	0.01	0.01	0.01	0.01	43.90	99.78
R9909482	L450N 57E	0.10	0.01	0.01	0.01		0.01	0.25	55.52	0.01	0.01	0.01	0.01	43.90	99.85
R9909483	L450N 107E	0.44	0.01	0.07	0.03		0.01	1.77	53.65	0.01	0.01	0.01	0.01	43.79	99.81
R9909484	L450N 120E	0.02	0.01	0.03	0.03		0.01	0.68	54.99	0.01	0.01	0.01	0.01	43.88	99.69
R9909485	L450N 138E	0.21	0.01	0.02	0.07		0.01	0.56	55.13	0.01	0.01	0.01	0.01	43.88	99.93
R9909486	L450N 40W	0.21	0.01	0.02	0.07		0.01	0.52	55.02	0.01	0.01	0.01	0.01	43.90	99.80
R9909487	L450N 60W	0.17	0.01	0.01	0.01		0.01	0.73	54.83	0.01	0.01	0.01	0.01	44.04	99.85
R9909488	L450N 100W	0.02	0.01	0.01	0.23		0.01	5.46	49.50	0.01	0.01	0.01	0.01	44.61	99.89
R9909489	L450N 120W	0.07	0.01	0.01	0.02		0.01	0.49	55.24	0.01	0.01	0.01	0.01	44.02	99.91

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba(4)	LOI	TOTAL
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
R9909490	L450N 140W	0.02	0.01	0.01	0.01		0.01	0.44	55.36	0.01	0.01	0.01	0.01	44.00	99.90
R9909491	L450N 160W	0.31	0.01	0.07	0.72		0.01	5.03	49.83	0.01	0.01	0.01	0.01	43.36	99.38
R9909492	L500N BL	0.01	0.01	0.01	0.01		0.01	0.44	55.22	0.01	0.01	0.01	0.01	44.00	99.75
R9909493	L500N 40E	0.20	0.01	0.12	0.07		0.01	0.75	54.81	0.01	0.01	0.01	0.01	43.83	99.84
R9909494	L500N 65E	0.02	0.01	0.02	0.02		0.01	0.40	55.27	0.01	0.01	0.01	0.01	43.93	99.72
R9909495	L500N 106E	0.02	0.01	0.01	0.02		0.01	1.09	54.49	0.01	0.01	0.01	0.01	44.02	99.71
R9909496	L500N 123E	0.79	0.02	0.23	0.10		0.01	6.73	47.95	0.01	0.07	0.01	0.01	43.84	99.77
R9909497	L500N 135E	0.05	0.01	0.01	0.07		0.01	0.80	54.86	0.01	0.01	0.01	0.01	43.90	99.75
R9909498	L500N 20W	0.02	0.01	0.01	0.05		0.01	0.40	55.29	0.01	0.01	0.01	0.01	43.93	99.76
R9909499	L500N 60W	0.17	0.01	0.07	0.14		0.02	1.57	53.99	0.01	0.01	0.01	0.01	43.75	99.76
R9909500	L500N 80W	0.10	0.01	0.01	0.01		0.01	0.46	55.24	0.01	0.01	0.01	0.01	43.97	99.85
R9909501	L500N 100W	0.33	0.01	0.02	0.05		0.01	5.01	50.09	0.01	0.01	0.01	0.01	44.34	99.90
R9909502	L500N 120W	0.03	0.01	0.01	0.03		0.01	1.69	53.77	0.01	0.01	0.01	0.01	44.15	99.74
R9909503	L500N 140W	0.15	0.01	0.01	0.02		0.01	0.93	54.75	0.01	0.01	0.01	0.01	44.00	99.92
R9909504	L500N 160W	0.10	0.01	0.01	0.02		0.01	3.88	51.43	0.01	0.01	0.01	0.01	44.45	99.95
R9909505	L550N 40E	0.10	0.01	0.01	0.03		0.01	0.46	55.15	0.01	0.01	0.01	0.01	44.00	99.81
R9909506	L550N 73E	0.34	0.01	0.07	0.07		0.01	2.20	53.31	0.01	0.02	0.01	0.01	43.88	99.94
R9909507	L550N 107E	0.17	0.01	0.02	0.01		0.01	1.11	54.63	0.01	0.01	0.01	0.01	43.90	99.90
R9909508	L550N 120E	0.07	0.01	0.01	0.01		0.01	0.46	55.15	0.01	0.01	0.01	0.01	44.06	99.82
R9909509	L550N 137E	0.02	0.01	0.02	0.01		0.01	0.20	55.54	0.01	0.01	0.01	0.01	44.06	99.91
R9909510	L550N 20W	1.96	0.01	0.12	0.10		0.01	2.99	52.36	0.01	0.07	0.01	0.01	42.20	99.85
R9909511	L550N 40W	0.02	0.01	0.01	0.03		0.01	0.62	55.11	0.01	0.01	0.01	0.01	44.04	99.89
R9909512	L550N 80W	0.18	0.01	0.02	0.05		0.01	2.83	52.50	0.01	0.01	0.01	0.01	44.13	99.77
R9909513	L550N 100W	0.28	0.01	0.05	0.40		0.01	3.29	51.93	0.01	0.01	0.01	0.01	43.68	99.69
R9909514	L550N 120W	0.10	0.01	0.01	0.01		0.01	0.63	55.13	0.01	0.01	0.01	0.01	43.95	99.89
R9909515	L550N 160W	0.10	0.01	0.01	0.03		0.01	0.46	55.18	0.01	0.01	0.01	0.01	44.02	99.86
R9909516	L600N BL	0.02	0.01	0.02	0.01		0.01	0.44	55.31	0.01	0.01	0.01	0.01	44.02	99.88
R9909517	L600N 40E	0.02	0.01	0.05	0.07		0.01	0.36	55.40	0.01	0.01	0.01	0.01	43.91	99.87
R9909518	L600N 100E	0.02	0.01	0.02	0.02		0.01	0.50	55.16	0.01	0.01	0.01	0.01	43.93	99.71
R9909519	L600N 120E	0.56	0.01	0.21	0.10		0.01	4.98	49.86	0.01	0.02	0.01	0.01	43.91	99.69
R9909520	L600N 131E	0.02	0.01	0.05	0.05		0.01	1.01	54.59	0.01	0.01	0.01	0.01	44.06	99.84
R9909521	L600N 20W	2.71	0.03	0.46	0.30		0.01	9.25	45.68	0.01	0.01	0.03	0.01	41.15	99.65
R9909522	L600N 60W	0.05	0.01	0.05	0.05		0.01	0.75	55.00	0.01	0.01	0.01	0.01	43.86	99.82
R9909523	L600N 80W	0.28	0.01	0.14	0.27		0.01	1.12	54.20	0.01	0.01	0.01	0.01	43.65	99.72
R9909524	L600N 100W	0.28	0.01	0.07	0.93		0.01	2.07	53.41	0.01	0.01	0.02	0.01	42.36	99.19
R9909525	L600N 120W	0.03	0.01	0.05	0.34		0.01	4.82	50.38	0.01	0.01	0.01	0.01	44.08	99.76

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba(4)	LOI	TOTAL
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
R9909526	L600N 140W	0.02	0.01	0.01	0.21		0.01	0.89	54.84	0.01	0.01	0.01	0.01	43.79	99.82
R9909527	L600N 160W	0.10	0.01	0.10	0.10		0.01	5.94	49.16	0.01	0.01	0.02	0.01	44.43	99.90
R9909528	L650N 20E	0.02	0.01	0.01	0.03		0.01	0.44	55.29	0.01	0.01	0.01	0.01	43.97	99.82
R9909529	L650N 40E	0.02	0.01	0.01	0.05		0.01	0.37	55.43	0.01	0.01	0.01	0.01	43.77	99.71
R9909530	L650N 83E	0.40	0.01	0.10	0.07		0.01	1.49	53.99	0.01	0.05	0.01	0.01	43.52	99.67
R9909531	L650N 100E	0.21	0.01	0.10	0.15		0.01	2.47	52.93	0.01	0.01	0.02	0.01	43.86	99.79
R9909532	L650N 125E	0.02	0.01	0.01	0.01		0.01	0.44	55.40	0.01	0.01	0.01	0.01	43.81	99.75
R9909533	L650N 20W	0.10	0.01	0.01	0.01		0.01	0.28	55.29	0.01	0.01	0.01	0.01	43.86	99.61
R9909534	L650N 40W	0.10	0.01	0.07	0.23		0.01	1.07	54.40	0.01	0.01	0.01	0.01	43.68	99.61
R9909535	L650N 80W	0.46	0.01	0.18	0.15		0.01	1.74	53.81	0.01	0.02	0.01	0.01	43.36	99.77
R9909536	L650N 100W	0.88	0.01	0.21	0.41		0.01	12.75	40.97	0.01	0.01	0.02	0.01	44.47	99.76
R9909537	L650N 120W	0.03	0.01	0.01	0.03		0.01	0.57	55.22	0.01	0.01	0.01	0.01	43.91	99.83
R9909538	L700N BL	0.37	0.01	0.10	0.37		0.01	1.80	53.75	0.01	0.02	0.01	0.01	43.41	99.87
R9909539	L700N 40E	0.20	0.01	0.01	0.07		0.01	0.34	55.29	0.01	0.01	0.01	0.01	43.90	99.87
R9909540	L700N 120E	0.03	0.01	0.03	0.02		0.01	0.51	55.29	0.01	0.01	0.01	0.01	43.91	99.85
R9909541	L700N 140E	0.43	0.01	0.17	0.09		0.01	1.96	53.29	0.01	0.07	0.01	0.01	43.65	99.71
R9909542	L700N 20W	0.10	0.01	0.02	0.05		0.01	0.40	55.40	0.01	0.01	0.01	0.01	43.91	99.94
R9909543	L700N 60W	0.02	0.01	0.01	0.01		0.01	0.46	55.31	0.01	0.01	0.01	0.01	43.89	99.76
R9909544	L700N 80W	0.23	0.01	0.01	0.98		0.01	3.71	51.40	0.01	0.01	0.01	0.01	43.09	99.48
R9909545	L700N 100W	0.07	0.01	0.01	0.02		0.01	0.62	55.11	0.01	0.01	0.01	0.01	44.04	99.93
R9909546	L700N 120W	0.75	0.05	0.21	0.74		0.01	0.58	54.75	0.01	0.02	0.01	0.01	42.38	99.52
R9909547	L750N 40E	0.02	0.01	0.03	0.02		0.01	0.28	55.45	0.01	0.01	0.01	0.01	43.97	99.83
R9909548	L750N 120E	0.15	0.01	0.05	0.02		0.01	0.62	54.99	0.01	0.01	0.01	0.01	44.00	99.89
R9909549	L750N 140E	0.07	0.01	0.12	0.05		0.01	0.62	55.04	0.01	0.01	0.01	0.01	43.93	99.89
R9909550	L750N 25W	0.10	0.01	0.03	0.05		0.01	0.56	54.95	0.01	0.01	0.01	0.01	43.97	99.72
R9909551	L750N 40W	2.48	0.01	0.17	0.15		0.01	1.14	53.45	0.01	0.01	0.01	0.01	42.27	99.72
R9909552	L750N 55W	0.41	0.01	0.10	0.17		0.01	1.90	53.29	0.01	0.01	0.01	0.01	43.77	99.70
R9909553	L750N 80W	0.10	0.01	0.01	0.31		0.02	4.21	50.79	0.01	0.02	0.01	0.01	44.18	99.68
R9909554	L750N 100W	0.07	0.01	0.01	0.07		0.01	0.85	54.75	0.01	0.01	0.01	0.01	44.00	99.81
R9909555	L750N 120W	0.02	0.05	0.01	0.15		0.01	1.01	54.61	0.01	0.01	0.01	0.01	44.00	99.90
R9909556	L800N BL	0.25	0.01	0.02	0.03		0.01	0.15	55.27	0.01	0.01	0.01	0.01	43.83	99.61
R9909557	L800N 40E	0.07	0.01	0.07	0.03		0.01	0.44	55.25	0.01	0.01	0.01	0.01	43.90	99.82
R9909558	L800N 60E	0.02	0.01	0.01	0.03		0.01	0.44	55.36	0.01	0.01	0.01	0.01	43.97	99.89
R9909559	L800N 120E	0.07	0.01	0.01	0.03		0.01	0.82	54.91	0.01	0.01	0.01	0.01	43.95	99.85
R9909560	L800N 140E	0.05	0.01	0.01	0.01		0.01	0.37	55.29	0.01	0.01	0.01	0.01	43.90	99.69
R9909561	L800N 160E	1.12	0.02	0.33	0.11		0.01	9.43	44.49	0.01	0.02	0.02	0.01	44.18	99.75

LAB NO	FIELD NUMBER	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba(4)	LOI	TOTAL
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
R9909562	L800N 20W	1.97	0.02	0.46	0.31		0.01	2.25	52.52	0.01	0.01	0.05	0.01	42.02	99.64
R9909563	L800N 40W	0.09	0.01	0.02	0.07		0.01	5.61	49.38	0.01	0.01	0.01	0.01	44.63	99.86
R9909564	L853N 80E	0.02	0.01	0.03	0.05		0.01	0.46	55.09	0.01	0.01	0.01	0.01	43.90	99.61
R9909565	L853N 140E	0.44	0.01	0.15	0.10		0.01	2.96	52.27	0.01	0.01	0.01	0.01	43.90	99.88
R9909566	L853N 155E	0.03	0.01	0.01	0.05		0.01	0.58	55.08	0.01	0.01	0.01	0.01	44.02	99.83
R9909567	L853N 20W	0.34	0.01	0.01	0.72		0.01	5.76	49.09	0.01	0.01	0.01	0.01	43.70	99.68
R9909568	L853N 40W	0.10	0.01	0.01	0.10		0.01	3.68	51.58	0.01	0.01	0.01	0.01	44.41	99.94
R9909569	L853N 65W	0.56	0.01	0.15	0.31		0.01	3.40	51.88	0.01	0.01	0.01	0.01	43.36	99.72

