GEOLOGICAL, GEOPHYSICAL AND TRENCHING REPORT ON THE KECHIKA NORTH/KECHIKA SOUTH GROUPS AND RAR 2, 3, REE 3 TO 6 AND REO 1, 2, CLAIMS

N.T.S. 94L/11, 12 & 13

LIARD MINING DIVISION

Jennifer Pell

D.G. Leighton

R.R. Culbert

June 15, 1990

GEOLOGICAL, GEOPHYSICAL AND TRENCHING REPORT ON THE KECHIKA NORTH GROUP (RAR 1,4,5,6,8 CLAIMS) KECHIKA SOUTH (RAR 7, REE 1,2,7,8 CLAIMS) GROUP, AND RAR 2, 3, REE 3 TO 6 AND REO 1,2 CLAIMS

KECHIKA YTTRIUM PROJECT

N.T.S. 94L/11, 12 & 13

Lat. 58°43'00" N, Long. 127°31'00" W

KECHIKA RIVER - TERMINUS MOUNTAIN AREA

LIARD MINING DIVISION

NORTHERN BRITISH COLUMBIA

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June 15, 1990

Owners: Golden Rule Resources Limited
Andrew G. Harman
Garth E. Johnson
Operator: Formosa Resources Corporation

CONTENTS

FIGURES

APPENDICES

Appendix I	Assays/Geochemistry
Appendix II	Structural Analysis
Appendix III	Thin Section Descriptions
Appendix IV	Labour Costs Breakdown
Appendix V	Kechika Separation Test Report (translated from Japanese)

KECHIKA YTTRIUM PROJECT

SUMMARY

1. The Kechika project involves yttrium and rare earth element exploration on the RAR, REE and REO claims in the Liard Mining Division of northern British Columbia.

2. The property consists of 19 claims owned by A. Harman, G. Johnson and Golden Rule Resources Ltd. Formosa Resources Corporation, the current operator, may acquire a 60% working interest in the claims by satisfying the terms of an option agreement.

3. The property is located in the Kechika Ranges of the Cassiar Mountains, west of the Rocky Mountain Trench and 150 km southeast of Watson Lake. Access is by air from Terminus Mountain airstrip, 20 km to the east.

4. The property covers a complex suite of alkaline igneous rocks (trachytes, trachytic breccias and tuffs, syenites, a diatreme and related dykes) hosted by Middle Paleozoic carbonates, tuffs and sandstones. This sedimentary and igneous rock package is exposed in a fault slice within Lower Paleozoic phyllites.

5. In 1988, high grade yttrium mineralization (up to 1.13% Y_2O_3) in rocks of igneous protolith was found on the RAR 7 claim.

6. The target of the 1989 program was to define the distribution, grade and continuity of yttrium mineralization on the RAR 7 claim and to locate other areas of mineralization. About $245,000 was spent on geological mapping, radiometric surveys, trenching and sampling. Of this sum, $56,000 is to be applied for work credit. Samples taken were subsequently subjected to various analytical and metallurgical tests with generally positive results.

7. The 1989 program delineated a mineralized zone (RAR 7 - 2237 "Ridge Zone") and a number of smaller mineralized areas on the RAR 7 grid. The Ridge Zone covers about 200 x 25 to 50 metres and encompasses numerous pods of high-grade mineralization.

8. Due to an early snowfall, the planned program was not completed; however, results were encouraging and indicate that follow-up work is warranted.

KECHIKA YTTRIUM PROJECT

1. INTRODUCTION

In 1988 Formosa Resources Corporation entered into an option/joint venture agreement with prospectors Andy Harman and Garth Johnson and Golden Rule Resources Ltd. to explore their Kechika property, an yttrium-rare earth prospect located in north central B.C. As operator, Formosa carried out a small reconnaissance program that summer which confirmed the economic potential of the area.

This report summarizes the results of follow-up survey work completed by Formosa on the Kechika property in August and September of 1989.

The program involved grid-controlled mapping on the RAR 7 claim and geological/prospecting work on surrounding areas. Detailed survey work was largely done by, or under the direction of, Jennifer Pell. Dick Culbert assumed responsibility for assessing surrounding areas.

Crews worked out of a base camp established beside a small creek on the RAR 5 claim. Fly-camps were set up to support regional work. Pack horses ferried supplies from Colt Lake, where small float planes can land, and moved crews and equipment between various fly-camps. A helicopter was also used on a part-time basis and during mobilization and demobilization.

The 1989 program included bench scale metallurgical work on three selected bulk samples of Kechika mineralization. Results of this test work are summarized in this report.

1.1 Location, Access and Physiography

Alkaline rocks on the RAR and REE claims are intermittently exposed in a northwest trending zone in excess of 20 kilometres long, the centre of which is located approximately at 58°43′ north and 127°31′ west (Figures 1, 2). Elevations on the property range from 1180 to 2373 metres and excellent exposure exists on the ridges and steep slopes. Most of the property is above tree line; some spruce trees exist to elevations of 1500 metres and buckbrush is present in most valleys to approximately 1650 metres elevation.

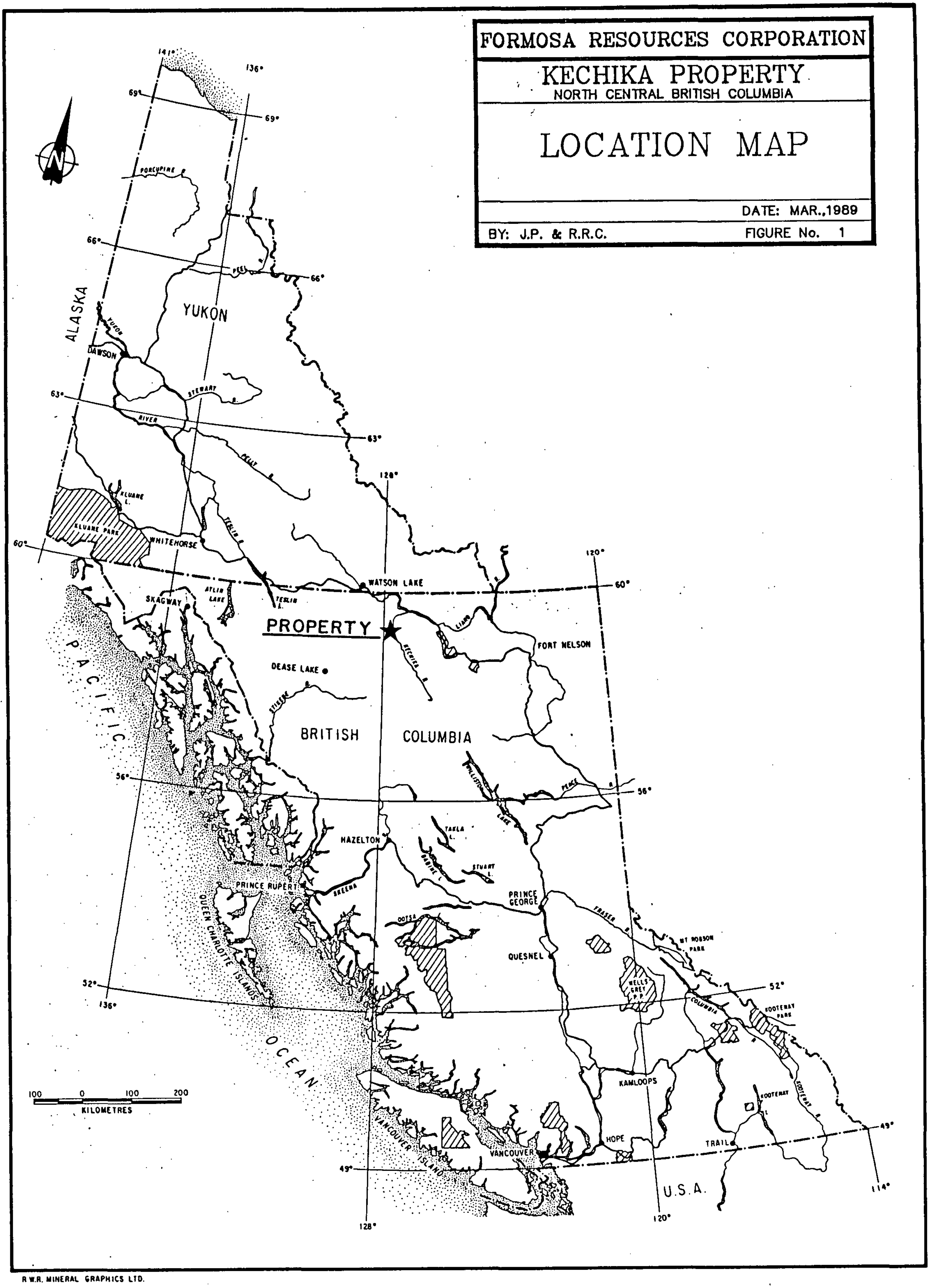
FORMOSA RESOURCES CORPORATION

KECHIKA PROPERTY
NORTH CENTRAL BRITISH COLUMBIA

LOCATION MAP

DATE: MAR.,1989

BY: J.P. & R.R.C. FIGURE No. 1



R.W.R. MINERAL GRAPHICS LTD.

Access is currently by air from Dease Lake, 160 kilometres to the west, or from Watson Lake, Yukon, 150 kilometres north of the property. The nearest air strip is at Terminus Mountain in the Rocky Mountain Trench, 20 kilometres east of the property. Small float planes (Cessnas or Beavers) can land on Colt Lake, eight kilometres east of the main showings; larger float planes (Otters or Twin Otters) can land on Dall Lake, 15 kilometres to the southwest. From these staging points, the property can be reached by helicopter or horseback.

1.2 Claims

The Kechika property consists of 19 contiguous claims (Figure 2). Of these, the Kechika South Group (92 units) and the Kechika North Group (93 units), are considered to have exploration potential. The remaining nine claims will be allowed to lapse as their anniversary dates come due. Claims are grouped as follows:

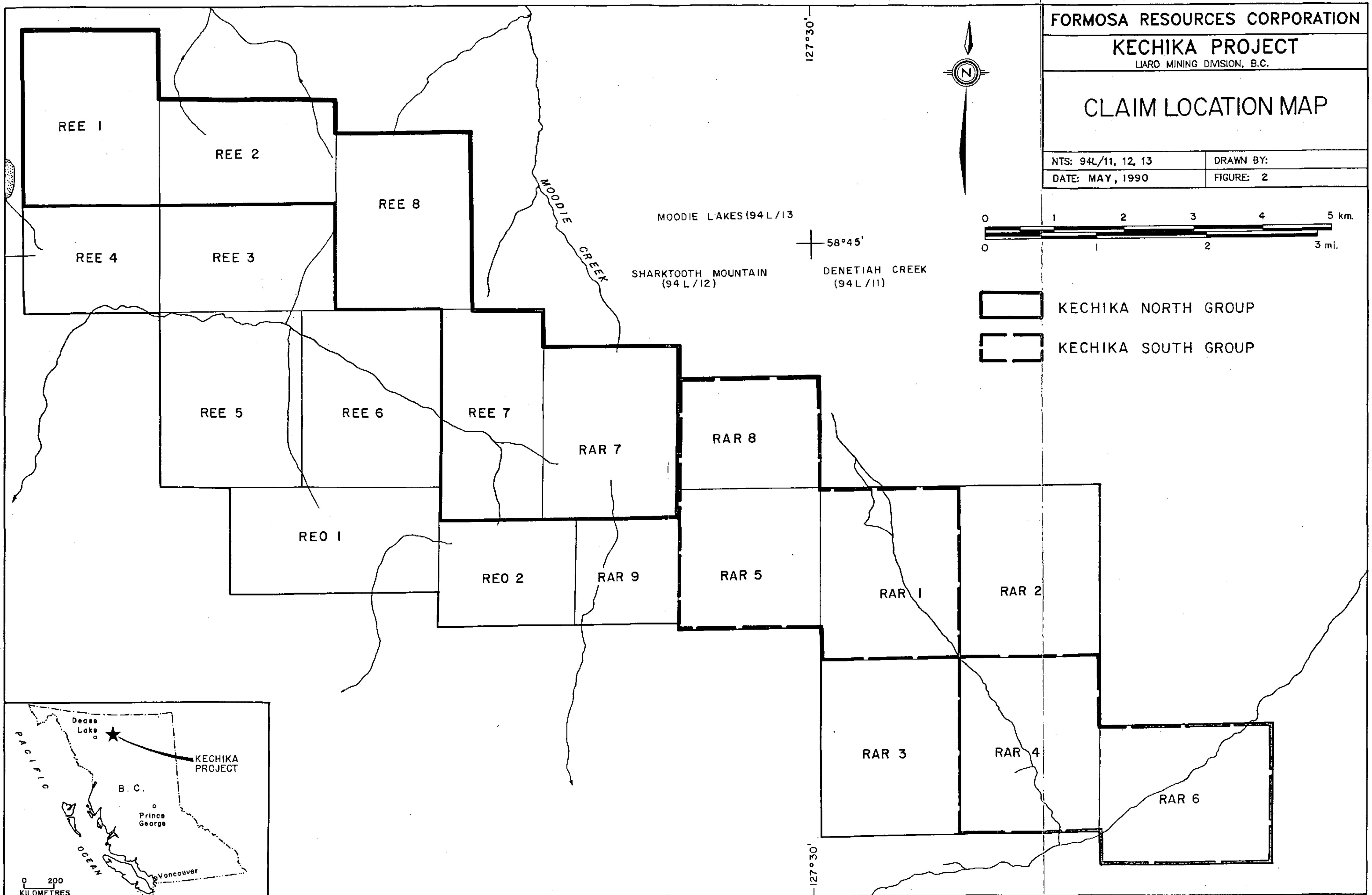
KECHIKA SOUTH GROUP

CLAIM NAME	UNITS	RECORD NO.	EXPIRY DATE
RAR 1	20	3363	Aug. 06, 1995*
RAR 4	20	3366	Aug. 06, 1995*
RAR 5	16	3367	Aug. 06, 1995*
RAR 6	20	3689	Oct. 28, 1990
RAR 8	16	3691	Oct. 28, 1990

KECHIKA NORTH GROUP

CLAIM NAME	UNITS	RECORD NO.	EXPIRY DATE
RAR 7	20	3690	Oct. 28, 1990
REE 1	20	3712	Oct. 28, 1990
REE 2	15	3924	Mar. 09, 1991
REE 7	18	3928	Mar. 09, 1991
REE 8	20	3929	Mar. 09, 1991

* On acceptance of this report.


FORMOSA RESOURCES CORPORATION
KECHIKA PROJECT
LIARD MINING DIVISION, B.C.
CLAIM LOCATION MAP
NTS: 94L/11, 12, 13
DRAWN BY:
DATE: MAY, 1990
FIGURE: 2
0 1 2 3 4 5 km.
0 1 2 3 mi.
KECHIKA NORTH GROUP
KECHIKA SOUTH GROUP
N
127°30'
58°45'
MOODIE LAKES (94 L/13
SHARKTOOTH MOUNTAIN (94 L/12)
DENETIAH CREEK (94 L/11)
MOODIE CREEK
REE 1
REE 2
REE 3
REE 4
REE 5
REE 6
REE 7
REE 8
REO 1
REO 2
RAR 1
RAR 2
RAR 3
RAR 4
RAR 5
RAR 6
RAR 7
RAR 8
RAR 9
Dease Lake
KECHIKA PROJECT
PACIFIC OCEAN
B.C.
Prince George
Vancouver
0 200
KILOMETRES

Claims which are not grouped and which will be allowed to lapse are listed below:

CLAIM NAME	UNITS	RECORD NO.	EXPIRY DATE
RAR 2	20	3363	06 Aug. 1990
RAR 3	20	3364	06 Aug. 1990
RAR 9	9	3692	28 Oct. 1990
REE 3	15	3925	09 Mar. 1991
REE 4	12	3713	28 Oct. 1990
REE 5	20	3926	09 Mar. 1991
REE 6	20	3927	09 Mar. 1991
REO 1	18	3930	09 Mar. 1991
REO 2	12	3931	09 Mar. 1991

The claims are owned by Andrew G. Harman, Garth E. Johnson and Golden Rule Resources Ltd. Formosa Resources Corporation, the current operator, may acquire a 60% working interest in these claims by satisfying the terms of an option agreement with the owners. As operator, Formosa Resources enlisted Boundary Drilling Inc. to carry out the 1989 exploration program.

A representative number of claim lines and posts were examined during the field program. Staking appears to conform to the requirements of British Columbia's Land Tenure Act and the area covered closely matches that shown on the Mining Recorder's map of the area.

1.3 Property History

During the course of regional mapping in the late 1950's and early 1960's, federal government representatives noted fluorite and copper showings on what are now the RAR and REE claims (Gabrielse, 1962). Rare earth mineralization was discovered on the property by prospectors Andy Harman and Barry Watson in the summer of 1968. Claims were staked in 1985 to 1987 by Andy Harman and agents for Golden Rule Resources.

In 1986, Golden Rule Resources carried out a reconnaissance geological and geochemical (stream sediment sampling) program to evaluate this discovery (Fox, 1986; 1987). In 1988, the B. C. Ministry of Energy, Mines and Petroleum Resources examined the alkaline igneous rocks and fluorine geochemistry of the area (Pell, Culbert and Fox, 1989; Pell, in prep.) and Formosa Resources Corporation completed a reconnaissance exploration program that included sampling of known yttrium & REE-rich zones for mineralogical test purposes, remapping of previously identified areas of interest and reconnaissance surveys to assess the area for potential new discoveries (Leighton and Culbert, 1989).