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised

If requested analyses are not shown ,results are to follow

ANALYTICAL METHODS

FeO determined by acid digestion /volumetric.LOI determined gravimetrically

Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3

MCINTYRE ASSOCIATES-X99

Job V 990598R

1994 & 1999 Brightness Samples

Report date: 18 OCT 1999

LAB NO	FIELD NUMBER	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	Ba(4) %	LOI %	Total %
R9908983	L350N/40W	0.05	0.01	0.01	0.01		0.01	0.30	55.66	0.01	0.01	0.01	0.01	43.88	99.97
R9908984	L350N/24E	0.02	0.01	0.01	0.01		0.01	0.44	55.45	0.01	0.01	0.01	0.01	43.91	99.90
R9908985	L400N/40W	0.07	0.01	0.01	0.01		0.01	1.12	54.70	0.01	0.01	0.01	0.01	43.95	99.92
R9908986	L400N/20E	0.02	0.01	0.01	0.01		0.01	0.46	55.49	0.01	0.01	0.01	0.01	43.86	99.91
R9908987	L450N/40E	0.05	0.01	0.01	0.01		0.01	0.51	55.41	0.01	0.01	0.01	0.01	43.88	99.93
R9908988	L450N/86E	0.25	0.01	0.01	0.01		0.01	1.23	54.43	0.01	0.01	0.01	0.01	43.88	99.87
R9908989	L450N/20W	0.25	0.01	0.01	0.10		0.02	0.23	55.68	0.01	0.01	0.01	0.01	43.52	99.86
R9908990	L450N/80W	0.07	0.01	0.01	0.01		0.01	0.49	55.36	0.01	0.01	0.01	0.01	43.90	99.90
R9908991	L500N/40W	0.10	0.01	0.01	0.02		0.01	0.56	55.40	0.01	0.01	0.01	0.01	43.79	99.94
R9908992	L500N/20E	0.20	0.01	0.07	0.01		0.01	0.79	55.02	0.01	0.01	0.01	0.01	43.74	99.89
R9908993	L500N/77E	0.02	0.01	0.01	0.01		0.01	0.47	55.36	0.01	0.01	0.01	0.01	43.84	99.77
R9908994	BL550N	2.35	0.01	0.12	0.10		0.01	3.15	52.34	0.01	0.07	0.01	0.01	41.70	99.88
R9908995	L550N/60E	0.02	0.01	0.01	0.01		0.01	0.38	55.61	0.01	0.01	0.01	0.01	43.84	99.93
R9908996	L550N/60W	0.02	0.01	0.01	0.02		0.01	1.78	53.84	0.01	0.01	0.01	0.01	44.02	99.75
R9908997	L600N/40W	0.03	0.01	0.01	0.02		0.01	0.62	55.29	0.01	0.01	0.01	0.01	43.84	99.87
R9908998	L600N/20E	0.02	0.01	0.01	0.01		0.01	0.38	55.56	0.01	0.01	0.01	0.01	43.90	99.94
R9908999	L600N/60E	0.37	0.01	0.05	0.05		0.01	0.61	55.04	0.01	0.01	0.01	0.01	43.72	99.90
R9909000	BL650N	0.07	0.01	0.01	0.01		0.01	0.31	55.56	0.01	0.01	0.01	0.01	43.77	99.79
R9909001	L650N/60W	0.05	0.01	0.07	0.07		0.01	1.00	54.68	0.01	0.01	0.01	0.01	43.77	99.70
R9909002	L650N/54E	0.02	0.01	0.01	0.02		0.01	0.50	55.25	0.01	0.01	0.01	0.01	43.88	99.74
R9909003	L700N/40W	0.07	0.01	0.01	0.05		0.01	2.18	53.50	0.01	0.01	0.01	0.01	44.04	99.91
R9909004	L700N/20E	0.02	0.01	0.01	0.01		0.01	0.25	55.75	0.01	0.01	0.01	0.01	43.79	99.89
R9909005	L700N/60E	0.09	0.01	0.01	0.03		0.01	0.44	55.47	0.01	0.01	0.01	0.01	43.81	99.91
R9909006	L700N/100E	0.02	0.01	0.07	0.02		0.01	0.50	55.34	0.01	0.01	0.01	0.01	43.75	99.76
R9909007	BL750N	0.02	0.01	0.01	0.02		0.01	0.36	55.63	0.01	0.01	0.01	0.01	43.81	99.91
R9909008	L750N/60E	0.05	0.01	0.01	0.02		0.01	0.43	55.40	0.01	0.01	0.01	0.01	43.81	99.78
R9909009	L750N/100E	0.02	0.01	0.01	0.02		0.01	0.34	55.65	0.01	0.01	0.01	0.01	43.86	99.96
R9909010	L800N/20E	0.02	0.01	0.02	0.01		0.01	0.36	55.49	0.01	0.01	0.01	0.01	43.84	99.80
R9909011	L800N/75E	0.51	0.01	0.18	0.10		0.01	1.47	54.11	0.01	0.01	0.01	0.01	43.27	99.70
R9909012	BL853N	0.44	0.01	0.07	0.17		0.01	0.44	55.11	0.01	0.01	0.01	0.01	43.63	99.92
R9909013	L853N/60E	0.02	0.01	0.01	0.03		0.01	0.54	55.36	0.01	0.01	0.01	0.01	43.91	99.93
R9909014	L853N/100E	0.10	0.01	0.02	0.05		0.01	0.44	55.43	0.01	0.01	0.01	0.01	43.84	99.94

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised

If requested analyses are not shown, results are to follow

(I) MAJOR ELEMENT ANALYSIS OF ROCKS AND MINERALS

(a) SAMPLE PREPARATION PROCEDURES:

Three to four grams of 100-200 mesh rock samples are roasted at 1060 degree centigrade for two hours to determine the "Loss On Ignition". Then, two grams of the roasted samples are fused at 1100 degree in a platinum-gold crucible with six grams of Johnson-Matthey Spectroflux no. 105 (47% Lithium tetraborate, 36.7% Lithium Carbonate and 16.3% Lanthanum oxide). The molten mass is cast on to a preheated graphite mould assembly to cool producing a stable,transparent,homogeneous and crack-free disk which is then polished to a 400 grit surface.

(b) WHOLE ROCK ANALYSIS:

The fusion disks are analysed by using a Siemens SRS-200 sequential X-Ray Spectrometer with a chromium-tube for 11 elements which are CaO, K2O, P2O5, SiO2, Al2O3, MgO, Na2O, Fe2O3,TiO2, MnO and Ba. All elements analysed are corrected with absorption effect, enhancement effect, line overlap, background correction and Loss On Ignition. The calibration curves of whole rock analysis are setup by using 34 synthetic standards and commercial standards with certified analytical data.

(c) QUALITY CONTROL AND STATISTICS:

Every twenty fusion disks prepared includes one commercial standard or house standard and one repeated sample. Every eight samples analysed includes two standards. (e.g. CANMET standards SY-2, SY-3 and MRG-1) The lower limit of detection (or two times standard deviation) for most whole rock analysis is 0.01% except for SiO2 which is 0.1%.

(d) XRF - WHOLE ROCK ANALYSIS:

Siemens SRS-200 Sequential X-Ray Spectrometer
X-Ray Tube: Chromium 50 kV / 20-50 mA

Element	Line	Collimator	Crystal	Detector	Time	D.Limit%	Ranges%
Si	K-alpha	Coarse	OVL	Flow	40 Sec.	0.10	0.10 - 100
Al	K-alpha	Coarse	OVL	Flow	40 Sec.	0.01	0.01 - 65
Mg	K-alpha	Coarse	OVL	Flow	80 Sec.	0.01	0.01 - 100
Na	K-alpha	Coarse	OVL	Flow	80 Sec.	0.01	0.01 - 25
Fe	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 100
Ti	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 25
Mn	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 50
Ca	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 100
K	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 25
Ba	L-alpha	Fine	LIF-100	Flow	40 Sec.	0.01	0.01 - 50
P	K-alpha	Coarse	PET	Flow	40 Sec.	0.01	0.01 - 25

APPENDIX 2

DIAMOND DRILL CORE LOGS

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-1

Date Started: October 5, 999 **Date Finished:** October 6,1999
Date Logged: October 7, 1999 **Logged By:** R.F. McIntyre

Grid Location: On road, at L300N/50E **Size:** BQ
UTM Coordinate: 5837508.563 N, 496566.409 E **Elevation:** 14.181 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 15.85 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0	0.60	0.60	Casing	Cased in rubble, some recovery at end.	205951	0.45	1.00	**98.34**
0.60	3.81		Limestone	Coarse crystalline, white limestone occurring. Light grey mottling.	205952	1.00	2.00	**98.91**
3.81	4.14	0.33	Limestone	As above but visible inclusions. Probably phlogopite.	205953	2.00	3.00	**98.57**
4.14	4.62	0.48	Limestone	Coarse, white, crystalline limestone. Lower 7 cm contains silicates.	205954	3.00	4.62	**97.89**
4.62	5.70	1.08	Amphibolite	Dark grey-green, heavily altered, brecciation visible clay altered margins 15-20 cm wide with pyrrhotite and pyrite on contacts, on some fractures and finely disseminated in the rock. Includes 10 cm 1st @ 5.4 m. Note: not calcareous.	205955	5.70	6.70	**95.05**
5.70	13.61	7.91	Limestone	Impure, white with grey, siliceous, somewhat vague	205956	6.70	7.70	**94.64**
				banding ~10-40° to core axis. Visible mica, pyrrhotite.	205957	7.70	8.70	**96.94**
				Blocky 11.86-12.60 m - possible pyrolusite on	205958	8.70	9.70	**95.41**
				fractures.	205959	9.70	10.70	**95.41**
13.61	14.70	1.09	Limestone	Coarse, crystalline, white to pale grey, Traces of impurities.	205960	12.70	13.60	**93.14**
14.70	15.18	0.48	Limestone	Same as 5.7-13.61 above.	205961	13.60	14.70	**98.50**
15.18	15.85	0.67	Limestone	Same as 13.61-14.70 above. Traces of impurities.	205962	14.70	15.85	**96.39**
					205963	10.70	11.70	**94.52**
				E.O.H.	205964	11.70	12.70	**92.70**

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-2

Date Started: October 6, 1999 **Date Finished:** October 7, 1999
Date Logged: October 14, 1999 **Logged By:** R.F. McIntyre

Grid Location: Base line, 250 N **Size:** BQ
UTM Coordinate: 5837439.576 N, 496586.003 E **Elevation:** 26.019 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 22.25 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	1.20	1.20	Limestone	Cased, some limestone recovered.	205965	1.20	2.31	95.98
1.20	2.31	1.11	Limestone	Mostly coarse crystalline, pale grey. Some grey banding, white massive limestone, traces of pyrrhotite <0.1%.	205966	2.31	3.38	83.84
2.31	2.66	0.35	Limestone	Limestone grey, medium-fine grained, speckled appearance, pyrrhotite ~0.5%, other impurities visible, probably dolomitic.	205967	4.80	5.80	98.73
2.66	3.22	0.56	Limestone	Coarse, pale grey, as 1.2-2.31 above.	205968	5.80	6.80	98.62
3.22	3.38	0.16	Limestone	White, coarse limestone, pure.	205969	6.80	7.80	98.53
3.38	3.55	0.17	Greenstone	Irregular bleb, dark green, hard, very fine grained with	205970	7.80	8.80	98.62
				brown mineral on contacts with limestone.	205971	8.80	9.80	98.73
				Larger unit occurs below.	205972	9.80	10.80	98.91
3.55	4.05	0.50	Limestone	White, coarse limestone, very pure appearance.	205973	10.80	11.80	98.82
4.05	4.80	0.75	Greenstone	Same as 3.38-3.55 above. Dark green to black, very fine grained, hard, non-calcareous. Heavily altered, original lithology uncertain, may have been clastic interbed or, more likely, a mafic dyke. Contact zones are further altered to medium buff-green wi	205974	11.80	12.72	98.09
4.80	12.72	7.92	Limestone	White to translucent, coarsely crystalline. Probably very	205975	12.72	13.70	93.78
				pure. Occasional irregular partings with black (graphitic?)	205976	13.70	14.70	97.35
				coating, at various angles to the core. Lowest 20 cm	205977	14.70	15.70	97.76
				more massive, white, traces of pyrrhotite and an	205978	15.70	16.70	97.73
				apple-green mineral.	205979	16.70	17.50	95.41
					205980	17.50	18.50	91.48
12.72	13.30	0.58	Limestone	Quite impure, grey mottled appearance, lower 15-20 cm has 1-2% pyrrhotite and pyrite, visible mica, black partings on fractures.	205981	18.50	19.50	95.77
13.30	17.52	4.22	Limestone	Mainly white, sometimes translucent. Some sections light	205982	19.50	20.50	96.62
				and medium grey, mottled. Mostly coarsely crystalline.	205983	20.50	21.50	92.98
17.52	22.25	4.73	Limestone	Similar textures to 13.3-17.52 above but the majority is grey, blotchy. Quartz veinlet 2 cm @ 17.7 m, gaugy 2 cm zone @ 18.1 m. Some mica present, very little sulphides. E.O.H.	205984	21.50	22.25	95.19

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-3

Date Started: October 7, 1999
Date Logged: October 14, 1999
Date Finished: October 9, 1999
Logged By: R.F. McIntyre

Grid Location: Base Line, 300 N
UTM Coordinate: 5837468.529 N, 496542.213 E
Type of Drill: Winke drill
Size: BQ
Elevation: 27.616 m

Azimuth: 0°
Final Depth: 22.86 m
Dip: -90°

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	1.20	1.20	Casing	Cased.				
1.20	3.44	2.24	Limestone	Mostly pale grey to white, coarsely crystalline, few visible impurities.	205985	1.20	3.44	97.10
3.44	5.90	2.46	Greenstone	Dark green to black, very fine grained and heavily altered, hard, non-calcareous. Margins more clay-altered.				
5.90	6.16	0.26	Diorite	Light grey, fine grained, a bit foliated. No obvious chill margins. Appear to be later, as it is less altered.				
6.16	6.44	0.28	Greenstone	Same as 3.44-5.90 above.				
6.44	9.35	2.91	Limestone	White, coarsely crystalline, pure, sometimes translucent. Gougy zone ~8 cm at 8.6 m.	5986	6.44	9.35	97.68
9.35	10.65	1.30	Limestone	Mostly medium to fine grained, grades into greyer colour. Light grey 11.9-10.6 m.	5987	9.35	12.25	95.82
10.65	18.52	7.87	Limestone	Variable texture, some white and coarse, some translucent, some mottled medium grey. Includes impure zones 12.22-12.66 m, 4 cm @ 14.0 m, 4 cm @ 15.0 m. Quartz veinlets, ~2 cm, @12.35, 12.55 m.	5988	12.25	15.40	93.82
18.52	20.70	2.18	Limestone	Pale grey, vaguely banded in sections, varies coarse to very fine grained.	5989	15.40	18.52	96.56
20.70	22.86	2.16	Limestone	Mainly white coarse crystalline. Somewhat rubbly-broken on fracture set 30-40° to core axis. These fractures often show a dark (graphitic?) parting.	5990	18.52	20.70	92.41
				E.O.H.	5991	20.70	22.86	98.94

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-4

Date Started: October 9, 1999
Date Finished: October 10, 1999
Date Logged: October 16, 1999
Logged By: R.F. McIntyre

Grid Location: Base Line, 200 N
Size: BQ
UTM Coordinate: 5837414.508 N, 496628.439 E
Elevation: 25.092 m
Type of Drill: Winke drill

Azimuth: 0°
Dip: -90°
Final Depth: 22.86 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	0.60	0.60	Casing	Cased.				
0.60	10.10	9.50	Limestone	Coarsely crystalline, white to light grey colour, few visible impurities but grey mottled in much of 0.6-7.0 m, traces of sulphides present.	205992	0.60	3.60	96.55
10.10	15.36	5.26	Limestone	Mostly fine grained to massive, bands and flakes of impurities are visible. Often marbly texture. Includes coarsely crystalline zone 12.2-14 m and significant impure sections 10.53-10.60 m, 12.00-12.20 m, 14.80-15.00 m.	205993	3.60	6.60	94.64
15.36	16.37	1.01	Greenstone	Dark green-black, hard. Contacts altered (brecciated?) and pyrrhotite enriched.	205994	6.60	10.10	97.96
16.37	16.76	0.39	Limestone	White with numerous black specks, quite impure.	205995	10.10	12.70	94.55
16.76	17.07	0.31	Greenstone	Same as contact zones of 15.36-16.37 above.	205996	12.70	15.36	96.71
17.07	22.86	5.79	Limestone	Variable textures, mainly like 10.1-15.36 above, with more frequent bands of impurities. Flecks of mica often present, traces of pyrrhotite in fine bands, mostly near center of section.	205997	17.07	20.07	97.03
				E.O.H.	205998	20.07	22.86	95.69

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-5

Date Started: October 10, 1999 **Date Finished:** October 11, 1999
Date Logged: October 17, 1999 **Logged By:** R.F. McIntyre