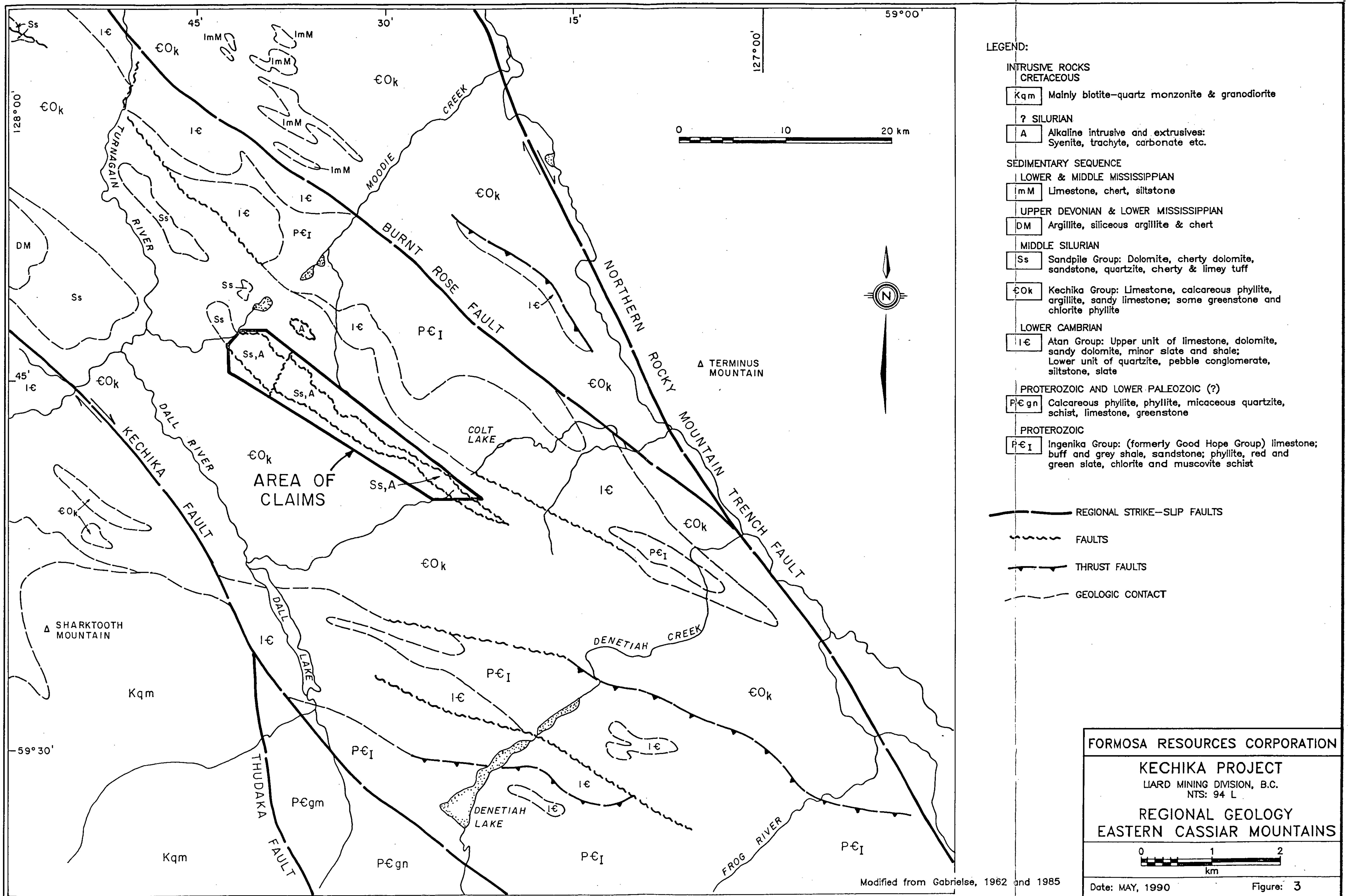
2. GEOLOGY

2.1. Regional Geology

The claims occur within a 35 to 40 kilometre wide belt underlain by metamorphosed Precambrian and unmetamorphosed to weakly metamorphosed Cambrian to Middle Paleozoic, predominantly platformal facies sedimentary strata (Gabrielse, 1962). This belt is bounded to the north and east by the Burnt Rose and Northern Rocky Mountain Trench strike-slip fault systems and to the south and west by the Kechika Fault (Figure 3). These are major dextral transcurrent fault systems on which hundreds of kilometres of movement have been estimated to have occurred (Gabrielse, 1985).

Immediately southwest of the Burnt Rose Fault, a broad open antiform with a northwest trending axis exposes Precambrian rocks correlative with the Ingenika Group (formerly Good Hope Group) and thick-bedded quartzites and micaceous quartzites of lower Cambrian age that belong to the lower member of the Atan Group (Figure 3). Along the southwestern limb of the antiform, the quartzites are in contact with a thick southwest-dipping section of phyllites, thin-bedded marbles and massive blocky weathering dolostones of probable Middle and Upper Cambrian and Ordovician age that are assigned to the Kechika Group (Gabrielse, 1962, 1963). Chlorite, sericite, sericite-graphite and calcareous phyllites are all present within this succession.

A fault bounded panel containing green tuffs and cherty tuffs overlain by buff cherty dolostones, fossiliferous grey limestones, sandy dolostones and pink and black quartzites, is present within the Kechika Group phyllites. Limestones within the fault panel contain beds rich in rugosan corals, favosites-type corals, bryozoans and brachiopod fragments. This sequence is probably of Middle Paleozoic age (Silurian) and can be correlated with the Sandpile Group (Gabrielse, 1963). The cherts, tuffs and limestones in the fault panel outline an overturned antiform. The alkaline rocks are present in the tuff-chert-carbonate-sandstone thrust panel and in a small klippe northeast of the north end of the belt.


45'
30'
15'
59°00'
127°00'
128°00'
45'
59°30'
ImM
€Ok
I€
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Ss
Ss,A
A
DM
Kqm
P€gm
P€gn
TURNAGAIN RIVER
MOODIE CREEK
BURNT ROSE FAULT
NORTHERN ROCKY MOUNTAIN TRENCH FAULT
KECHIKA FAULT
DALL RIVER
DALL LAKE
THUDAKA FAULT
COLT LAKE
DENETIAH CREEK
DENETIAH LAKE
FROG RIVER
TERMINUS MOUNTAIN
SHARKTOOTH MOUNTAIN
AREA OF CLAIMS
0
10
20 km
N
Modified from Gabrielse, 1962 and 1985
LEGEND:
INTRUSIVE ROCKS
CRETACEOUS
Kqm Mainly biotite-quartz monzonite & granodiorite
? SILURIAN
A Alkaline intrusive and extrusives: Syenite, trachyte, carbonate etc.
SEDIMENTARY SEQUENCE
LOWER & MIDDLE MISSISSIPPIAN
ImM Limestone, chert, siltstone
UPPER DEVONIAN & LOWER MISSISSIPPIAN
DM Argillite, siliceous argillite & chert
MIDDLE SILURIAN
Ss Sandpile Group: Dolomite, cherty dolomite, sandstone, quartzite, cherty & limey tuff
€Ok Kechika Group: Limestone, calcareous phyllite, argillite, sandy limestone; some greenstone and chlorite phyllite
LOWER CAMBRIAN
I€ Atan Group: Upper unit of limestone, dolomite, sandy dolomite, minor slate and shale; Lower unit of quartzite, pebble conglomerate, siltstone, slate
PROTEROZOIC AND LOWER PALEOZOIC (?)
P€gn Calcareous phyllite, phyllite, micaceous quartzite, schist, limestone, greenstone
PROTEROZOIC
P€I Ingenika Group: (formerly Good Hope Group) limestone; buff and grey shale, sandstone; phyllite, red and green slate, chlorite and muscovite schist
REGIONAL STRIKE-SLIP FAULTS
FAULTS
THRUST FAULTS
GEOLOGIC CONTACT
FORMOSA RESOURCES CORPORATION
KECHIKA PROJECT
LIARD MINING DIVISION, B.C.
NTS: 94 L
REGIONAL GEOLOGY
EASTERN CASSIAR MOUNTAINS
0
1
2
km
Date: MAY, 1990
Figure: 3

2.2. Property Geology

2.2.1 Stratigraphy

The Kechika property is underlain by a sequence of alkaline igneous rocks hosted by middle Paleozoic carbonates, sandstones and tuffs correlative with the Sandpile Group. These rocks are exposed in a fault slice, with lower Paleozoic phyllites of the Kechika formation present on either side of the bounding faults (Figure 4).

The Cambro-Ordovician Kechika Group consists predominantly of phyllites, calcareous phyllites and marbles. The phyllites and calcareous phyllites are mainly silver and grey to pinkish-buff weathering, extremely fissile and have one to two centimetre thick buff to light grey marble interlayers. Locally, buff to grey marbles and phyllitic marbles predominate. Some layers of light green weathering, chloritic phyllite and grey weathering graphitic phyllite are also present in the sequence. One to two metre thick orange to rusty weathering dolostone beds are also locally present. On the RAR and REE claims, the Kechika Group is in fault contact with younger rocks.