Grid Location: L200N, 0+50 W **Size:** BQ
UTM Coordinate: 5837368.619 N, 496605.902 E **Elevation:** 29.145 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 30.48 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	0.60	0.60	-	Cased.				
0.60	3.97	3.37	Limestone	White to pale grey, coarse crystalline, few visible impurities.	205999	0.60	3.80	97.23
3.97	7.62	3.65	Limestone	White to light grey, mostly coarse but some finer marbly sections, a few grey bands with visible impurities, esp. 4.5-4.6 m and 7.24-7.72 m.	206000	3.80	7.00	96.37
7.62	16.48	8.86	Limestone	Mostly white coarsely crystalline, very little visible impurities. Occasionally pale grey to translucent with a few small bands or blobs of impurities.	206001	7.00	10.20	98.46
16.48	16.56	0.08	Dyke?	Blobs of brown mineral (siderite? Garnet?) Weak acid response may be due to include calcite.	206002	10.20	13.40	97.84
16.56	20.15	3.59	Limestone	Fine grained, marbly white to light grey. Occasional bands of medium grey limestone with visible silicates. Rare traces of pyrrhotite.	206003	13.40	16.56	97.89
20.15	22.43	2.28	Limestone	White, pure, coarsely crystalline. No visible impurities.	206004	16.56	20.15	91.07
22.43	25.54	3.11	Limestone	Fine-grained marbly white with grey bands of impurities, especially phlogopite. Traces of pyrrhotite.	206005	20.15	23.70	96.46
25.54	30.48	4.94	Limestone	Mostly translucent to white, coarsely crystalline, pure. Includes minor bands same as overlying unit, at 27.47-27.60 m, 28.45-28.71 m.	206006	23.70	27.10	95.05
				E.O.H.	206007	27.10	30.48	98.12

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-6

Date Started: October 12, 1999 **Date Finished:** October 14, 1999
Date Logged: **Logged By:** R.F. McIntyre

Grid Location: **Size:** BQ
UTM Coordinate: 5837325.074 N, 496579.973 E **Elevation:** 33.171 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 31.7 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	0.60	0.60	Casing	Cased.				
0.60	5.50	4.90	Limestone	White to pale grey, mottled appearance. Coarsely	206008	0.60	3.60	93.75
5.50	6.96	1.46	Limestone	White, fine grained, marbly. Traces of impurities in bands.	206009	3.60	6.96	95.66
6.96	7.33	0.37	Greenstone	Black-green traces of pyrrhotite. Badly broken in drilling.				
7.33	8.40	1.07	Limestone	White, coarsely crystalline. Trace of rust on fracture.				
8.40	9.06	0.66	Diorite?	Greenish grey, altered rock. Siliceous, with talc on fractures. Badly broken in drilling, major core loss.				
9.06	9.14	0.08	Limestone	White, coarse, grey mottling.				
9.14	9.23	0.09	Diorite?	Similar to previous diorite, talc and quartz. Core loss.				
9.23	12.00	2.77	Limestone	White to pale grey, sometimes mottled. Some quite translucent crystals 11.3-11.5 m.	206010	9.23	12.00	97.89
12.00	14.10	2.10	Limestone	White, fine and marbly, somewhat sheared. Lower 2/3 has extensive graphite on partings. Also, fine, soft turquoise material on many fractures.	206011	12.00	15.10	98.41
14.10	18.28	4.18	Limestone	White, mainly marbly, some green partings on fractures as in unit overlying.	206012	15.10	18.28	98.25
18.28	18.99	0.71	Greenstone	Black-green, talcy fractures. Badly broken in drilling. Similar to 6.96-7.33 m above.				
18.99	25.80	6.81	Limestone	Coarse, white, some sections mottled with grey translucent crystals.	206013	18.99	22.00	98.50
25.80	26.04	0.24	Limestone	~50% of section is fine grained, medium grey impure bands.	206014	22.00	26.00	96.10
26.04	29.16	3.12	Limestone	White, coarse crystalline. Appears very pure.	206015	26.00	29.16	98.25
29.16	29.73	0.57	Diorite?	Three separate bands of talcy, highly altered rock (same as 8.4-9.06 above) lying at 45° to core axis.				
29.73	31.70	1.97	Limestone	White, coarse, quite pure. A few graphitic partings.	206016	29.73	31.70	98.85
				E.O.H.				

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-7

Date Started: October 14, 1999 **Date Finished:** October 16, 1999
Date Logged: **Logged By:** R.F. McIntyre

Grid Location: L200N, 150 mW **Size:** BQ
UTM Coordinate: 5837281.495 N, 496558.863 E **Elevation:** 36.719 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 28.95 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	1.80	1.80	Casing	Cased. Mostly a cavity (surface crack).				
1.80	22.77	20.97	Limestone	Mostly white to pale grey and coarsely crystalline. Includes small sections with visible impurities, usually in bands, at 2.80, 3.15, 4.49, 4.59-4.89, 9.14-9.29, 9.71, 10.67, 20.96-21.20. Also, darker grey limestone band 13.11-13.39. Lowest 10 cm of section is gougy, broken contact zone.	206017	1.80	4.80	95.94
					206018	4.80	7.80	98.37
					206019	7.80	10.80	96.34
					206020	10.80	13.80	98.28
22.77	23.52	0.75	Diorite	Central section is relatively unaltered medium-fine grained with 1-2 cm xenoliths. Top 15 cm and bottom 35 cm are increasingly hard, silicified, and altered beyond recognition. Some pyrrhotite present. Some chlorite on fractures.	206021	13.80	16.80	98.37
23.52	24.97	1.45	Limestone	Pale grey to white limestone. Coarsely crystalline. Traces of impurities at 23.95, 24.22 m.	206022	16.80	19.80	98.85
24.97	28.95	3.98	Greenstone	Black, very fine grained. Upper contact zone is altered to milky green and brownish-black. Contact is a white, fine, non-calcareous mud, next to 1.2 cm of brown mineral (siderite? garnet?). Lower 1.2 m is chloritized breccia-probably represents a fault z	206023	19.80	22.77	97.26
				E.O.H.	206024	23.52	24.97	96.09

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-8

Date Started: October 16, 1999 **Date Finished:** October 22, 1999
Date Logged: November 3, 1999 **Logged By:** R.F. McIntyre

Grid Location: L240N, 140mW **Size:** BQ
UTM Coordinate: 5837314.894 N, 496517.213 E **Elevation:** 34.231 m
Type of Drill: Winke drill

Azimuth: 0° **Dip:** -90°
Final Depth: 32.0 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	0.60	0.60	Casing	Cased.				
0.60	10.70	10.10	Limestone	White to pale grey, coarsely crystalline. Few visible impurities. Note: 0.95-1.95 m the surface of the core has been stained rusty (from a drill rod?). Does not extend to the interior. Core broken; more greyish at 2.0-2.3 m.	206025	1.20	4.40	**97.84**
10.70	13.20	2.50	Limestone	White with grey mottled zones. Often finer, more marbly than overlying unit. A few small bands with siliceous impurites.	206026	4.44	7.50	**98.12**
13.20	14.92	1.72	Silicified Dyke	Light-medium grey, very silicified intrusive. Badly broken in drilling, recovery poor. Top section gougy - probably fault zone. Lower portions have soft material on partings.	206027	7.50	10.70	**98.76**
14.92	20.52	5.60	Limestone	Same as 10.7-13.2 above. Often shows grey mottling. Some graphitic partings. Fractures present 5-30° to core axis.	206028	10.70	13.20	**97.16**
20.52	22.74	2.22	Limestone	Similar to above but coarser crystals, less marbly.				
22.74	22.77	0.03	Silicified Dyke	Like 13.2-14.92 above. Unbroken contact ~30° to core axis.				
22.77	23.23	0.46	Limestone	Mainly white, coarse. Impurities related to the intrusives.	206029	14.92	18.82	**96.84**
23.23	23.43	0.20	Silicified Dyke	Similar to dykes above. Very hard, silicified. Crystalline texture apparent. Attitude 20° to core axis. Unbroken 1 cm talc on footwall contact, similar bands appear in the limestone above and below this unit.	206030	18.82	22.74	**96.10**
23.43	24.11	0.68	Limestone	White to mottled grey. Coarsely crystalline. Minor silicates and traces of pyrrhotite at 23.94 m.				
24.11	24.26	0.15	Silicified Dyke	Similar to dikes above. Medium-grained. Contacts broken in drilling.	206031	22.77	24.11	**79.92***
24.26	27.78	3.52	Limestone	White to pale grey, coarse. Like 0.6-10.7 m above.				
27.78	28.28	0.50	Silicified Dyke	Like 23.23-23.43 above. Broken in drilling fractured 15-20° to core axis. Gaugy lower contact. Excludes 7 cm limestone.	206032	24.26	27.78	**96.21**
28.28	30.97	2.69	Limestone	Top half marbly, mottled. Lower section coarse pure. Bottom 12 cm quite impure with notable pyrite and pyrrhotite - contact zone with underlying rock.				
30.97	31.98	1.01	Greenstone	Hard, siliceous, green-black. Minor pyrite and pyrrhotite on some fractures.	206033	28.28	30.97	**96.37**
31.98	32.00	0.02	Limestone	Pale grey, coarse.				

E.O.H.

*Note: Sample 206031 - 0.2 m dyke was not included in the sample. WGM has weighted the CaCo3 (calc %) to include its length using a 0% CaCO3 grade for the dyke.

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-9

Date Started: October 22, 1999
Date Logged: November 3, 1999

Date Finished: October 23, 1999
Logged By: R.F. McIntyre

Grid Location: L250N, 110 mW
UTM Coordinate: 5837341.210 N, 496525.212 E
Type of Drill: Winke drill

Size: BQ
Elevation: 38.306 m

Azimuth: 0°
Final Depth: 32.0 m

Dip: -90°

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	CaCO$_3$ (calc%)
0.00	0.60	0.60	Casing	Cased.				
0.60	7.90	7.30	Limestone	White, coarse, virtually no impurities visible.	206034	0.06	3.70	98.85
7.90	10.70	2.80	Limestone	Coarse, pale grey to white. Occasional fine bands of silicate impurities.	206035	3.70	6.80	98.37
10.70	16.17	5.47	Limestone	Variable section includes rocks similar to the units above, plus some fine marble white zones. Bands of impurities found occasionally throughout are larger than in overlying rocks.	206036	6.80	9.90	97.00
16.17	19.85	3.68	Brecciated Limestone	Top half is a limestone breccia (fault influence likely). Rock is white, sometimes with chalky appearance, some chlorite on fractures. Lower half is brecciated with dark (graphite) parting on fracture surfaces.	206037	9.90	13.00	95.73
19.85	22.00	2.15	Limestone	White, fairly coarse, with sections mottled grey.	206038	13.00	16.17	97.43
22.00	23.02	1.02	Diorite Dyke?	Medium grey, medium fine grained altered. Somewhat greenish. Textures more like siliceous dykes of other holes but colour darker. Somewhat broken in drilling. Petrology uncertain - diorite?	206039	16.17	19.85	97.10
23.02	25.40	2.38	Limestone	White to pale grey, some brecciation with chlorite on fractures.	206040	19.85	22.00	96.10
25.40	30.00	4.60	Limestone	Coarse, white to very pale grey, minor impurities.	206041	23.02	26.50	98.18
30.00	30.43	0.43	Siliceous Dyke	Medium-light grey, fine grained altered. Extensive brecciation and gougy zones - minor fault zone.	206042	26.50	30.00	98.50
30.43	32.00	1.57	Limestone	White, coarse, same as 25.4-30.0 above.	206043	30.43	32.00	97.23
				E.O.H.				

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-10

Date Started: October 24, 1999
Date Logged: November 15, 1999

Date Finished: October 24, 1999
Logged By: R.F. McIntyre

Grid Location: L250N, 53 m W
UTM Coordinate: 5837394.581 N, 496556.620 E
Type of Drill: Winke drill

Size: BQ
Elevation: 28.735 m

Azimuth: 0°
Final Depth: 3.05 m

Dip: -90°

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	CaCO$_3$ (calc%)
0.00	3.05	3.05	Diorite	Collared in swamp, found only a dyke. Core was dumped by drillers-recovered randomized in a bag. Rock is medium grey, fine grained. Primary crystallization is readily apparent so this intrusive is likely much younger than those previously seen. Rock is				
				E.O.H.				
			Note:	Not sampled, no core recovery log.				
				Drill became stuke in broken ground. Could not recover string. Broke off core barrell.				

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-10A

Date Started: October 25, 1999
Date Logged: November 5, 1999

Date Finished: October 29, 1999
Logged By: R.F. McIntyre

Grid Location: L250N, 48 mW
UTM Coordinate: 5837398.668 N, 496561.324 E
Type of Drill: Winke drill

Size: BQ
Elevation: 28.998 m

Azimuth: 0°
Final Depth: 30.48 m

Dip: -90°

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	1.20	1.20	Casing	Cased.				
1.20	9.14	7.94	Limestone	Pale grey, nearly tranlucent in most sections, coarse. devoid at visible impurities except 6 cm of greenstone at 6.10-6.16 m, bands of phlogopite in white, marbly intervals at 6.3-6.34 m, 6.83-6.86 m.	206044	1.20	4.50	98.09
					206045	4.50	7.80	97.55
					206046	7.80	11.10	95.82
9.14	15.24	6.10	Limestone	White to medium grey, marbly and fine grained in many sections. Grey bands of impurities present throughout the section: largest at 10.25, 10.4, 10.6, 13.2 m. Also 3 cm of fairly soft green altered silicate rock (origin?) at 15.24 m	206047	11.10	14.40	95.89
					206048	14.40	17.70	98.12
15.24	23.83	8.59	Limestone	Pale grey to white, coarsely crystalline, looks very pure. No bands of silicates - only occasional chlorite partings on fractures.	206049	17.70	21.00	98.57
23.83	24.43	0.60	Greenstone	Typical. Hard, dark green-black, very fine grained, altered with talc on some partings, alteration zone on footwall. Contacts ~40° to core axis. Traces of pyrite, especially near footwall. Tended to break in drilling - few pieces over 5 cm long.	206050	21.00	23.83	98.62
24.43	30.48	6.05	Limestone	Coarse white to very pale grey, pure. Some as 15.24-23.83 m above.	206051	24.43	27.48	98.78
				E.O.H.	206052	27.48	30.48	98.69

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-11

Date Started: November 1, 1999
Date Logged: November 6, 1999

Date Finished: Nbovember 1, 1999
Logged By: R.F. McIntyre

Grid Location: L300N, 50 mW
UTM Coordinate: 5837424.083 N, 496509.143 E
Type of Drill: Winke drill

Size: BQ
Elevation: 30.505 m

Azimuth: 0°
Final Depth: 3.96 m

Dip: -90°

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	CaCO$_3$ (calc%)
0.00	1.20	1.20	Casing	Cased.				
1.20	1.32	0.12	Dyke?	Highly altered intrusive. Silicate rock with carbonate enrichment. May represent surface oxidation.				
1.32	1.60	0.28	Siliceous Dyke	Pale grey, fine-very fine grained, silicified acidic intrusive. Lowest 10 cm nearly massive, may be just a contact zone. Lower contact 45° to core axis.				
1.60	3.55	1.95	Gabbroic Porphyry	Block, fine grained with 1.2 mm plagioclase phenocrysts. Both contacts are altered-indicate melting into surrounding rocks. Relative age uncertain.				
3.55	3.96	0.41	Diorite	Medium light grey, fine grained, hard. Relatively fresh.				
				E.O.H.				
			Note:	No Samples taken.				