Rocks correlative with the Ordovician and Silurian Sandpile Group are present within the fault bounded slice on the property. At the south end of the property, on the RAR 1, 4 and 6 claims, thinly laminated white and green tuff and cherty tuffs, which locally contain 1 to 3 centimetre thick sericitic marble interbeds, crop out (Figure 5). Near the top of the exposed portion of this section, which is in excess of 200 metres thick, white to grey crystalline limestone beds become increasingly abundant; the highest part of this section consists of massive, grey weathering carbonates.

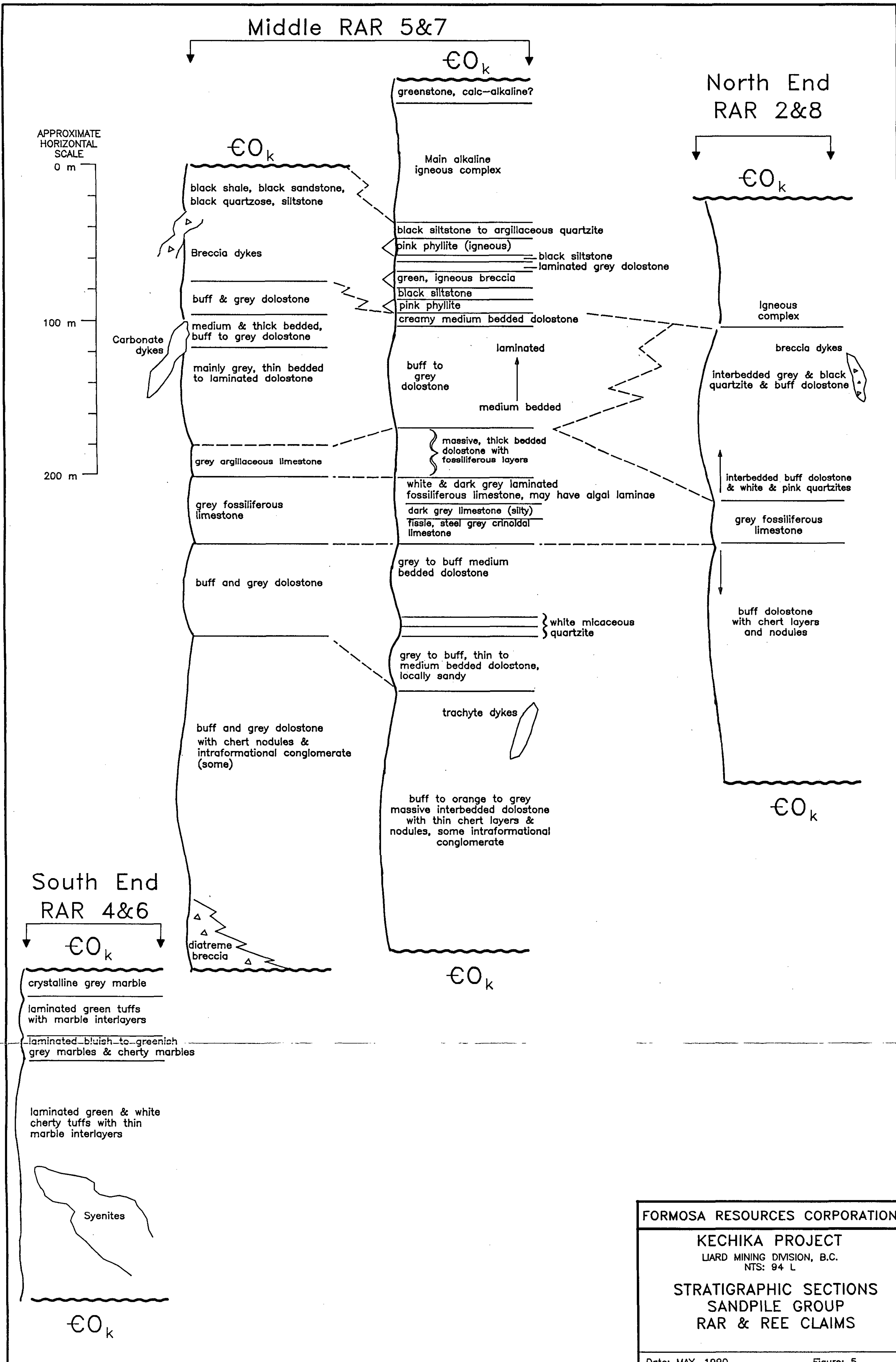
In the central portion of the property, on the RAR 5 and 7 claims, orange to buff to grey, predominantly thick-bedded dolostones with chert nodules, thin chert layers and rare intraformational conglomerate beds are exposed above the northeast bounding fault. The tuff package at the south end of the property projects beneath this dolostone package (Figure 6). The thick-bedded dolostones, which constitute 160-200 metres of section, are overlain by 50-90 metres of thin- to medium-bedded, buff to grey weathering dolostones, sandy dolostones and subordinate, thin white micaceous quartzites. Grey fossiliferous limestones overlie the dolostones (Figures 5, 6); they contain abundant colonial corals (some favosites), crinoid fragments, bryozoans, rugosan corals and some shell fragments. Some horizons are characterized by dark grey and white laminations, possibly of algal origin. Grey argillaceous limestones or thick-bedded buff weathering dolostones with thin fossiliferous layers overlie the main macrofossil-rich zone and are in turn overlain by grey and buff medium-bedded to laminated dolostones (Figures 5, 6). Black siltstones, argillites and black quartzose siltstones overlie the dolostones and are locally interbedded with the carbonates and with phyllitic rocks of probable igneous (tuffaceous) protolith. The total carbonate package exposed in this area is approximately 400 metres thick.

At the north end of the property, on the REE 2 and 8 claims, the grey fossiliferous limestone horizon is overlain by interbedded buff dolostones and white and pink quartzites. Up-section, the quartzites change from white and pink to grey and black in colour and become slightly more abundant.

2.2.2 Structure

The RAR and REE claims are underlain by Ordovician to Silurian aged rocks, correlative with the Sandpile Group, that outline a large northwest-plunging antiform. Analysis of stereonet patterns (Appendix II) indicates that, within the fault slice, bedding is folded into a shallow northwest plunging (297/08) structure with steeply southwest dipping (122/80) axial planes. Foliations in the Kechika Group phyllites outside the fault slice are not significantly different from foliations measured within the fault slice.

The Sandpile strata are in fault contact to the northeast and southwest with Cambro-Ordovician Kechika Group rocks. The northeast bounding fault (Figure 4) is shallowly dipping to the southwest and apparently has had normal movement along it, as younger strata are present in the hanging-wall package; however, geometry, minor drag folds near the fault, and the presence of the hanging-wall anticline imply that at one time there probably was thrust motion along this fault. The southwest bounding fault is moderately to steeply southwest dipping and also appears to be a thrust as it places older rocks over younger rocks. Transverse faults are present in a few locations; they are north to northeast striking and offset stratigraphy (Figure 4).



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KECHIKA PROJECT
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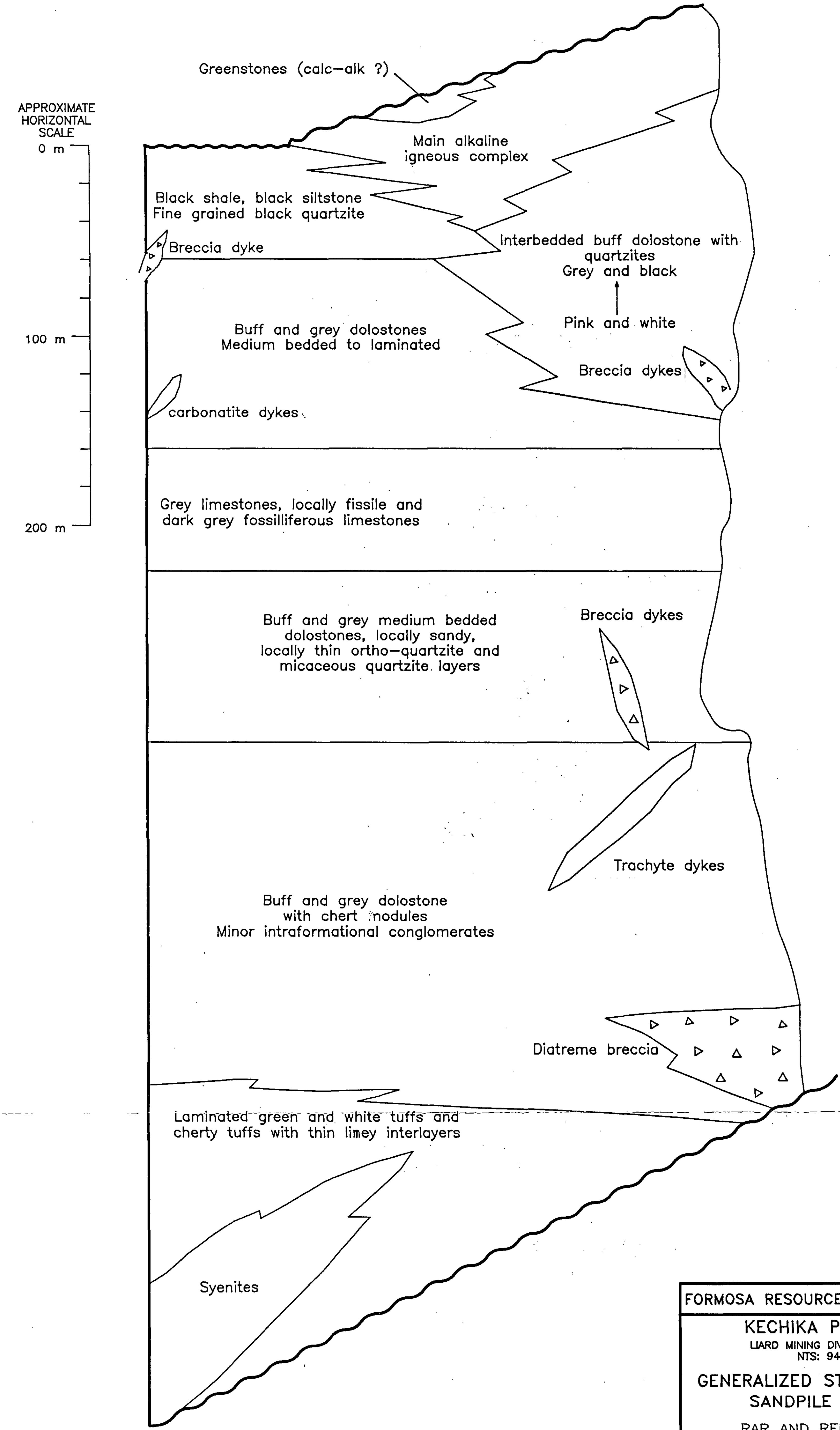
STRATIGRAPHIC SECTIONS
SANDPILE GROUP
RAR & REE CLAIMS

Date: MAY, 1990 | Figure: 5

Age	Group/Formation (Thickness,metres)	Lithology	Phosphatic Horizons	Thickness (metres)	Grade (% P_2O_5)
Cretaceous	Kootenay Fm.	-grey to black carbonaceous siltstone and sandstone; nonmarine;coal			
Jurassic	Fernie Gp. (+244)	-black shale,siltstone,limestone; marine to nonmarine at top -glauconitic shale in upper section -belemnites; common fossil	-approximately 60 metres above base low-grade phosphate bearing calcareous sandstone horizon or phosphatic shale -Bajocian -basal phosphate in Sinemurian strata; generally pelletal/oolitic; rarely nodular;1-2 metres thick; locally two phosphate horizons; top of phosphate may be marked by a yellowish-orange weathering marker bed.	1-2	11-30
		regional uncomformity			
Triassic	SPRAY RIVER GP. Whitehorse Fm.	-dolomite,limestone,siltstone			
	SPRAY RIVER GP. Sulphur Mntn. Fm. (100-496)	-grey to rusty brown weathering sequence of siltstone, calcareous siltstone and sandstone,shale, silty dolomite and limestone	-nonphosphatic in southeastern British Columbia		
		regional unconformity			
Permian	ROCKY MOUNTAIN SUPERGROUP / ISHBEL GROUP Ranger Canyon Fm. (1-60)	-sequence of chert,sandstone and siltstone;minor dolomite and gypsum;conglomerate at base -shallow marine deposition	-upper portion-brown,nodular phosphatic sandstone;also rare pelletal phosphatic sandstone (few centimetres to +4 metres) -basal conglomerate-chert with phosphate pebbles present ($\leq$1 metre)	0.6 0.5-1.0	9.5 13-18
		unconformity			
	Ross Creek Fm.(90-150)	-sequence of siltstone,shale chert,carbonate and phosphatic horizons areally restricted to Telford thrust sheet -west of Elk River,shallow marine deposition	-phosphate in a number of horizons as nodules and finely disseminated granules within the matrix -phosphatic coquinoid horizons present	0.4-1.0	1.7-6.0
	Telford Fm. (210-225)	-sequence of sandy carbonate containing abundant brachiopod fauna;minor sandstone -shallow marine deposition	-rare,very thin beds or laminae of phosphate;rare phosphatized coquinoid horizon	0.3	11.4
	Johnson Canyon Fm. (1-60)	-thinly bedded,rhythmic sequence of siltstone,chert,shale, sandstone and minor carbonate; basal conglomerate -shallow marine deposition	-locally present as a black phosphatic siltstone or pelletal phosphate -phosphate generally present as black ovoid nodules in light coloured siltstone;phosphatic interval ranges in thickness from 1-22 metres -basal conglomerate (maximum 30 cm thick) contains chert and phosphate pebbles	0.2-0.3 1-22 1-2	3.0-4.0 0.1-11.0 14.2-21.2
		regional unconformity			
Pennsylvanian	SPRAY LAKES GP. Kananaskis Fm. (±55)	-dolomite,silty,commonly contains chert nodules or beds	-locally,minor phosphatic siltstone in uppermost part of section		
	SPRAY LAKES GP. Tunnel Mntn Fm. (±500)	-dolomitic sandstone and siltstone			
Mississippian	Rundle Gp. (±700)	-limestone,dolomite,minor shale, sandstone and cherty limestone			
	Banff Fm. (280-430)	-shale,dolomite,limestone			
Devonian-Mississippian	Exshaw Fm. (6-30)	-black shale,limestone -areally restricted in south-eastern British Columbia	-an upper nodular horizon -phosphatic shale and pelletal phosphate 2-3 metres above base -basal phosphate <1 metre thick		
Devonian	Palliser Fm.	-limestone			

FIGURE 4: STRATIGRAPHIC SUMMARY INCLUDING PHOSPHATE-BEARING HORIZONS IN SOUTHEASTERN BRITISH COLUMBIA (modified from Butrenchuk, 1987a). Thickness not to scale.



FORMOSA RESOURCES CORPORATION

KECHIKA PROJECT

LIARD MINING DIVISION, B.C.
NTS: 94 L

GENERALIZED STRATIGRAPHY,
SANDPILE GROUP

RAR AND REE CLAIMS

Date: MAY, 1990 Figure: 6

2.2.3 Alkaline Rocks

2.2.3.1 Distribution

RAR and REE Claims

Alkaline igneous rocks occur in four main areas of the property (Figure 4). In the south, on the RAR 4 & 6 claims, dark green intrusive mafic syenites (malignites) displaying good igneous textures predominate. These syenites contain some irregular leucocratic zones and are brecciated along their margins. Peripheral to the main intrusive body, numerous small sills, dykes and metasomatic alteration zones are present.

A complex diatreme containing a number of breccia phases, related tuffs and breccia dykes crop out near the centre of the belt of alkaline igneous rocks, on the RAR 5 block (Figure 4). These rocks weather greenish silver to rusty orange and are weakly to extremely well foliated. The main diatreme is exposed in a creek at 1560 metres elevation; dykes and tuffs are present on the slopes and ridges to the north and west of the diatreme, on the RAR 5 and 7 claims, at elevations of up to 2230 metres. The diatreme breccia pipe contains xenoliths of numerous sedimentary and igneous rock types and rare chrome spinel xenocrysts, in a pale green carbonate-rich tuffisitic matrix. The diatreme, which is proximal to the northeast bounding fault, is weakly to strongly deformed and locally cut by carbonatite dykes and carbonate-sulphide veins.

A large area underlain by igneous rocks, including the main mineralized zone (RAR 7 Grid, 2237 Ridge Zone), is present immediately northwest of the diatreme (Figures 4, 7, 8). It consists of a complex, southwest dipping homoclinal sequence of moderately to strongly deformed (sheared) igneous rocks that will be described in detail in the section on the RAR 7 grid.

At the north end of the property, on the REE 1, 2 and 8 claims, a thick sequence of alkaline igneous rocks is exposed. It consists mainly of a complex sequence of pale green to orange to buff weathering agglomerates and tuffs, buff and grey aplite layers, white weathering quartz-feldspar-carbonate-sericite rocks and some sedimentary interlayers. Reconnaissance traverses only have been completed in this area, and therefore a detailed stratigraphy has not been established. Although lithologies present in this area are superficially similar to those on the central part of the area, no zones of high grade mineralization have yet been discovered.

To the northeast of the property, alkaline rocks are exposed in a klippe (Figures 3, 4). Dark green mafic syenites are present at the base of the exposed sequence and are structurally overlain by feldspar porphyritic, biotite and/or sericite-rich fine-grained syenites.