LAREDO PROJECT, ARISTAZABAL ISLAND, BC

Hole ID: DDH-99-11A

Date Started: November 2, 1999 — Date Finished: November 3, 1999
Date Logged: November 6, 1999 — Logged By: R.F. McIntyre

Grid Location: 305 m N, 45 m W — Size: BQ
UTM Coordinate: 5837429.216 N, 496501.339 E — Elevation: 34.053 m
Type of Drill: Winke drill

Azimuth: 0° — Dip: -90°
Final Depth: 26.21 m

From (m)	To (m)	Interval (m)	Rock type	Description	Sample No.	From (m)	To (m)	$CaCO_3$ (calc%)
0.00	0.60	0.60	Casing	Cased.				
0.60	0.94	0.34	Limestone	Impure zone white limestone with numerous grey bands of impurities.	206053	0.60	1.70	92.53
0.94	10.20	9.26	Limestone	White to pale grey, coarsely crystalline. Very little visible impurities. Includes white to translucent somewhat limestone breccia, 9.30-9.50 m.	206054	1.70	2.80	99.14
					206055	2.80	3.90	98.57
					206056	3.90	5.00	98.89
10.20	11.00	0.80	Diorite	Variable intrusive. Relatively fresh. Center is dark grey with some black xenoliths. Both margins change through short intervals of lighter coloured and/or finer grained intrusive. Top and bottom contacts irregular have 5-10 cm of pinkish aplite on the margins.	206057	5.00	6.10	98.50
					206058	6.10	7.20	99.23
					206059	7.20	8.20	98.98
					206060	8.20	9.20	99.07
					206061	9.20	10.20	91.96
11.00	21.60	10.60	Limestone	White to occasionally light grey, coarsely crystalline. Very uniform color and texture throughout this hole. Very few visible impurities.	206062	11.00	12.00	99.21
					206063	12.00	13.00	99.01
21.60	21.75	0.15	Dyke	Green and brown silicate rock, origin unknown.	206064	13.00	14.00	99.05
21.75	24.86	3.11	Limestone	White, coarse, pure, same as 11.0-21.6 m above.	206065	14.00	15.10	99.10
24.86	25.02	0.16	Diorite	Medium grey, medium fine grained, texture slightly indistinct.	206066	15.10	16.20	98.50
25.02	25.91	0.89	Limestone	White, coarse, pure, same as units above.	206067	16.20	17.30	98.82
25.91	25.98	0.07	Diorite	Same as 24-86-25.02 m above, but vaguer textures.	206068	17.30	18.40	98.82
25.98	26.13	0.15	Limestone	Same as units above.	206069	18.40	19.50	99.01
26.13	26.21	0.08	Diorite	Same as 24.86-25.02 m above. Drill could not proceed in unit - kept stalling and grabbing in a tight zone. Hole abandoned due to risk of sticking rods and losing the	206070	19.50	20.60	98.91
					206071	20.60	21.60	98.41
					206072	21.75	22.80	98.85
					206073	22.80	23.80	98.76
				E.O.H.	206074	23.80	24.86	97.93
					206075*	25.02	26.13	92.32*

*Note: Sample 206075 - 7 cm dyke was not included in the sample within interval 25.02m to 26.13 m. WGM has weighted the CaCo3 (calc %) to include its length using a 0% CaCO3 grade for the dyke..

APPENDIX 3

DRILL CORE SAMPLE ANALYTICAL RESULTS

MCINTYRE ASSOCIATES-X99

Job V 99-0724R

LAREDO DDH 99-1

Report date 25 OCT 1999

LAB NO	FIELD NUMBER	DRILL INTERVAL from (metres)	to	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	Ba(4) %	LOI %	TOTAL %
R9910825	#5951 99-1	0.00	1.00	0.25	0.01	0.07	0.07		0.01	0.56	55.09	0.01	0.01	0.01	0.01	43.77	99.87
R9910826	#5952 99-1	1.00	2.00	0.05	0.01	0.01	0.09		0.01	0.41	55.41	0.01	0.01	0.01	0.01	43.84	99.87
R9910827	#5953 99-1	2.00	3.00	0.14	0.01	0.01	0.14		0.01	0.46	55.22	0.01	0.01	0.01	0.01	43.74	99.77
R9910828	#5954 99-1	3.00	4.62	0.36	0.01	0.07	0.20		0.01	0.68	54.84	0.01	0.01	0.01	0.01	43.56	99.77
R9910829	#5955 99-1	5.70	6.70	0.18	0.01	0.07	0.28		0.01	2.18	53.25	0.01	0.01	0.01	0.01	43.70	99.72
R9910830	#5956 99-1	6.70	7.70	0.18	0.01	0.10	0.15		0.01	2.52	53.02	0.01	0.01	0.01	0.01	43.86	99.89
R9910831	#5957 99-1	7.70	8.70	0.12	0.01	0.07	0.09		0.01	1.35	54.31	0.01	0.01	0.01	0.01	43.88	99.88
R9910832	#5958 99-1	8.70	9.70	0.23	0.01	0.09	0.10		0.01	2.20	53.45	0.01	0.01	0.01	0.01	43.68	99.81
R9910833	#5959 99-1	9.70	10.70	0.23	0.01	0.09	0.10		0.01	2.21	53.45	0.01	0.01	0.01	0.01	43.70	99.84
R9910834	#5960 99-1	10.70	11.70	0.34	0.01	0.15	0.10		0.01	2.65	52.95	0.01	0.02	0.01	0.01	43.66	99.92
R9910835	#5961 99-1	11.70	12.70	0.94	0.01	0.17	0.09		0.01	2.91	51.93	0.01	0.03	0.01	0.01	43.66	99.78
R9910836	#5962 99-1	12.70	13.70	0.46	0.01	0.15	0.10		0.01	3.19	52.18	0.01	0.03	0.01	0.01	43.81	99.97
R9910837	#5963 99-1	13.70	14.70	0.03	0.01	0.03	0.03		0.01	0.68	55.18	0.01	0.01	0.01	0.01	43.95	99.96
R9910838	#5964 99-1	14.70	15.85	0.23	0.01	0.11	0.09		0.01	1.77	54.00	0.01	0.02	0.01	0.01	43.68	99.95

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised
If requested analyses are not shown ,results are to follow

ANALYTICAL METHODS
FeO determined by acid digestion /volumetric.LOI determined gravimetrically
Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3

MCINTYRE ASSOCIATES-X99

Job V 99-0787R

LAREDO 99-2,3,4,5,6

Report date 15 NOV 1999

LAB NO	FIELD NUMBER	DRILL INTERVAL from (metres)	to	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	Ba(4) %	LOI %	TOTAL %
R9912043	#5965 DDH99-2	1.20	2.31	0.28	0.01	0.07	0.07		0.01	1.75	53.77	0.01	0.01	0.01	0.01	43.86	99.86
R9912044	#5966 DDH99-2	2.31	3.38	0.81	0.01	0.09	0.25		0.01	7.51	46.97	0.01	0.01	0.01	0.01	43.93	99.62
R9912045	#5967 DDH99-2	4.80	5.80	0.05	0.01	0.02	0.07		0.01	0.44	55.31	0.01	0.01	0.01	0.01	43.79	99.74
R9912046	#5968 DDH99-2	5.80	6.80	0.05	0.01	0.07	0.07		0.01	0.44	55.25	0.01	0.01	0.01	0.01	43.84	99.78
R9912047	#5969 DDH99-2	6.80	7.80	0.10	0.01	0.02	0.05		0.01	0.46	55.20	0.01	0.01	0.01	0.01	43.79	99.68
R9912048	#5970 DDH99-2	7.80	8.80	0.10	0.01	0.05	0.05		0.01	0.40	55.25	0.01	0.01	0.01	0.01	43.84	99.75
R9912049	#5971 DDH99-2	8.80	9.80	0.21	0.01	0.07	0.05		0.01	0.44	55.31	0.01	0.01	0.01	0.01	43.77	99.91
R9912050	#5972 DDH99-2	9.80	10.80	0.18	0.01	0.05	0.05		0.01	0.44	55.41	0.01	0.01	0.01	0.01	43.75	99.94
R9912051	#5973 DDH99-2	10.80	11.80	0.03	0.01	0.02	0.05		0.01	0.46	55.36	0.01	0.01	0.01	0.01	43.84	99.82
R9912052	#5974 DDH99-2	11.80	12.72	0.05	0.01	0.01	0.07		0.01	0.75	54.95	0.01	0.01	0.01	0.01	43.79	99.68
R9912053	#5975 DDH99-2	12.72	13.70	1.26	0.01	0.14	0.60		0.01	2.43	52.54	0.01	0.02	0.01	0.01	42.18	99.22
R9912054	#5976 DDH99-2	13.70	14.70	0.02	0.01	0.02	0.09		0.01	1.19	54.54	0.01	0.01	0.01	0.01	43.81	99.73
R9912055	#5977 DDH99-2	14.70	15.70	0.21	0.01	0.05	0.05		0.01	0.95	54.77	0.01	0.01	0.01	0.01	43.75	99.84
R9912056	#5978 DDH99-2	15.70	16.70	0.07	0.01	0.05	0.07		0.01	1.04	54.75	0.01	0.01	0.01	0.01	43.79	99.83
R9912057	#5979 DDH99-2	16.70	17.50	0.91	0.01	0.20	0.09		0.01	1.87	53.45	0.01	0.07	0.01	0.01	43.31	99.95
R9912058	#5980 DDH99-2	17.50	18.50	3.01	0.01	0.63	0.14		0.01	2.51	51.25	0.07	0.18	0.01	0.01	42.00	99.83
R9912059	#5981 DDH99-2	18.50	19.50	0.40	0.01	0.05	0.07		0.01	1.91	53.65	0.01	0.01	0.01	0.01	43.66	99.80
R9912060	#5982 DDH99-2	19.50	20.50	0.02	0.01	0.03	0.07		0.01	1.61	54.13	0.01	0.01	0.01	0.01	44.00	99.92
R9912061	#5983 DDH99-2	20.50	21.50	0.17	0.01	0.07	0.09		0.01	3.25	52.09	0.01	0.01	0.01	0.01	43.97	99.70
R9912062	#5984 DDH99-2	21.50	22.25	0.17	0.01	0.07	0.07		0.01	2.29	53.33	0.01	0.01	0.01	0.01	43.97	99.96
R9912063	#5985 DDH99-3	1.20	3.44	0.50	0.01	0.05	0.05		0.01	1.17	54.40	0.01	0.01	0.01	0.01	43.68	99.91
R9912064	#5986 DDH99-3	6.44	9.35	1.13	0.01	0.15	0.10		0.01	0.60	54.72	0.01	0.01	0.01	0.01	43.00	99.76
R9912065	#5987 DDH99-3	9.35	12.40	0.05	0.01	0.05	0.07		0.01	1.90	53.68	0.01	0.01	0.01	0.01	43.84	99.65
R9912066	#5988 DDH99-3	12.25	15.40	1.76	0.01	0.37	0.10		0.01	2.24	52.56	0.01	0.17	0.01	0.01	42.47	99.72
R9912067	#5989 DDH99-3	15.40	18.52	0.10	0.01	0.07	0.05		0.01	1.49	54.09	0.01	0.01	0.01	0.01	43.84	99.70
R9912068	#5990 DDH99-3	18.52	20.70	0.21	0.01	0.15	0.10		0.01	3.35	51.77	0.01	0.07	0.01	0.01	44.00	99.70
R9912069	#5991 DDH99-3	20.70	22.86	0.03	0.01	0.03	0.05		0.01	0.44	55.43	0.01	0.01	0.01	0.01	43.86	99.90
R9912070	#5992 DDH99-4	0.60	3.60	0.07	0.01	0.07	0.05		0.01	1.57	54.09	0.01	0.01	0.01	0.01	43.93	99.84
R9912071	#5993 DDH99-4	3.60	6.60	0.18	0.01	0.02	0.07		0.01	2.51	53.02	0.01	0.01	0.01	0.01	43.88	99.74
R9912072	#5994 DDH99-4	6.60	10.10	0.01	0.01	0.02	0.07		0.01	0.97	54.88	0.01	0.01	0.01	0.01	43.88	99.89
R9912073	#5995 DDH99-4	10.10	12.70	0.17	0.01	0.07	0.10		0.01	2.61	52.97	0.01	0.01	0.01	0.01	43.93	99.91
R9912074	#5996 DDH99-4	12.70	15.36	0.11	0.01	0.07	0.28		0.01	1.36	54.18	0.01	0.01	0.01	0.01	43.68	99.74
R9912075	#5997 DDH99-4	17.07	20.07	0.56	0.01	0.07	0.52		0.01	1.25	54.36	0.01	0.01	0.01	0.01	43.13	99.95

LAB NO	FIELD NUMBER	DRILL INTERVAL from (metres)	to	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	Ba(4) %	LOI %	TOTAL %
R9912076	#5998 DDH99-4	20.07	22.86	0.20	0.01	0.07	0.15		0.01	2.01	53.61	0.01	0.01	0.01	0.01	43.81	99.91
R9912077	#5999 DDH99-5	0.60	3.80	0.10	0.01	0.02	0.05		0.01	1.23	54.47	0.01	0.01	0.01	0.01	43.95	99.88
R9912078	#6000 DDH99-5	3.80	7.00	0.17	0.01	0.05	0.05		0.01	1.59	53.99	0.01	0.01	0.01	0.01	43.88	99.79
R9912079	#6001 DDH99-5	7.00	10.20	0.18	0.01	0.02	0.03		0.01	0.67	55.16	0.01	0.01	0.01	0.01	43.81	99.93
R9912080	#6002 DDH99-5	10.20	13.40	0.37	0.01	0.07	0.05		0.01	0.92	54.81	0.01	0.01	0.01	0.01	43.59	99.87
R9912081	#6003 DDH99-5	13.40	16.56	0.50	0.01	0.15	0.10		0.01	0.81	54.84	0.01	0.01	0.01	0.01	43.45	99.91
R9912082	#6004 DDH99-5	16.56	20.15	0.68	0.01	0.14	0.18		0.01	4.17	51.02	0.01	0.01	0.01	0.01	43.68	99.93
R9912083	#6005 DDH99-5	20.15	23.70	0.17	0.01	0.05	0.07		0.01	1.61	54.04	0.01	0.01	0.01	0.01	43.81	99.81
R9912084	#6006 DDH99-5	23.70	27.10	0.62	0.01	0.10	0.10		0.01	2.14	53.25	0.01	0.01	0.01	0.01	43.63	99.90
R9912085	#6007 DDH99-5	27.10	30.48	0.17	0.01	0.10	0.07		0.01	0.73	54.97	0.01	0.01	0.01	0.01	43.75	99.85
R9912086	#6008 DDH99-6	0.60	3.60	0.02	0.01	0.01	0.03		0.01	2.81	52.52	0.01	0.01	0.01	0.01	44.24	99.69
R9912087	#6009 DDH99-6	3.60	6.96	0.07	0.01	0.03	0.07		0.01	1.95	53.59	0.01	0.01	0.01	0.01	44.00	99.77
R9912088	#6010 DDH99-6	9.23	12.00	0.15	0.01	0.02	0.07		0.01	0.67	54.84	0.01	0.01	0.01	0.01	43.79	99.60
R9912089	#6011 DDH99-6	12.00	15.10	0.10	0.01	0.10	0.07		0.01	0.40	55.13	0.01	0.01	0.01	0.01	43.77	99.63
R9912090	#6012 DDH99-6	15.10	18.28	0.15	0.01	0.02	0.05		0.01	0.56	55.04	0.01	0.01	0.01	0.01	43.75	99.63
R9912091	#6013 DDH99-6	18.99	22.00	0.01	0.01	0.02	0.05		0.01	0.56	55.18	0.01	0.01	0.01	0.01	43.86	99.74
R9912092	#6014 DDH99-6	22.00	26.00	0.34	0.01	0.07	0.10		0.01	1.69	53.84	0.01	0.01	0.01	0.01	43.61	99.71
R9912093	#6015 DDH99-6	26.00	29.16	0.18	0.01	0.01	0.03		0.01	0.56	55.04	0.01	0.01	0.01	0.01	43.88	99.76
R9912094	#6016 DDH99-6	29.73	31.70	0.07	0.01	0.01	0.05		0.01	0.43	55.38	0.01	0.01	0.01	0.01	43.95	99.95

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised

If requested analyses are not shown ,results are to follow

ANALYTICAL METHODS

FeO determined by acid digestion /volumetric.LOI determined gravimetrically

Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3

MCINTYRE ASSOCIATES-X99

Job V 99-0794R

DDH99-7 - 11A

Report date 19 NOV 1999

LAB NO	FIELD NUMBER	DRILL INTERVAL from (metres)	to	SiO_2 %	TiO_2 %	Al_2O_3 %	Fe_2O_3 %	FeO %	MnO %	MgO %	CaO %	Na_2O %	K_2O %	P_2O_5 %	Ba (4) %	LOI %	TOTAL %
R9912115	6017 99-7	1.80	4.80	0.20	0.01	0.02	0.05		0.01	1.48	53.75	0.01	0.01	0.01	0.01	44.29	99.85
R9912116	6018 99-7	4.80	7.80	0.05	0.01	0.01	0.05		0.01	0.80	55.11	0.01	0.01	0.01	0.01	43.88	99.96
R9912117	6019 99-7	7.80	10.80	0.17	0.01	0.01	0.10		0.01	1.53	53.97	0.01	0.01	0.01	0.01	43.88	99.72
R9912118	6020 99-7	10.80	13.80	0.21	0.01	0.01	0.03		0.01	0.68	55.06	0.01	0.01	0.01	0.01	43.81	99.86
R9912119	6021 99-7	13.80	16.80	0.21	0.01	0.01	0.02		0.01	0.58	55.11	0.01	0.01	0.01	0.01	43.88	99.87
R9912120	6022 99-7	16.80	19.80	0.12	0.01	0.01	0.02		0.01	0.41	55.38	0.01	0.01	0.01	0.01	43.83	99.83
R9912121	6023 99-7	19.80	22.77	0.34	0.01	0.02	0.10		0.01	1.05	54.49	0.01	0.01	0.01	0.01	43.70	99.76
R9912122	6024 99-7			0.44	0.01	0.01	0.07		0.01	1.62	53.83	0.01	0.01	0.01	0.01	43.68	99.71
R9912123	6025 99-8	1.20	4.40	0.21	0.01	0.01	0.03		0.01	0.68	54.81	0.01	0.01	0.01	0.01	43.88	99.68
R9912124	6026 99-8	4.40	7.50	0.17	0.01	0.01	0.02		0.01	0.66	54.97	0.01	0.01	0.01	0.01	43.88	99.77
R9912125	6027 99-8	7.50	10.70	0.21	0.01	0.01	0.02		0.01	0.44	55.33	0.01	0.01	0.01	0.01	43.77	99.84
R9912126	6028 99-8	10.70	13.20	0.67	0.01	0.01	0.07		0.01	0.85	54.43	0.01	0.01	0.01	0.01	43.75	99.84
R9912127	6029 99-8	14.92	18.82	0.56	0.01	0.01	0.05		0.01	1.08	54.25	0.01	0.01	0.01	0.01	43.77	99.78
R9912128	6030 99-8	18.82	22.74	0.21	0.01	0.02	0.05		0.01	1.62	53.84	0.01	0.01	0.01	0.01	43.79	99.59
R9912129	6031 99-8	22.77	24.11	2.06	0.01	0.34	0.15		0.01	1.80	52.63	0.01	0.01	0.01	0.01	42.63	99.67
R9912130	6032 99-8	24.26	27.78	0.46	0.01	0.05	0.07		0.01	1.58	53.90	0.01	0.01	0.01	0.01	43.61	99.73
R9912131	6033 99-8	28.28	30.97	0.38	0.01	0.02	0.18		0.01	1.45	53.99	0.01	0.01	0.01	0.01	43.61	99.69
R9912132	6034 99-9	0.60	3.70	0.02	0.01	0.01	0.01		0.01	0.51	55.38	0.01	0.01	0.01	0.01	43.83	99.82
R9912133	6035 99-9	3.70	6.80	0.07	0.01	0.01	0.02		0.01	0.54	55.11	0.01	0.01	0.01	0.01	43.93	99.74
R9912134	6036 99-9	6.80	9.90	0.07	0.01	0.01	0.03		0.01	1.19	54.34	0.01	0.01	0.01	0.01	43.97	99.67
R9912135	6037 99-9	9.90	13.00	0.28	0.01	0.03	0.05		0.01	1.84	53.63	0.01	0.01	0.01	0.01	43.88	99.77
R9912136	6038 99-9	13.00	16.17	0.25	0.01	0.01	0.05		0.01	1.04	54.58	0.01	0.01	0.01	0.01	43.95	99.94
R9912137	6039 99-9	16.17	19.85	0.56	0.01	0.02	0.07		0.01	0.89	54.40	0.01	0.01	0.01	0.01	43.86	99.86
R9912138	6040 99-9	19.85	22.00	0.34	0.01	0.01	0.05		0.01	1.46	53.84	0.01	0.01	0.01	0.01	44.02	99.78
R9912139	6041 99-9	23.02	26.50	0.79	0.01	0.02	0.07		0.01	0.37	55.00	0.01	0.01	0.01	0.01	43.65	99.96
R9912140	6042 99-9	26.50	30.00	0.34	0.01	0.02	0.05		0.01	0.51	55.18	0.01	0.01	0.01	0.01	43.79	99.95
R9912141	6043 99-9	30.43	32.00	0.44	0.01	0.02	0.10		0.01	0.92	54.47	0.01	0.01	0.01	0.01	43.68	99.69
R9912142	6044 99-10A	1.20	4.50	0.07	0.01	0.01	0.05		0.01	0.68	54.95	0.01	0.01	0.01	0.01	43.70	99.52
R9912143	6045 99-10A	4.50	7.80	0.14	0.01	0.07	0.07		0.01	0.97	54.65	0.01	0.01	0.01	0.01	43.61	99.57
R9912144	6046 99-10A	7.80	11.10	0.31	0.02	0.15	0.23		0.01	1.82	53.68	0.01	0.01	0.01	0.01	43.36	99.62
R9912145	6047 99-10A	11.10	14.40	0.18	0.01	0.03	0.07		0.01	1.84	53.72	0.01	0.01	0.01	0.01	43.90	99.80
R9912146	6048 99-10A	14.40	17.70	0.23	0.01	0.10	0.09		0.01	0.57	54.97	0.01	0.01	0.01	0.01	43.61	99.63
R9912147	6049 99-10A	17.70	21.00	0.02	0.01	0.01	0.02		0.01	0.46	55.22	0.01	0.01	0.01	0.01	43.79	99.58

LAB NO	FIELD NUMBER	DRILL INTERVAL from (metres)	to	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	Ba(4) %	LOI %	TOTAL %
R9912148	6050 99-10A	21.00	23.83	0.10	0.01	0.07	0.07		0.01	0.46	55.25	0.01	0.01	0.01	0.01	43.70	99.71
R9912149	6051 99-10A	24.43	27.48	0.10	0.01	0.02	0.05		0.01	0.37	55.34	0.01	0.01	0.01	0.01	43.75	99.69
R9912150	6052 99-10A	27.48	30.48	0.25	0.01	0.05	0.02		0.01	0.37	55.29	0.01	0.01	0.01	0.01	43.68	99.72
R9912151	6053 99-11A	0.60	1.70	0.93	0.01	0.14	0.10		0.01	3.40	51.84	0.01	0.01	0.01	0.01	43.36	99.83
R9912152	6054 99-11A	1.70	2.80	0.10	0.01	0.03	0.02		0.01	0.37	55.54	0.01	0.01	0.01	0.01	43.77	99.89
R9912153	6055 99-11A	2.80	3.90	0.02	0.01	0.02	0.03		0.01	0.51	55.22	0.01	0.01	0.01	0.01	43.79	99.65
R9912154	6056 99-11A	3.90	5.00	0.05	0.01	0.03	0.03		0.01	0.34	55.40	0.01	0.01	0.01	0.01	43.77	99.68
R9912155	6057 99-11A	5.00	6.10	0.02	0.01	0.05	0.07		0.01	0.62	55.18	0.01	0.01	0.01	0.01	43.91	99.91
R9912156	6058 99-11A	6.10	7.20	0.02	0.01	0.02	0.03		0.01	0.34	55.59	0.01	0.01	0.01	0.01	43.79	99.85
R9912157	6059 99-11A	7.20	8.20	0.02	0.01	0.10	0.07		0.01	0.34	55.45	0.01	0.01	0.01	0.01	43.75	99.79
R9912158	6060 99-11A	8.20	9.20	0.02	0.01	0.05	0.02		0.01	0.25	55.50	0.01	0.01	0.01	0.01	43.72	99.62
R9912159	6061 99-11A	9.20	10.20	8.56	0.02	1.47	0.20		0.01	0.41	51.52	0.02	0.49	0.02	0.01	37.02	99.75
R9912160	6062 99-11A	11.00	12.00	0.10	0.01	0.03	0.02		0.01	0.28	55.58	0.01	0.01	0.01	0.01	43.84	99.91
R9912161	6063 99-11A	12.00	13.00	0.02	0.01	0.03	0.02		0.01	0.37	55.47	0.01	0.01	0.01	0.01	43.79	99.76
R9912162	6064 99-11A	13.00	14.00	0.02	0.01	0.03	0.02		0.01	0.30	55.49	0.01	0.01	0.01	0.01	43.79	99.71
R9912163	6065 99-11A	14.00	15.10	0.02	0.01	0.02	0.02		0.01	0.33	55.52	0.01	0.01	0.01	0.01	43.79	99.76
R9912164	6066 99-11A	15.10	16.20	0.02	0.01	0.02	0.05		0.01	0.51	55.18	0.01	0.01	0.01	0.01	43.79	99.63
R9912165	6067 99-11A	16.20	17.30	0.02	0.01	0.05	0.03		0.01	0.37	55.36	0.01	0.01	0.01	0.01	43.88	99.77
R9912166	6068 99-11A	17.30	18.40	0.02	0.01	0.01	0.02		0.01	0.36	55.36	0.01	0.01	0.01	0.01	43.83	99.66
R9912167	6069 99-11A	18.40	19.50	0.10	0.01	0.05	0.03		0.01	0.37	55.47	0.01	0.01	0.01	0.01	43.79	99.87
R9912168	6070 99-11A	19.50	20.60	0.01	0.01	0.05	0.05		0.01	0.34	55.41	0.01	0.01	0.01	0.01	43.86	99.78
R9912169	6071 99-11A	20.60	21.60	0.23	0.01	0.07	0.20		0.01	0.37	55.13	0.01	0.01	0.01	0.01	43.66	99.72
R9912170	6072 99-11A	21.75	22.80	0.15	0.01	0.01	0.10		0.01	0.30	55.38	0.01	0.01	0.01	0.01	43.95	99.95
R9912171	6073 99-11A	22.80	23.80	0.02	0.01	0.03	0.03		0.01	0.36	55.33	0.01	0.01	0.01	0.01	43.93	99.76
R9912172	6074 99-11A	23.80	24.86	0.93	0.01	0.18	0.07		0.01	0.51	54.86	0.01	0.01	0.01	0.01	43.08	99.69
R9912173	6075 99-11A	25.02	26.13	0.50	0.01	0.07	0.07		0.01	0.40	55.20	0.01	0.01	0.01	0.01	43.38	99.68

I=insufficient sample X=small sample E=exceeds calibration C=being checked R=revised

If requested analyses are not shown ,results are to follow

ANALYTICAL METHODS

FeO determined by acid digestion /volumetric.LOI determined gravimetrically

Other elements by Li borate fusion/XRF .Where no FeO value shown 'Fe2O3' is total Fe as Fe2O3

(I) MAJOR ELEMENT ANALYSIS OF ROCKS AND MINERIALS

(a) SAMPLE PREPARATION PROCEDURES:

Three to four grams of 100-200 mesh rock samples are roasted at 1060 degree centigrade for two hours to determine the "Loss On Ignition". Then, two grams of the roasted samples are fused at 1100 degree in a platinum-gold crucible with six grams of Johnson-Matthey Spectroflux no. 105 (47% Lithium tetraborate, 36.7% Lithium Carbonate and 16.3% Lanthanum oxide). The molten mass is cast on to a preheated graphite mould assembly to cool producing a stable,transparent,homogeneous and crack-free disk which is then polished to a 400 grit surface.

(b) WHOLE ROCK ANALYSIS:

The fusion disks are analysed by using a Siemens SRS-200 sequential X-Ray Spectrometer with a chromium-tube for 11 elements which are CaO, K2O, P2O5, SiO2, Al2O3, MgO, Na2O, Fe2O3,TiO2, MnO and Ba. All elements analysed are corrected with absorption effect, enhancement effect, line overlap, background correction and Loss On Ignition. The calibration curves of whole rock analysis are setup by using 34 synthetic standards and commercial standards with certified analytical data.

(c) QUALITY CONTROL AND STATISTICS:

Every twenty fusion disks prepared includes one commercial standard or house standard and one repeated sample. Every eight samples analysed includes two standards. (e.g. CANMET standards SY-2, SY-3 and MRG-1) The lower limit of detection (or two times standard deviation) for most whole rock analysis is 0.01% except for SiO2 which is 0.1%.

(d) XRF - WHOLE ROCK ANALYSIS:

Siemens SRS-200 Sequential X-Ray Spectrometer
X-Ray Tube: Chromium 50 kV / 20-50 mA

Element	Line	Collimator	Crystal	Detector	Time	D.Limit%	Ranges%
Si	K-alpha	Coarse	OVL	Flow	40 Sec.	0.10	0.10 - 100
Al	K-alpha	Coarse	OVL	Flow	40 Sec.	0.01	0.01 - 65
Mg	K-alpha	Coarse	OVL	Flow	80 Sec.	0.01	0.01 - 100
Na	K-alpha	Coarse	OVL	Flow	80 Sec.	0.01	0.01 - 25
Fe	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 100
Ti	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 25
Mn	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 50
Ca	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 100
K	K-alpha	Fine	LIF-100	Flow	20 Sec.	0.01	0.01 - 25
Ba	L-alpha	Fine	LIF-100	Flow	40 Sec.	0.01	0.01 - 50
P	K-alpha	Coarse	PET	Flow	40 Sec.	0.01	0.01 - 25

APPENDIX 4

1999 BRIGHTNESS TESTS

MCINTYRE ASSOCIATES
1994 & 1999 Brightness samples

E.R.L. JOB V990598R 18-OCT-1999

LAB NO.	FIELD NO.	BRIGHTNESS	HUNTER		
		%	L	a	b
R99: 08983	L350N/40W	91.2	96.05	0.12	1.06
R99: 08984	L350N/24E	92.0	97.39	-0.07	1.05
R99: 08985	L400N/40W	91.6	96.76	-0.02	0.21
R99: 08986	L400N/20E	92.4	97.20	-0.01	0.39
R99: 08987	L450N/40E	92.6	97.25	-0.07	0.34
R99: 08988	L450N/86E	92.1	96.89	-0.08	0.05
R99: 08989	L450N/20W	87.0	95.15	-0.15	0.76
R99: 08990	L450N/80W	93.6	97.78	-0.01	0.55
R99: 08991	L500N/40W	91.1	97.11	-0.09	1.20
R99: 08992	L500N/20E	91.3	96.82	-0.05	0.53
R99: 08993	L500N/77E	93.5	97.60	-0.10	0.38
R99: 08994	BL550N	87.5	95.28	-0.17	0.61
R99: 08995	L550N/60E	92.8	97.44	-0.09	0.55
R99: 08996	L550N/60W	90.8	96.57	-0.07	0.42
R99: 08997	L600N/40W	90.1	96.44	-0.04	0.74
R99: 08998	L600N/20E	92.1	97.26	-0.13	0.75
R99: 08999	L600N/60E	90.4	96.40	-0.10	0.46
R99: 09000	BL650N	90.5	96.45	-0.08	0.49
R99: 09001	L650N/60W	85.6	94.32	-0.19	0.33
R99: 09002	L650N/54E	90.9	96.83	-0.12	0.85
R99: 09003	L700N/40W	86.0	94.72	-0.06	0.74
R99: 09004	L700N/20E	91.8	97.15	-0.04	0.73
R99: 09005	L700N/60E	89.1	96.17	-0.08	0.99
R99: 09006	L700N/100E	90.9	96.79	-0.04	0.79
R99: 09007	BL750N	88.7	96.00	0.07	1.02
R99: 09008	L750N/60E	87.1	95.32	0.07	0.97
R99: 09009	L750N/100E	88.0	95.61	0.10	0.78
R99: 09010	L800N/20E	88.5	96.22	0.10	1.53
R99: 09011	L800N/75E	85.5	94.30	-0.10	0.40
R99: 09012	BL853N	75.4	89.27	1.15	3.40
R99: 09013	L853N/60E	86.9	94.32	0.38	1.55
R99: 09014	L853N/100E	84.9	93.77	0.75	2.30
R99: 09015	#4 L200N/26E	91.5	96.29	-0.05	0.87
R99: 09016	#10 L200N/30W	92.3	96.64	-0.04	0.82
R99: 09017	#15 L200N/80W	88.7	95.46	0.15	1.83
R99: 09018	#20 L200N/130W	84.7	93.04	0.29	1.72
R99: 09019	#44 L200W/40N	87.9	94.61	0.24	1.18
R99: 09020	#46 L200W/10S	92.4	96.73	0.02	0.93
R99: 09021	#50 L200W/60S	91.8	96.40	-0.04	0.87
R99: 09022	#60 L250N/10E	89.5	95.51	0.02	1.30
R99: 09023	#68 L250N/30W	91.1	95.95	0.01	0.71
R99: 09024	#71 L250N/70W	88.0	93.89	-0.12	0.13
R99: 09025	#76 L250N/120W	91.3	96.03	-0.11	0.74
R99: 09026	#81 L250W/10S	92.1	96.24	-0.07	0.44
R99: 09027	#86 L250W/70S	81.1	90.02	-0.19	-0.04
R99: 09028	#99 L300N/50E	90.4	95.88	-0.08	1.14
R99: 09029	#105 L300N/10W	90.4	95.86	0.06	1.10