RAR 7 Grid

A complex sequence of apparently conformable igneous rocks is present on the RAR 7 grid (Figures 7, 8). The base of the sequence is composed of pale green to pale orange weathering, variably calcareous rocks that locally contain rare chrome spinels. These rocks are interlayered with a minor amount of grey aplitic trachyte and buff to brown weathering, fine to coarse breccias interlayered with fine-grained laminated beds. Well developed graded layers are present locally. The coarse breccias and the bases of the graded beds consist of lithic fragments 1-3 centimetres in size, in a welded tuff matrix containing abundant flattened pumice fragments and altered crystals (Appendix 3). Fine-grained carbonate-rich material is present at the top of the graded beds. This part of the section is interpreted as comprising a series of fine-grained locally calcareous tuffs, crystal and lapilli welded tuffs, with some interlayered sedimentary material and, locally, sills.

This sequence is overlain by predominantly white to locally buff and pinkish weathering rocks containing varying amounts of quartz, feldspar, apatite, carbonate and sericite (Figure 7). Yttrium mineralization occurs within this white weathering horizon and appears to be related to phosphate-rich areas. Locally, this rock type grades into grey weathering (graphitic?) varieties or rusty weathering, extremely carbonate- and sericite-rich varieties. This unit is generally weakly to moderately well foliated, strongly lineated and, in thin section, displays a mylonitic fabric. These rocks are tentatively interpreted as trachytic or syenitic tuffs or flows with, possibly, a minor sedimentary component; the degree of deformation makes recognition of the protolith very difficult.

Near the top of this sequence (Figures 7, 8), dark green mafic syenites, that grade from medium-grained igneous textured rocks to foliated chlorite schists near their margins, are present. The mafic syenites appear to have been intrusive into the white weathering quartz-feldspar-apatite-carbonate-sericite sequence and are now present as megaboudin.

These rocks are structurally overlain by an unusual breccia unit (Figures 7, 8). To the north, this breccia consists of predominantly sub-angular clasts in a very fine-grained buff to light grey, pumice fragment-rich matrix (Appendix III). To the south, the breccia is rusty weathering and contains predominantly subrounded fragments in a carbonate-rich matrix. In both areas the breccia is heterolithic, containing a variety of sedimentary and igneous rock fragments; notably absent within the fragment suite are mafic syenites. Fluorite and pyrite are common accessory minerals in the breccias, disseminated within the matrix and replacing fragments. In places, a unique buff-weathering, feldspar porphyritic trachyte structurally overlies the breccias, and clasts of this trachyte are present within the breccias. The trachytes are interpreted as having been flows or sills; the breccias are volcanic tuff breccias with a matrix that varies laterally from lapilli tuff to fine-grained calcareous tuff.

This sequence is overlain by a second buff to white weathering feldspathic unit (Figures 7, 8). It is similar to the mineralized white-weathering quartz-feldspar-carbonate-sericite-apatite unit; however, it generally does not contain as much sericite, carbonate or apatite and is more massive than the lower unit. To the north end of the zone, this unit is in fault contact with Lower Paleozoic phyllites; at the south, it interfingers with black siltstones and is overlain by a pale to medium green weathering medium-grained igneous flows or sills of uncertain affiliation. Rusty weathering carbonatite dykes and green to orangish weathering fragmental dykes or sills occur in numerous locations throughout the sequence.

2.2.3.2 Petrography

Syenites

Syenites and melanocratic titaniferous augite syenites (malignites) are found at the south end of the property. The melanocratic syenites, which are present as large dykes or elongate stocks, are fine- to medium-grained dark green to bluish grey rocks with small pyroxene and feldspar phenocrysts. They contain 40 to 60 per cent microcline, 5 to 20 per cent albite and 10 to 20 per cent augite with titaniferous rims. Garnet (melanite), biotite, sodalite, cancrinite, allanite, magnetite/ilmenite, pyrite, fluorite and apatite/monazite are all present as accessory phases. Veins or segregations containing coarse calcite and dark purple fluorite +/- biotite +/- epidote are locally present within the malignites. In the central and northern part of the property, melanocratic syenites are highly sheared and chlorite-rich.

Leucocratic syenites crop out in the southern part of the property, generally as irregular zones within the melanocratic syenites. They are light grey medium-grained massive rocks containing 35 to 40 per cent microcline and 10 to 20 per cent albite, with fluorite, sodalite, cancrinite, sphene, biotite, pyrite and pyrochlore present in variable amounts. Cross-cutting calcite-pyrite-fluorite veinlets are common. The syenites vary from massive and relatively unaltered to sheared. Sheared syenites contain potassium feldspar porphyroclasts in a fine-grained recrystallized and altered matrix containing abundant clay minerals, quartz, plagioclase, dolomite and muscovite.

Trachytes

Buff, grey or pinkish weathering trachyte dykes and sills (or flows) are present in the central and northern parts of the area. For the most part, they appear aplitic in hand specimen; however, some varieties contain feldspar phenocrysts, 2 to 5 millimetres in size, in an aplitic matrix. In thin section (see Appendix III), the porphyritic feldspars are generally polycrystalline and exhibit both simple and "checkerboard" twinning; they appear to be potassic to perthitic in composition. The phenocrysts are present in a fine-grained groundmass of felted feldspar microlites with minor disseminated carbonate and opaques.

Feldspar-Quartz-Carbonate-Sericite Rocks

Fine-grained, extremely fissile and micaceous phyllites to massive, white to buff weathering rocks are commonly associated with other alkaline rocks in the central and northern portions of the property. They locally have mylonitic textures and contain predominantly apatite and pyrite, and varying amounts of potassium feldspar, quartz, carbonate (generally dolomite, although calcite and iron-rich magnesite have also been noted), muscovite and phosphates. Massive varieties commonly have irregular dolomitic patches in a siliceous matrix.

In some samples potassium feldspar porphyroclasts are preserved in a fine-grained quartz-carbonate-sericite matrix, which suggests that the mylonite had a syenitic or trachytic protolith. In other cases, the rocks are very fine-grained and completely recrystallized; no textural evidence of the protolith remains. Field evidence indicates that these rocks are conformable to bedding in the hosting carbonate rocks and were possibly flows or tuff layers. The high degree of deformation within these rocks compared with the other rock types may be a result of original incompetence, in which case a tuffaceous protolith is favored. Phosphate-rich rocks are distributed in discontinuous lenses up to a few metres thick and several tens of metres in length, parallel or subparallel to overall layering.

Carbonatites

Fine-grained igneous carbonate rocks with a distinctive orange-brown weathering colour are also present in the Kechika area. They occur as dykes which are generally less than one metre wide and crosscut other alkaline rocks and the carbonate host rocks. Volumetrically, the carbonatites are an insignificant part of the alkaline suite.

The carbonatites are dolomite- or ankerite-rich (>80%) and can contain quartz. Accessory phases include microcline, muscovite, barite, iron oxides, pyrite, fluorapatite, gorceixite, xenotime and an unidentified thorium-calcium-yttrium-iron phosphate mineral. The carbonatites are locally fragmental, containing subangular to rounded lithic clasts of various rock types. In some cases, the carbonatites verge on silicocarbonatites, containing relatively abundant feldspars. Some silicocarbonatites contain globular segregations or accretionary lapilli cored by coarse feldspar crystals; the lapilli rims are slightly more feldspathic than the carbonatite matrix and, as a result, the lapilli weather in relief.

Diatreme breccias and related rocks

The main diatreme (Figure 4) comprises inhomogeneous, heterolithic tuffisitic breccias with rounded to angular xenoliths up to 7 centimetres across. Quartzite and carbonate rock fragments dominate the xenolith population; some autoliths, rare syenite fragments and some black argillite clasts were also noted. Quartz xenocrysts, rare chrome spinels, juvenile and vesicular glass lapilli, and crystal fragments (predominantly potassium feldspar and minor phlogopite) are also present. The breccia matrix consists of carbonate minerals, potassium feldspars, minor muscovite and locally, chrome micas. In places near its outer contacts, the diatreme breccia is intensely deformed and has the appearance of a stretched-pebble conglomerate. The northern and central part of the diatreme has been cut by fluorite-calcite and fluorite-calcite-pyrite stockwork veins containing minor amounts of galena and molybdenite. Similar breccias (minus the phlogopite) are present in the Bull River - White River area of the southern Rocky Mountains (Pell, 1987).

Peripheral to the main diatreme, and on the ridges to the north of it (Figures 4, 5), associated dykes are common. These crosscut the carbonate host rocks and the feldspar-quartz-carbonate-sericite rocks. The dykes, in general, are extremely well foliated and average 1 to 2 metres thick. They are similar in composition and appearance to the matrix of the main diatreme, comprised predominantly of iron and magnesium-rich carbonate minerals, feldspars, muscovite, and serpentine. Some quartz and apatite may also be present. The dykes locally contain chrome spinels, small lithic fragments and devitrified glass fragments. Some dykes contain chrome green (chrome mica) or dark green (chlorite and biotite) elliptical patches which probably represent sheared and altered fragments or crystals. One dark green weathering dyke contains abundant small rock fragments and altered olivine macrocrysts.