MCINTYRE ASSOCIATES
1994 & 1999 Brightness samples

LAB NO.	FIELD NO.	BRIGHTNESS %	HUNTER L	HUNTER a	HUNTER b
R99: 09030	#110 L300N/70W	90.4	95.77	0.06	1.05
R99: 09031	#116 L300N/130W	91.7	96.47	0.05	1.05
R99: 09032	#6 L100N/40W	90.9	96.05	0.14	1.04
R99: 09033	#10 L100N/90W	89.8	95.19	-0.08	0.66
R99: 09034	#33 BL100N	90.1	95.53	0	0.88
R99: 09035	#36 L100W/30N	90.6	95.91	0.07	1.05
R99: 09036	#39 L100W/10S	90.5	95.88	0.07	1.15
R99: 09037	#44 L100W/50S	92.3	96.82	-0.01	0.75
R99: 09038	#48 L100W/90S	91.6	96.48	0.04	1.12
R99: 09039	#60 BL150W	91.0	96.23	0.02	1.20
R99: 09040	#58 BL150N/30E	92.5	96.86	-0.03	0.97
R99: 09041	#62 BL150N/30W	89.7	95.37	0.02	0.93
R99: 09042	#65 BL150N/60W	90.8	96.04	0.02	1.11
R99: 09043	#71 BL150N/110W	89.6	95.80	0.21	1.64
R99: 09044	#74 BL150N/150W	92.7	96.73	-0.05	0.67
R99: 09045	#96 BL150W/40N	93.2	96.96	-0.08	0.59
R99: 09046	#100 L150W/40S	89.9	95.59	0.05	1.16
R99: 09047	#104 L150W/80S	91.9	96.47	0	0.87
R99: 09048	#2 L000W/20N	86.3	93.73	-0.13	1.25
R99: 09049	#23 L000W/20S	90.3	95.24	-0.06	0.34
R99: 09050	#27 L000W/60S	90.7	96.19	0.11	1.34
R99: 09051	#31 L000W/100S	89.5	95.26	0.07	0.97
R99: 09052	#35 BL50W	89.7	95.28	0.03	1.07
R99: 09053	#37 L50N/20W	88.9	95.27	0.35	1.37
R99: 09054	#70 L50W/60S	93.5	97.20	0.03	0.74
R99: 09055	#75 L50W/110S	91.0	96.44	0.18	1.55

MCINTYRE ASSOCIATES

Composites Samples

E.R.L. JOB V990808R

15-DEC-1999

LAB NO.	FIELD NO.		BRIGHTNESS %	HUNTER L	HUNTER a	HUNTER b
R99: 10828	#5954 99-1	3.00-4.62	89.6	95.49	-0.33	1.26
R99: 10835	#5961 99-1	11.70-12.7	85.8	93.12	-0.40	0.76
R99: 12053	#5975 99-2	12.72-13.7	75.9	87.72	-0.39	0.91
R99: 12063	#5985 99-3	1.20-3.44	90.1	95.39	-0.24	0.71
R99: 12069	#5991 99-3	20.70-22.8	91.8	96.56	-0.24	1.14
R99: 12077	#5999 99-5	0.60-3.80	90.2	95.40	-0.12	0.60
R99: 12078	#6000 99-5	3.80-7.00	89.8	95.14	-0.17	0.60
R99: 12122	#6024 99-7		90.3	95.99	-0.57	1.48
R99: 12261	5951-5954 99-1	0.00-4.62	90.2	95.56	-0.14	0.86
R99: 12262	5955-5960 99-1	6.70-11.70	87.1	93.38	-0.13	0.10
R99: 12263	5962-5984 99-1	12.70-15.85	87.4	93.46	-0.08	-0.03
R99: 12264	5965-5966 99-2	1.20-3.38	84.2	92.01	-0.24	0.40
R99: 12265	5967-5975 99-2	4.80-13.70	86.8	93.58	-0.10	0.60
R99: 12266	5976-5984 99-2	13.70-22.26	88.9	94.93	-0.45	1.02
R99: 12267	5986-5990 99-3	6.44-20.70	90.4	95.60	-0.26	0.77
R99: 12268	5992-5994 99-4	0.60-10.10	89.9	95.12	-0.12	0.46
R99: 12269	5995-5996 99-4	10.10-15.36	86.2	92.97	-0.14	0.21
R99: 12270	5997-5998 99-4	17.07-22.86	82.8	90.90	-0.29	0.07
R99: 12271	6001-6007 99-5	7.00-30.48	89.2	94.69	-0.23	0.36
R99: 12272	6008-6009 99-6	0.60-6.96	91.1	95.89	-0.16	0.69
R99: 12273	6010-6012 99-6	9.23-18.28	89.3	95.00	-0.18	0.70
R99: 12274	6013-6015 99-6	18.99-29.16	89.2	94.68	-0.13	0.33
R99: 12275	6017-6023 99-7	1.80-22.77	89.0	94.67	-0.09	0.47

T 534 pm-92

PROVISIONAL METHOD – 1976
OFFICIAL TEST METHOD – 1986
PROVISIONAL METHOD – 1992
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Brightness of clay and other mineral pigments (*d*/0° diffuse)

1. Scope

1.1 This method describes a procedure for determining the brightness of clay and other mineral pigment that has been pulverized under controlled conditions and made into a uniformly compacted pigment plaque. This method is for use with minerals normally used in the manufacture of paper and is not intended for highly colored pigments.

1.2 The instrument employed has the same spectral, geometric, and photometric characteristics as that described in TAPPI T 525 "Diffuse Brightness of Pulp." The brightness scale applicable to this method is the same as the brightness scale described in T 525.

1.3 In contrast to TAPPI T 646 "Brightness of Clay and Other Mineral Pigments (45° /0°)," which uses 45° illumination and perpendicular viewing, this method utilizes an instrument with an integrating sphere to provide hemispherical (diffuse) illumination and perpendicular observation. Thus, the specimen surface structure and azimuthal orientation have negligible influence on the brightness results.

NOTE 1: Brightness values obtained using this method will not agree with those obtained using T 646.

1.4 Precautions are taken to exclude specularly reflected light from smooth, glossy surfaces by requiring installation of a gloss trap in the upper hemisphere of the instrument's integrating sphere.

1.5 The specimens must be prepared with close adherence to the instructions found in the Appendices.

1.6 This method utilizes sample preparation apparatus which is identical to that required for TAPPI T 646. The measurement procedure is also similar.

2. Summary

In this method, the diffuse blue reflectance factor (diffuse ISO brightness) of clay and mineral pigment is measured at an effective wavelength of 457 nm employing an instrument using diffuse illumination and perpendicular observation. The values reported will be absolute ISO brightness if the instrument standard is calibrated on an absolute scale (see Section 6).

3. Significance

The brightness (reflectance at 457 nm) of clay or mineral pigment affects the reflectance of the paper with which it is used. Although one might assume that the measured reflectance is a property of the pigment, the value, in fact, depends on the manner of specimen preparation. For this reason, preparation must follow the instructions given in the Appendices.

Approved by the Optical Properties Committee of the Process and Product Quality Division
TAPPI

4. Definitions

4.1 *Diffuse reflectance* (*1*) is the ratio of the radiant or luminous flux of a specimen to that of a perfectly reflecting diffuser, each being irradiated hemispherically and viewed identically.

4.2 *Absolute ISO brightness* is defined as the reflectance of blue light corresponding to a specific spectral distribution with an effective wavelength of 457 nm by a perfectly diffusing surface. The perfect diffuser was recommended by CIE in 1959 (*1,2*) to replace the former CIE standard based on magnesium oxide.

NOTE 2: No known substance is perfectly diffusing or perfectly reflecting, but reference standards can be calibrated in terms of absolute reflectance (3).

5. Apparatus

5.1 *Reflectometer*[1], designed for the measurement of hemispherical (diffuse) reflectance and conforming to the requirements of the apparatus described in T 525.

5.2 *Sample preparation apparatus* as described in the Appendices.

5.3 *Standards*[1] a white ceramic or opal glass standard or a set of 5 pads of paper tabs calibrated in terms of diffuse absolute reflectance, which is traceable to an ISO Level 2 standard (*4, 5*).

5.4 *Working standard*, white ceramic or opal glass standard.

6. Calibration

6.1 Place the 457 nm filter in the measurement position.

6.2 Set the instrument zero in accordance with the instrument manufacturer's instructions.

6.3 Place the white ceramic, opal glass, or paper transfer standard against the specimen aperture. Adjust the instrument to read the absolute value of the standard.

6.4 Place the working standard on the instrument. Read and record its absolute reflectance value.

6.5 A frequent calibration check should be made with the working standard. The frequency of these checks will depend on the amount of use of the instrument and the accuracy required. Clean the opal glass or ceramic standards frequently with the appropriate solution and dry with lint-free tissue.

NOTE 3: To clean opal glass standards use a solution of 0.3% nitric acid, 95% ethyl alcohol (190 proof) and 4.7% distilled water. To clean ceramic standards use Windex with Ammonia.

NOTE 4: Opal glass or ceramic standards should not be left over the instrument opening as it may harm the standard.

7. Sampling and preparation of test specimens

7.1 From each test unit obtained in accordance with TAPPI T 657 "Sampling of Fillers and Pigments," take a specimen of dry clay or pigment sufficient for the test.

7.2 In the event that the test unit is in a dispersed aqueous slurry form, determine the percent solids and remove a slurry equivalent to 100g of dry pigment.

7.3 Prepare plaques (3 are recommended) by the procedure outlined in the Appendices. Leave the plaques in place as prepared until immediately prior to testing. They should be protected from circulating air, ultraviolet radiation, high humidity, dust or other contamination which might affect the optical reflectance.

8. Measurement

8.1 When ready to test, "break" the plaque free of the plate. Lift the plaque cylinder vertically to prevent "burnishing" of the plaque surface, which will result if the cylinder is twisted or moved across the glass plate. Visually inspect the plaque surface to detect surface irregularities, contamination, or other flaws in the surface to be tested. Should any such be noted, discard the plaque and prepare another.

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[1]Names of suppliers of testing equipment and materials for this method may be found on the Test Equipment Suppliers list in the bound set of TAPPI Test Methods, or may be available from the TAPPI Technical Services Department.

NOTE 5: Visual inspection and measurement should be made within 10 s of breaking the plaque free to minimize the effects of rapidly diminishing brightness when exposed to room air.

8.2 Carefully place each prepared test plaque into position on the reflectance instrument and measure its reflectance with reference to that of a calibrated working standard in accordance with the operating instructions supplied with the instrument.

9. Report

Report the average brightness of the plaques to one decimal place. Indicate that the measurements were obtained in accordance with T 534. The report must also include the type of reflectance instrument used for the measurement and any deviations from T 534.

10. Precision

10.1 Not available. To be added when available, and will be balloted to the committee as an Official Test Method.

11. Additional information

11.1 Effective date of issue: August 10, 1992.

11.2 This is a method for measuring the absolute brightness of clay and mineral pigment. It differs from T 646 in that it uses diffuse (hemispherical) illumination instead of 45° directional illumination.

11.3 Previously recommended standards of barium sulfate have been replaced with standards of white ceramic, opal glass, or paper which are calibrated and supplied by ISO authorized laboratories.

Appendix A. Preparation of kaolin clay powder plaques for reflectometry

A.1 *Scope*

A.1.1 This appendix describes a procedure for preparation of pressed white high reflectance plaques of specimens of kaolin clay to be used for reflectance measurements.

A.1.2 When samples of production runs are prepared for measurement, the samples should be obtained according to TAPPI T 657 "Sampling of Fillers and Pigments."

A.1.3 There is no guarantee that plaques prepared by this method of preparation will be uniformly reflective even when new.

A.2 *Apparatus*

A.2.1 *Apparatus required for preparation of dry specimens*

A.2.1.1 Pulverizer[1] (Fig. 1), consisting of:

A.2.1.1.1 A removable specimen holding cup made of stainless steel, which has a 145 cc capacity. The pulverizing cavity (Fig. 2) shall be cylindrical in nature, having an 80 mm diameter and a 29 mm depth. The intersection of the bottom plane and the walls should be rounded so as to eliminate a crevice in which clay could collect. The top of the cavity should be sufficiently flat to eliminate clay build up while pulverizing. It should also be well sealed so as to eliminate the possibility of clay escaping or contaminants entering the cavity.