Tuffs outcrop on ridges near the centre of the property, immediately north of the main diatreme and at the north end of the property, south of Boreal Lake (Figures 4, 5). These pyroclastic rocks are rusty orange to silver-green weathering with a pale green fresh surface, very similar in appearance to some of the dykes. They are conformable with the host carbonate succession and are interbedded with brown, blocky weathering agglomerates and aplitic trachytes. Chrome spinels are present locally. In thin section, these rocks contain plagioclase laths, siderite spots and altered six-sided crystals (clinopyroxenes?) in a fine-grained matrix of carbonate, sericite (or talc), feldspar and opaques (Appendix III). These rocks may be the extrusive equivalent of the diatreme and breccia dykes.

2.2.4 Mineralization

Yttrium mineralization occurs within the white weathering feldspar-quartz-carbonate-sericite mylonites, in some carbonatites, and to a lesser extent in some syenites and trachytic dykes. In general, heavy rare earths are associated with the yttrium mineralization. In some cases, there is a correlation between yttrium mineralization and radioactivity; however, this relationship is not always present. Samples containing up to 8900 ppm yttrium (1.13% Y_2O_3) have been collected (Leighton and Culbert, 1989). Light rare earths are most strongly concentrated in carbonatites and to a lesser extent in the feldspar-quartz-carbonate-sericite mylonites; however, rocks enriched in light rare earths generally do not show similar enrichment in heavy rare earths and yttrium.

Yttrium enrichment in the white weathering feldspar-quartz-carbonate-sericite mylonites appears to be related to phosphate-rich areas. In places, phosphate minerals comprise in excess of 25% of the rock. In such lithologies, a number of phosphate minerals may be intergrown, with apatite the most common species. Monazite (containing cerium, neodymium, lanthanum, calcium, thorium), xenotime (yttrium phosphate, with minor dysprosium, gadolinium and calcium) and an yttrium-thorium-calcium-dysprosium-gadolinium-bearing phosphate have been identified by scanning electron microscopy (Pell, Culbert and Fox, 1989). Minor amounts of an iron-thorium-yttrium-calcium silicate mineral have also been noted.

Phosphate-rich rocks within the feldspar-quartz-carbonate-sericite mylonites are distributed in discontinuous lenses which vary from a few centimetres to a few metres thick and several tens of metres in length, parallel or subparallel to overall layering. On the RAR 7 grid (Figure 5), a zone containing numerous mineralized lenses has been identified (the RAR 7 2237 Ridge Zone).

3. GEOPHYSICAL SURVEY

Geophysical work on the Kechika property in 1989 consisted of detailed and reconnaissance radiometric surveys using SPP2 total count scintillometers as an indirect means of outlining areas with potential yttrium and/or rare earth mineralization. Previous work had demonstrated that, in some cases there is a correlation between high background radiation levels and the presence of rare earth enriched zones. Subsequently it was shown that this was due to anomalous thorium and that uranium did not contribute significantly to the effect.

The detailed radiometric survey (Figure 9) conducted over known areas of high-grade yttrium mineralization on the RAR 7 claim has outlined a main zone, the RAR 7-2237 Ridge zone, approximately 200 x 25 to 50 metres in size, that contains numerous smaller radiometric anomalies. The zone is on a ridge crest predominantly underlain by outcrop and felsenmere of white weathering feldspar-quartz-carbonate-sericite (+/- apatite) rocks. Carbonatite dykes are locally present. Anomalous areas were empirically defined as ones that had a radiometric response of 600 c.p.s. or greater; background readings in the area were generally 150 to 300 c.p.s.. The 600 c.p.s. contours were outlined on the ground with orange spray paint to facilitate mapping, and the highest reading within the zone noted. Spot highs ranged from 650 to 3700 c.p.s.. Anomalies varied from only a few centimetres in size to areas of 3.5 x 13 metres and 1 to 2 x 30 metres (Figure 9). In many cases the shape of the anomalous zone was modified by overburden covered areas or by displaced boulders.

4. TRENCHING AND ASSAY RESULTS

Systematic sampling of the RAR 7 2237 Ridge zone was begun late in the season; the earlier-than-anticipated snowfall made completion of the sampling impossible. Three continuous chip samples were taken across a cumulative distance of about 53 metres; as well, four trenches were blasted, exposing a cumulative distance of approximately 35.5 metres of continuous outcrop (Figure 9) and were sampled using the continuous chip method. Sampling lines and trenches were oriented perpindicular to structural grain and laid out so as to test a number of radiometric anomalies and intervening zones.

Thirty-six continuous chip samples were collected from trenches and sample lines. An additional 66 samples were collected from elsewhere on the property and during the course of regional reconnaissance work. All samples were prepared and analysed by Bondar-Clegg Laboratories of North Vancouver. Samples were crushed and pulverized to -150 mesh. Yttrium was analysed by X-Ray Fluorescence (XRF). Samples were also analysed for 34 elements, including gold and the rare earth elements cerium, lanthanum, samarium, europium, terbium, ytterbium and leutetium, by Induced Neutron Activation (INAA; see Appendix I).

The limited trenching and sampling of the RAR 7 2237 Ridge Zone supports in a general way the previous observations that there commonly is an association between yttrium mineralization and radiometric response in this area. The best assay returned from this sampling was 1700 ppm Y across 0.6 metres (sample RE89-1010, Appendix I); extremely high grade material, such as that discovered during the 1988 preliminary program was not encountered. It must be reiterated, however, that due to early snowfall, the sampling of this zone was incomplete.

5. MARKETING AND METALLURGICAL CONSIDERATIONS

5.1 Market

Demand for yttrium concentrates has been strong throughout the 1980's in response to high demand from the ceramic, magnet and phosphor sectors. Increased demand from existing markets is likely to be mitigated due to increased production from China. A sharp increase in demand for yttrium in superconductors would, however, have a significant effect on the rare earth industry. It has been estimated that demand for yttrium in superconductors could reach 20,000 metric tons per year by the year 2000. This compares with western world consumption of about 650 tonnes in 1988 (Spooner et al. 1990; Roskill, 1988).

Xenotime (YPO_4) is the main source of yttrium. It is produced as a by-product of tin mining operations in Australia, Malaysia, Thailand, and China. Since September 1986, yttrium concentrates have been produced by Dennison Mines from uranium leach operations at Elliot Lake. Production rose from 50 tonnes (containing Y_2O_3) in 1987 to 100 tonnes in 1988 (Spooner et al., 1990; Roskill, 1988).

5.2 Metallurgy

In the fall of 1989, three 100 kilogram samples were collected in the area of the main showings and sent to Dowa Mining's labs in Japan. The objective was to confirm metallurgical acceptability of Kechika mineralization before committing further project funding. This was follow-up to detailed mineralogical studies on representative hand samples carried out by Japanese researchers in the fall of 1988. Both the mineralogical and metallurgical reports were written in Japanese so the following is a summary based on a translation of the original material by K.I. Lu and D.G. Leighton, which is included as Appendix V.

Mineralogical studies were run on ten samples collected from the radioactive anomalous zones. Thirty one elements were analyzed for, including the REE's. Two relatively high total R_2O_3 content samples (KCK01, KCK06) were selected for X-ray diffraction and microscopic analyses.

Chemical analyses indicate a high Y_2O_3 content for the samples and indicate a very attractive REE resource due to the high content of heavy rare earths. Although no rare earth minerals were observed, it was determined that the ore contains mainly xenotime and monazite. No other elements were anomalous besides REE.

The analytical results are summarized below:

	Min. value (ppm)	Max. value (ppm)	Average (ppm)
TOTAL R_2O_3	298	3214	1337
Y_2O_3	14	1700	461
LIGHT RARE EARTHS	280	2007	650
HEAVY RARE EARTHS	18	2485	688

The preliminary metallurgical results are generally positive, but further work remains to be done. Mineralogical tests show that the main constituents of the ore are quartz and apatite with minor phlogopite and K-feldspar. Xenotime is the only rare earth mineral present, identified by X-ray diffraction.

Previous tests showed that xenotime in Kechika ore is fine-grained (~20 - 100 microns) and is enclosed by apatite, barite, goethite etc. It is therefore necessary to grind the ore to a very fine grain for separation, and physical ore dressing such as magnetic or specific gravity separation is not recommended.

The H.G.M.S. (high gradient magnetic separation) test shows that on a +200 mesh sample, recovery of Y_2O_3 was 37.3% (assaying 1.88%) by 300A mag; on the -200 mesh split, recovery of Y_2O_3 was 69.1% (assaying 1.93%) by 300A mag.

The +200 and -200 mesh sample splits were further sorted on a gravitational table to separate heavy and light minerals. From the +200 mesh sample, the heavy fraction assayed 1.4% Y_2O_3 (recovery of 41.0%). The magnetic concentrate grade is 4.36% (recovery of 20.5%).

In the -200 mesh sample split, table concentrate grade is 1.46% Y_2O_3 (recovery of 8.0%); magnetic concentrate is 7.23% Y_2O_3 (recovery of 4.1%). Recovery here was extremely low, as most minerals ended up in the tails.