APPENDIX 5

SCHEDULE OF EXPLORATION EXPENSES

SCHEDULE OF EXPLORATION EXPENSES

1) Surface Sampling Program

A: T. Jansen, Project Management, July & Aug @ $5,000.00 per mo.				**$10,000.00**
B: R.F. McIntyre, Geologist	(i) Preparation and Planning		5 days	
	(ii) Field, July 3-19		15 days	
	(iii) Interpretation and wind-up		5 days	
	Total		25 days @ $400.00	**10,000.00**
C: Field Assistant, G. McKee, July 3-19			15 days @ $150.00	**2,250.00**
D: Transportation	(i) Automobile, 1500 km @ 0.25		$375.00	
	(ii) Boat Charter Mob/Demob		684.65	
	(iii) Ferries		563.00	
	(iv) Freight		106.00	
	(v) Misc. Transport		219.64	
	Total Transportation		$1,948.29	**1,948.29**
E: Equipment and Supplies	(i) Autotel		$482.73	
	(ii) Food		620.06	
	(iii) Misc. Equipment and Supplies		697.94	
	(iv) Survey Instrument Rental		513.00	
	(v) Chainsaw, Rowboat, Generator Rentals		674.90	
	(iv) Camp Rental 2 wks @ $200.00		400.00	
	Total Equipment and Supplies		$3,388.63	**3,388.63**
F: Analytical	(i) T.S.L. Laboratories	152 Samples @ $28.36	$4,309.96	
	(Includes prep, ICP major oxides, sulfur, taxes)			
	(ii) Cominco E.R.L.	151 Samples @ $21.40	3,231.40	
	(Includes XRF major oxides, taxes)			

(iii) Cominco E.R.L.	73 samples @ $58.40	4,296.05		
(Includes special prep @ $15.00, Hunter Lab @ $40.00, taxes)				
Total Analytical		$11,837.41	11,837.41	

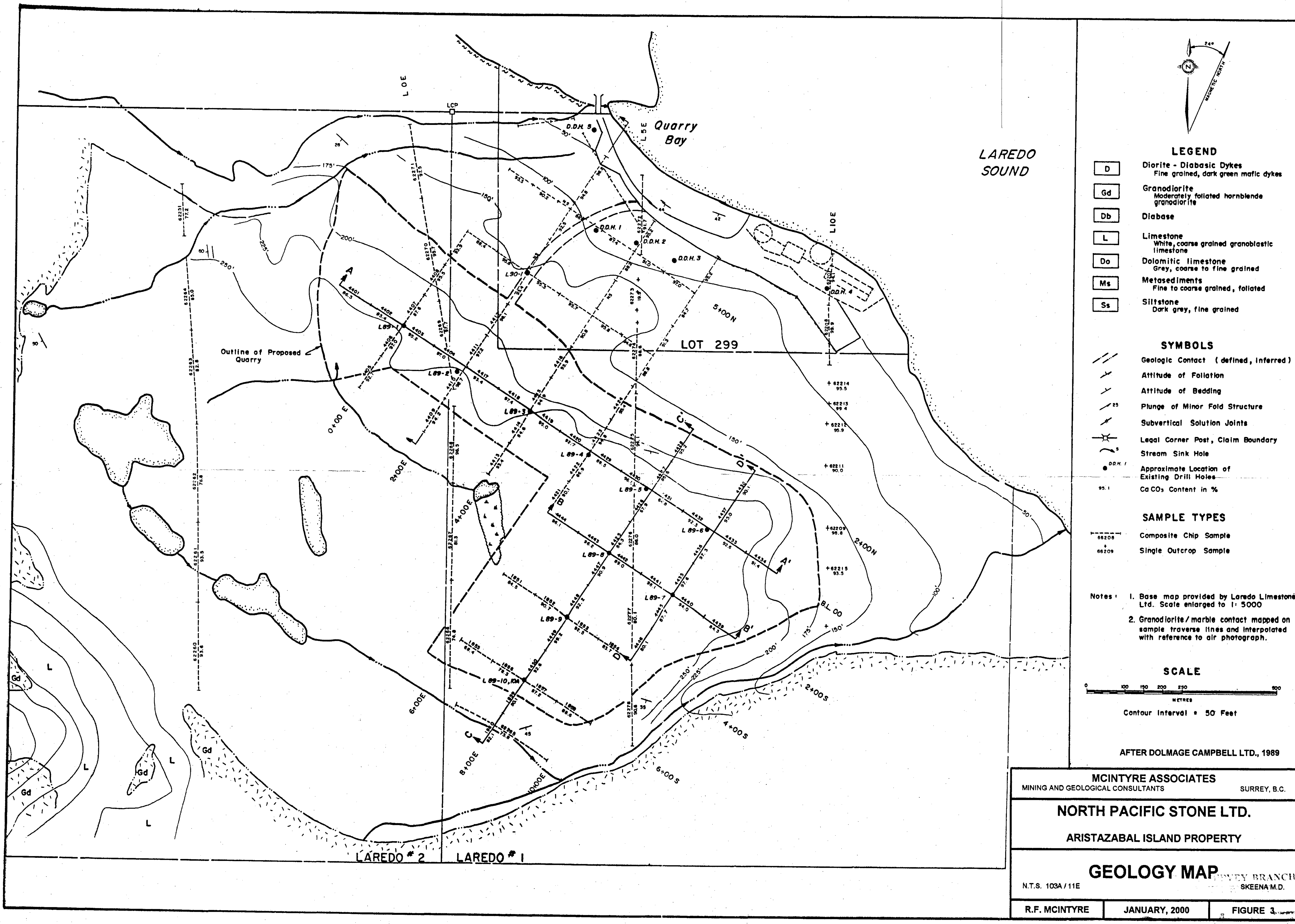
TOTAL SURFACE SAMPLING PROGRAM **$39,424.33**

B) Diamond Drilling Program

A: T. Jansen, Project Management, Sept. & Oct. @ $5000.00 per mo.				**$10,000.00**
B: Watts, Griffis & McOuat Ltd., Project Design, Supervision, Interpretation				
	(i) August		$7,254.00	
	(ii) September		9,861.00	
	(iii) October		13,003.00	
	Total		$30,118.00	**30,118.00**
C: R.F. McIntyre, Geologist, (i) Prep & Planning, Sept.		8 ¾ days		
	(ii) Field, Oct. 2- Nov. 6	35 ½ "		
	Total	44 ¼ days @ $400.00		**17,700.00**
D: Cook/First Aid Attendant				
	(i) K. Wilson, Oct. 1-22, 22 days @ $200.00		4,400.00	
	(ii) S. Lussier, Oct.21- Nov. 6, 16 days @ $200.00		3,200.00	
	Total Cook/First Aid		$7,600.00	**7,600.00**
E: Labor	(i) L. Neasloss, Oct. 3-8	6 days		
	(ii) R. Robinson, Oct. 10-18	71/2 "		
	(iii) M. Hopkins, Oct. 10-18, 22-29	14 "		
	(iv) S. Mayhew, Oct 31-Nov. 6	7 "		
	(v) D. Taylor, Oct. 20,21	2 "		
	Total Labor	36 ½ days @ $150.00		**13,075.00**

F: Diamond Drilling Expenses, Aggressive Diamond Drilling Ltd.			
Footage: 258.3 meters @ $47.57 per meter ($14.50/ft.)		$12,289.00	
Standby: 231 man-hours @ $30.00		6,930.00	
G.S.T. @ 7%		1,345.33	
Total Drilling Charges to Nov. 6, 1999		$20,564.33	**20,564.33**
G: Transportation			
Helicopter (Astar) 17.75 hr @ $1,119.43 incl. Fuel and Taxes		$19,860.00	
Mobilization, Boat Charter, Freight, Storage, Handling		10,910.00	
Airline Tickets and Freight, Misc. Transportation		2,084.00	
Fuel Deliveries Oct 14, 18, 27, Nov. 6		1,240.00	
Total Transportation		$34,094.00	**34,094.00**
H: Equipment and Supplies	(i) Lumber, Building Supplies	2,542.24	
	(ii) Camp Rental, 1 month	2,519.42	
	(iii) Food, Kitchen Supplies	2,533.19	
	(iv) Chainsaw, Generator Rental	705.12	
	(v) Rowboat rental, 1 month	400.00	
	(vi) A.T.V. Rental, 33 days @ $50.00	1,650.00	
	(vii) First Aid Equip. Rental	171.00	
	(viii) Fuel	1,470.66	
	(ix) Misc. Equipment and Supplies	1,592.67	
	(x) Radiotelephone Rental and Charges	917.41	
	Total Equipment and Supplies	$14,501.71	**14,501.71**
I: Analytical, Cominco E.R.L, 125 core samples @ $26.75			
(Includes Prep., XRF Major Oxides, Taxes)			**3,343.75**
J: Assessment Report, R.F.McIntyre, Jan. 25, 2000			**2,750.00**

TOTAL DIAMOND DRILLING PROGRAM	**$153,746.79**
TOTAL SURFACE SAMPLING PROGRAM	**$39,424.33**
<u>TOTAL 1999 EXPLORATION EXPENSES</u>	**<u>$193,171.12</u>**


LAREDO SOUND
Quarry Bay
LOT 299
Outline of Proposed Quarry
LAREDO # 2
LAREDO # 1
MAGNETIC NORTH
24°
LEGEND
D Diorite - Diabasic Dykes
Fine grained, dark green mafic dykes
Gd Granodiorite
Moderately foliated hornblende granodiorite
Db Diabase
L Limestone
White, coarse grained granoblastic limestone
Do Dolomitic limestone
Grey, coarse to fine grained
Ms Metasediments
Fine to coarse grained, foliated
Ss Siltstone
Dark grey, fine grained
SYMBOLS
Geologic Contact (defined, inferred)
Attitude of Foliation
Attitude of Bedding
Plunge of Minor Fold Structure
Subvertical Solution Joints
Legal Corner Post, Claim Boundary
Stream Sink Hole
Approximate Location of Existing Drill Holes
CaCO3 Content in %
SAMPLE TYPES
Composite Chip Sample
Single Outcrop Sample
Notes: 1. Base map provided by Laredo Limestone Ltd. Scale enlarged to 1: 5000
2. Granodiorite / marble contact mapped on sample traverse lines and interpolated with reference to air photograph.
SCALE
METRES
Contour Interval = 50 Feet
AFTER DOLMAGE CAMPBELL LTD., 1989
MCINTYRE ASSOCIATES
MINING AND GEOLOGICAL CONSULTANTS
SURREY, B.C.
NORTH PACIFIC STONE LTD.
ARISTAZABAL ISLAND PROPERTY
GEOLOGY MAP
N.T.S. 103A / 11E
SKEENA M.D.
R.F. MCINTYRE
JANUARY, 2000
FIGURE 3

26,165

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

26,163

MCINTYRE ASSOCIATES
MINING AND GEOLOGICAL CONSULTANTS — SURREY, B.C.

NORTH PACIFIC STONE LTD.

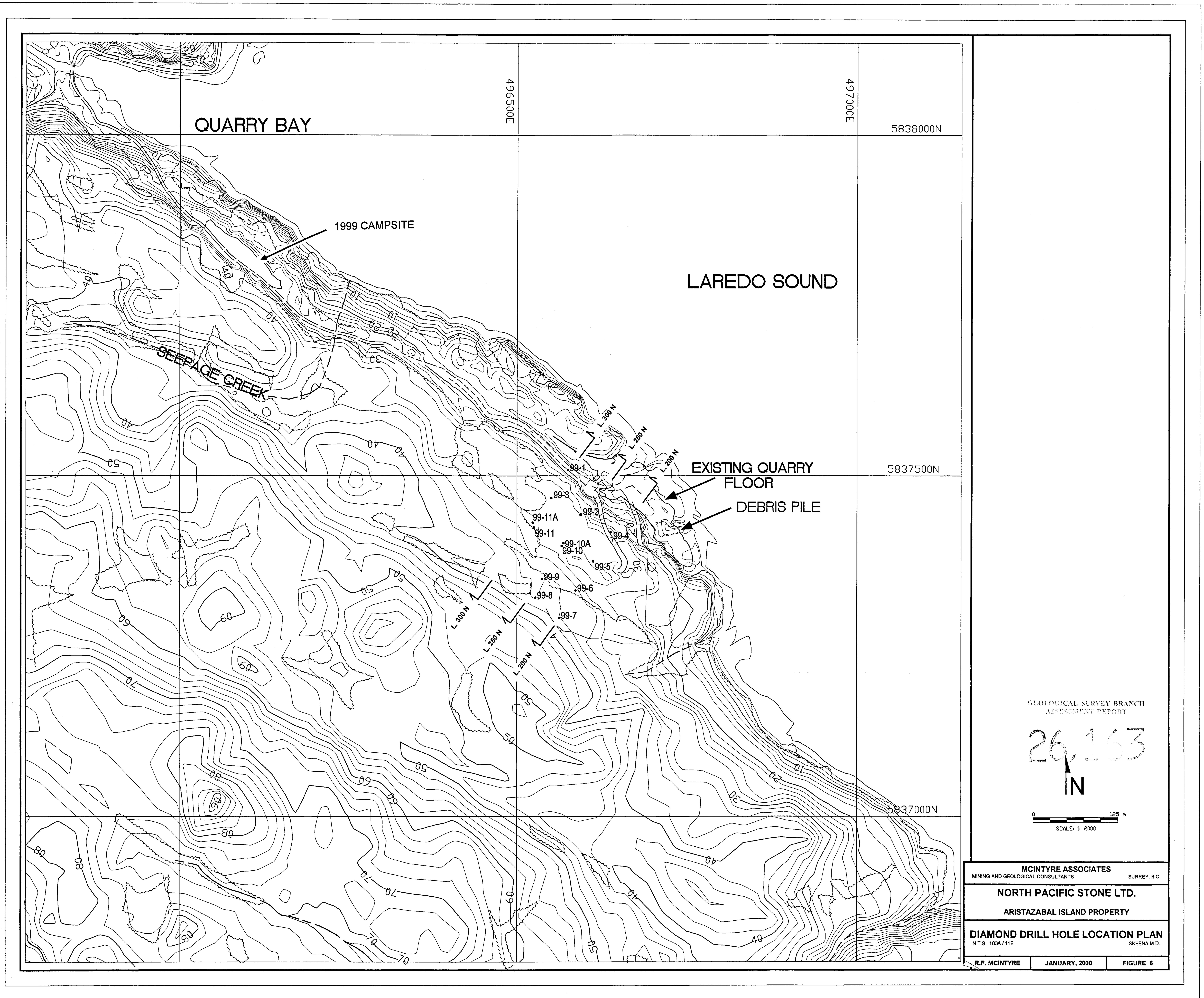
ARISTAZABAL ISLAND PROPERTY

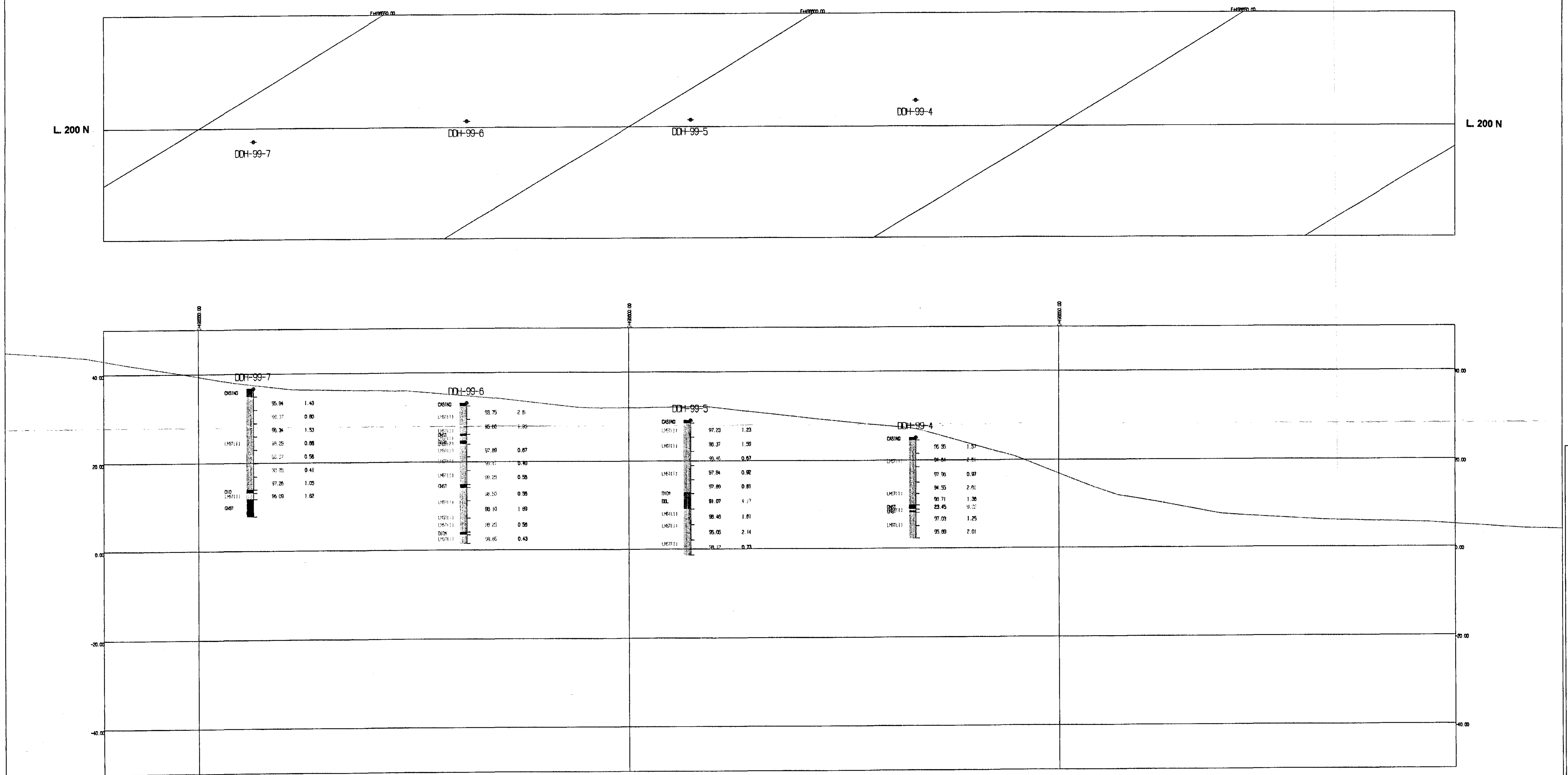
1999 SAMPLING GRID

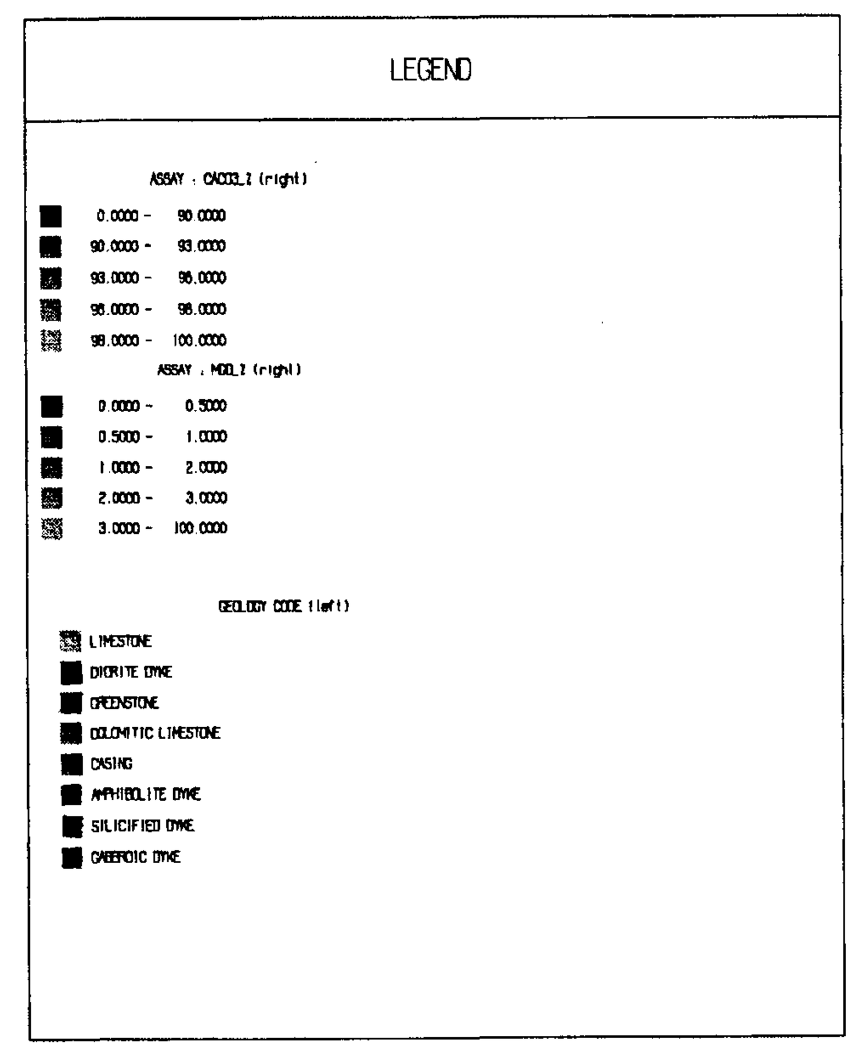
N.T.S. 103A / 11E — SKEENA M.D.

R.F. MCINTYRE	JANUARY, 2000	FIGURE 5

CHONG


QUARRY BAY
LAREDO SOUND
1999 CAMPSITE
SEEPAGE CREEK
EXISTING QUARRY FLOOR
DEBRIS PILE
496500E
497000E
5838000N
5837500N
5837000N
L. 300 N
L. 250 N
L. 200 N
99-1
99-2
99-3
99-4
99-5
99-6
99-7
99-8
99-9
99-10
99-10A
99-11
99-11A
N
SCALE 1: 2000
125 m
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
26,163
MCINTYRE ASSOCIATES
MINING AND GEOLOGICAL CONSULTANTS
SURREY, B.C.
NORTH PACIFIC STONE LTD.
ARISTAZABAL ISLAND PROPERTY
DIAMOND DRILL HOLE LOCATION PLAN
N.T.S. 103A / 11E
SKEENA M.D.
R.F. MCINTYRE
JANUARY, 2000
FIGURE 6





AFTER WATTS, GRIFFIS AND MCOUAT LTD., 1999

MCINTYRE ASSOCIATES MINING AND GEOLOGICAL CONSULTANTS	SURREY, B.C.
NORTH PACIFIC STONE LTD.	
ARISTAZABAL ISLAND PROPERTY	
SECTION 200 North (Looking Northwest) N.T.S. 103A / 11E	SKEENA M.D.
R.F. MCINTYRE	JANUARY, 2000
FIGURE 7	

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Scale 1:500

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NORTH PACIFIC STONE LTD.		
ARISTAZABAL ISLAND PROPERTY		
SECTION 250 North (Looking Northwest)		
N.T.S. 103A / 11E		SKEENA M.D.
R.F. MCINTYRE	JANUARY, 2000	FIGURE 8

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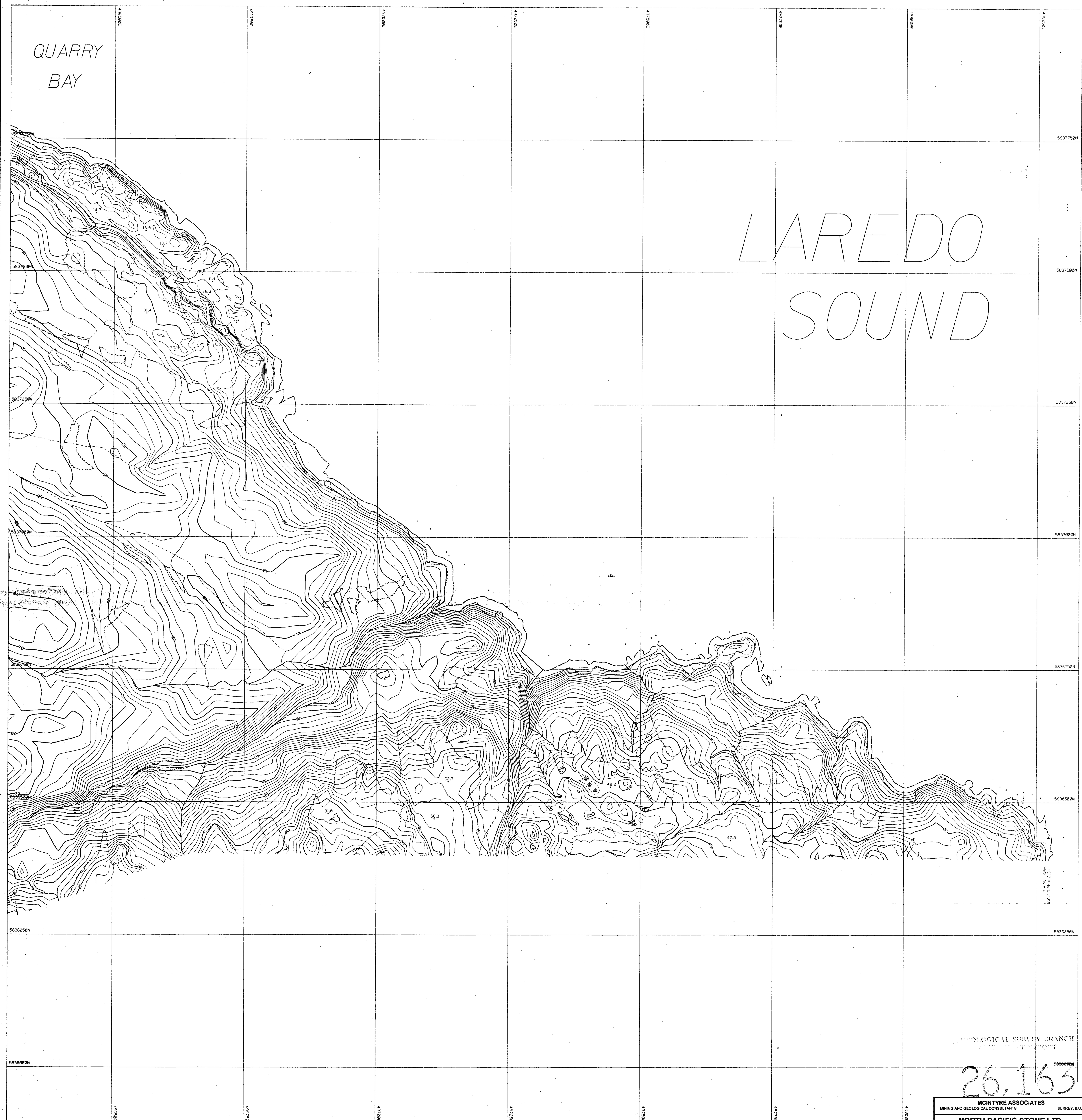
NORTH PACIFIC STONE LTD. ARISTAZABAL ISLAND PROPERTY		
SECTION 300 North (Looking Northwest) N.T.S. 103A / 11E — SKEENA M.D.		
R.F. MCINTYRE	JANUARY, 2000	FIGURE 9

GEOLOGICAL SURVEY BRANCH
26,163



GEOLOGICAL SURVEY BRANCH

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ARISTAZABAL ISLAND PROPERTY

TOPOGRAPHIC MAP, SHEET 1
N.T.S. 103A / 11E — SKEENA M.D.

R.F. MCINTYRE	JANUARY, 2000	FIGURE 10

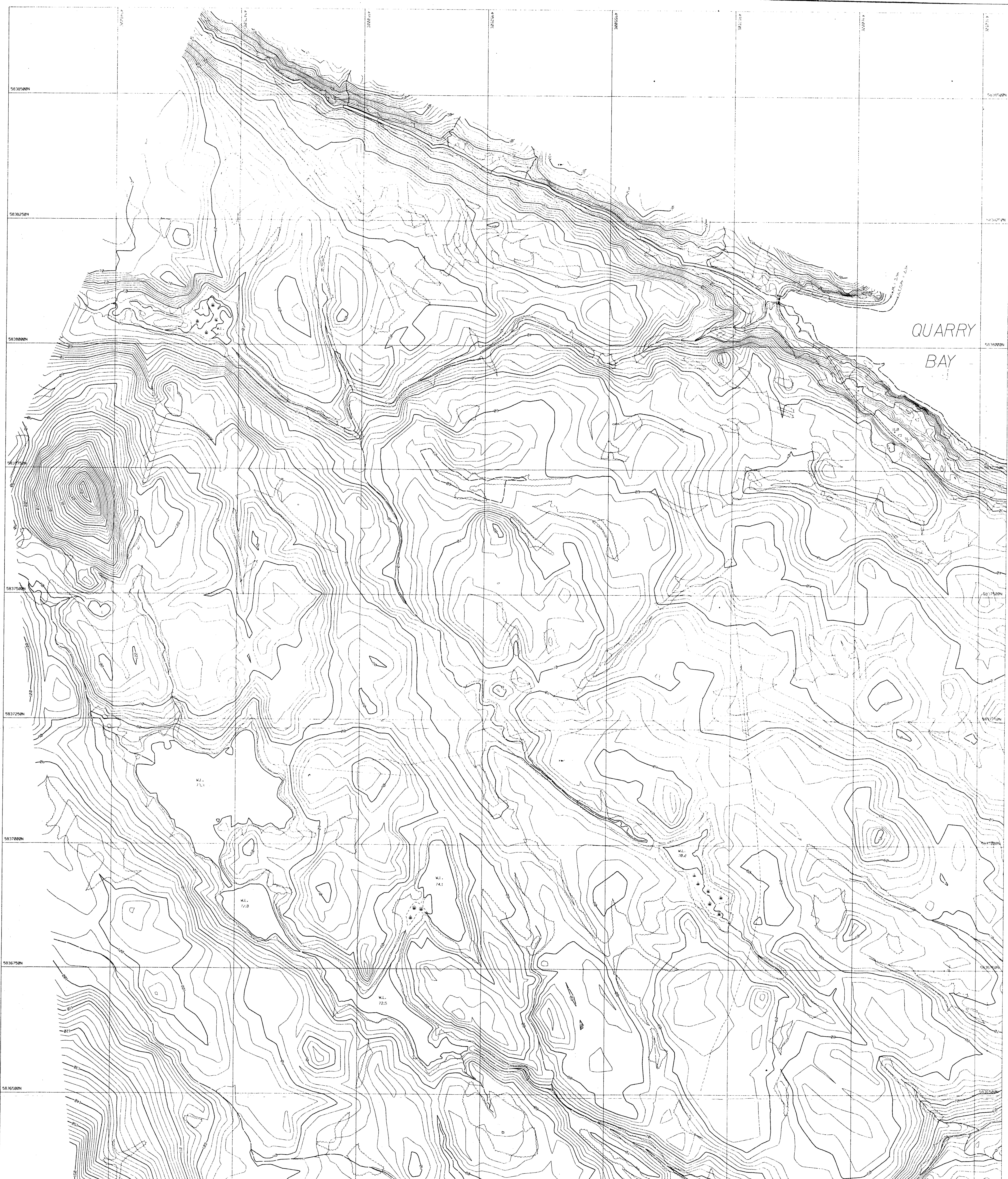
McElhanney
McElhanney Consulting Services Ltd.
Vancouver, B.C. V6B 2M1
Tel. 604-683-8521, Fax 604-683-4350
Ref. No. 2611-16735-0

N

50 0 50 100 150 200 250 metres

NOTES:
PRELIMINARY RECONNAISSANCE TYPE MAPPING.
SCALE AND ELEVATION DATUM BASED ON LIMITED GROUND CONTROL; RESULTING IN GOOD RELATIVE, BUT UNCERTAIN ABSOLUTE ACCURACY.

PRODUCED IN SEPT. 1999 FROM 1:20000 SCALE (12") PHOTOGRAPHY, TAKEN JULY 1979			
MAP SCALE	1 : 2500	CONTOUR INTERVAL	2 Metre
MAP DATUM	UTM,nad83	SHEET NO.	2 OF 2
DIGITAL DATA FORMAT(S): MCMAP, AUTOCAD, MICROSTATION			



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50 0 50 100 150 200 250 metres

NOTES:
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SCALE AND ELEVATION DATUM BASED ON LIMITED GROUND CONTROL, RESULTING IN GOOD RELATIVE, BUT UNCERTAIN ABSOLUTE ACCURACY.

PRODUCED IN SEPT. 1999 FROM 1:20000 SCALE (12") PHOTOGRAPHY, TAKEN JULY 1979			
MAP SCALE	1 : 2500	CONTOUR INTERVAL	2 Metre
MAP DATUM	UTM.nad83	SHEET NO.	1 OF 2
DIGITAL DATA FORMAT(S): MCMAP, AUTOCAD, MICROSTATION			

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ARISTAZABAL ISLAND PROPERTY

TOPOGRAPHIC MAP, SHEET 2
N.T.S. 103A / 11E SKEENA M.D.

R.F. MCINTYRE	JANUARY, 2000	FIGURE 11