Recovery in all tests was reduced due to the presence of enclosed grains of xenotime.

Flotation tests indicate that normal flotation conditions do not work for xenotime. Further study of the collectors, pH controller, activator and waste depressor for xenotime is required. Another problem encountered is that the flotational behaviour of xenotime is similar to apatite, which is abundant in the ore. It is therefore difficult to selectively separate xenotime from apatite by flotation.

6. CONCLUSIONS AND RECOMMENDATIONS

Surface work carried out on the Kechika property during 1988 and 1989 has demonstrated that the property contains potentially economic concentrations of yttrium and rare earth elements. The main showing is referred to as the RAR 7 Ridge Zone. This will have to be drilled before any reliable grade/tonnage can be made; however, mineralization exposed on surface indicates a viable drill target.

Mineralogical and metallurgical test work has yielded generally positive results. Exploration has thus far been guided principally by radioactivity; however, one potentially important finding was that yttrium/rare earth values are not necessarily confined to material with anomalous radiation levels. Future work should take this into consideration; sampling should not be restricted to radioactive anomalous material.

Government plans exist to extend the Rocky Mountain Trench road system northward. Exploitation of the property may have to await closer access that would likely be provided through any roads established along the Trench.

In the meantime, follow-up work must be designed with the properties remote location in mind. The next stage of recommended work involves completion of mapping and radiometric surveys on the RAR 7 grid and continued regional geological prospecting work. At the same time a sump (or sumps) should be excavated near the main showings in preparation for a shallow grid drilling program. This could be done with a minimum of effort using "trenching explosives". Contingent upon this work, a drill program should be planned.

7. REFERENCES

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8. STATEMENT OF COSTS

Wages and Professional Fees*		
(1st July-30th September, 1990)	56,513	
Benefits at 25%	14,128	
		$ 70,642
Disbursements:		
Field supplies		10,821
Groceries		4,227
Transportation:		
Truck Rental	4,838	
Helicopter & fuel	58,077	
Fixed-wing	9,634	
Horses & wranglers	23,137	
Air fares	963	
		96,649
Geochem./Assays		2,868
Communications		1,431
Expediting		1,457
Freight		1,118
Explosives		530
Expense Accounts:		
Equipment, Rentals, Camp building materials, etc.		19,658
Contractors:		
A. G. Harman, prospector	12,200	
R. R. Culbert, Engineer	5,476	
		17,676
Contract/Engineering charge		18,660
TOTAL		$245,737

DISTRIBUTION		
Kechika North Group	65%	$159,729
Kechika South Group	35%	$ 86,007**

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* Pay period includes pre- and post-field season project organization, report writing, etc. Breakdown showing pay rates and days worked follows.

** Work Assessment Credits applied only to Kechika South Group.

9. STATEMENT OF QUALIFICATIONS

I, Jennifer A. Pell, of 3011 Quadra Street, Victoria, British Columbia, do hereby certify that:

1. I was in the field in the Kechika area from August until late September, 1989 and personally was involved with the exploration on the RAR and REE claims.

2. I am a graduate of the University of Ottawa with a Bachelor of Science Honours degree in Geology, 1979.

3. I am a graduate of the University of Calgary with a Doctorate of Philosophy degree in Geology, 1984.

4. I am a Fellow of the Geological Association of Canada.

5. I was employed as an Assistant Professor in the Department of Geology, University of Windsor, teaching Economic Geology, Mineralogy, Structural Geology and Historical Geology from July, 1985 to July, 1986 and as a sessional lecturer at University of British Columbia, teaching Introductory Geology from January to April of 1987.

6. I have been engaged in mineral exploration, geologic mapping and geological research in British Columbia, the Northwest Territories, Manitoba and Ontario since 1977.

7. This report is true and factual, to the best of my knowledge. It is based on work done directly under my supervision as well as a study of available literature.

8. I have not received, nor do I expect to receive any interest, direct or indirect, in the Kechika property, in the Formosa-Golden Rule joint venture or in the securities of either Golden Rule Resources Ltd. or Formosa Resources Corporation.

June, 1990
Victoria, B.C.

Jennifer Pell, Ph.D., F.G.A.C.

APPENDIX I

ASSAYS/GEOCHEMISTRY

Bondar-Clegg & Company Ltd.
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BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

DATE PRINTED: 31-OCT-89

REPORT: V89-06950.0

PROJECT: KECHIKA-108 PAGE 1A

SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Ag PPM	As PPM	Ba PPM	Br PPM	Cd PPM	Ce PPM	Co PPM	Cr PPM	Cs PPM	Eu PPM	Fe PCT
R2 C-KC-1R		67	<5	115	230	<1	<10	230	<10	<50	1	<2	3.5
R2 C-KC-2R		<5	<5	3	<100	<1	<10	280	<10	<50	3	<2	0.9
R2 C-KC-4R		72	<5	648	780	<2	<10	270	42	230	3	5	13.0
R2 C-KC-5R		<5	<5	14	210	<1	<10	180	14	110	2	17	4.2
R2 C-KC-6R		<5	<5	5	1100	<1	<10	110	12	79	3	<2	2.9
R2 C-KC-7R		<5	<5	10	320	<1	<10	180	<10	300	<1	<2	1.3
R2 C-KC-8R		<5	<5	<1	190	<1	<10	200	<10	<50	5	<2	0.9
R2 C-KC-9R		<60	<5	337	960	<9	<44	450	48	590	3	39	22.0
R2 C-KC-9RA		<5	<5	54	1400	<1	<10	120	19	320	3	11	6.4
R2 C-KC-10R		<38	<12	<16	<100	<11	<61	9000	29	500	<2	47	5.8
R2 C-KC-10RA		19	<5	63	130	<1	<10	400	11	82	<1	<2	5.0
R2 C-KC-11R		320	<12	1320	2000	<13	<66	6030	99	450	<2	32	14.0
R2 C-KC-11RA		370	<14	1150	1600	<14	<76	8090	93	520	<3	37	21.0
R2 C-KC-12R		<5	<5	43	250	<1	<10	100	27	1300	2	<2	4.6
R2 C-KC-13R		<5	<5	7	140	<1	<10	210	<10	61	2	<2	1.3
R2 C-KC-15R		32	<5	60	<470	<2	<10	1570	44	300	<1	14	6.7
R2 C-KC-16R		<5	<5	5	610	<1	<10	210	<10	150	<1	<2	1.4
R2 C-KC-22R		<5	<5	53	1100	<1	<10	210	25	150	<1	10	5.1
R2 C-KC-23R		<5	<5	12	400	<1	<10	210	28	410	<1	3	3.7
R2 C-KC-26R		<29	<5	<12	<250	<8	<42	480	16	170	<1	83	4.3
R2 C-KC-27R		<18	<5	10	<100	<6	<10	560	20	140	<1	35	5.9
R2 C-KN-1R		<5	<5	1	3300	<1	<10	310	<10	<50	6	<2	<0.5
R2 C-KN-10R		<5	<5	<1	450	<1	<10	620	<10	63	1	3	<0.5
R2 C-KS-1R		<5	<5	2	560	<1	<10	320	<10	<50	3	3	1.1
R2 C-KS-3R		<5	<5	<1	480	<1	<10	86	<10	<50	3	<2	2.8
R2 C-KS-4R		220	<5	846	2400	4	<10	170	<10	<50	2	3	5.0
R2 C-KS-5R		<5	<5	5	300	<1	<10	140	<10	<50	4	<2	0.8
R2 C-KS-8R		<5	<5	69	600	<1	<10	53	<10	66	2	<2	2.6
R2 C-KS-8RB		38	<5	448	360	2	<10	53	54	77	2	<2	12.0
R2 C-KS-10R		<5	<5	5	260	<1	<10	150	<10	92	2	<2	2.2
R2 C-KS-11R		<120	<13	<20	1900	<15	<80	890	25	920	15	55	8.1
R2 C-KS-12R		14	<5	135	290	<1	<10	92	<10	55	<1	<2	2.1
R2 C-KS-15A		8	<5	70	1300	<1	<10	240	<10	<50	2	<2	3.0
R2 C-KS-17R		<41	<5	202	530	4	<38	840	<10	270	2	18	1.8
R2 C-KS-18R		601	<5	8540	230	16	<35	1740	34	230	<1	44	22.0
R2 C-KS-19R		12	<5	200	210	<1	<10	66	<10	<50	<1	<2	2.1
R2 C-KS-20R		<5	<5	8	2600	<1	<10	180	<10	<50	4	<2	2.6
R2 C-KS-21R		20	<5	205	670	<1	<10	260	12	<50	<1	4	3.1
R2 C-KS-22R		<5	<5	36	970	<1	<10	200	12	80	2	4	3.0
R2 C-KS-23R		<5	<5	13	1200	22	<10	370	<10	100	3	<2	3.9

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130 Pemberton Ave.
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V7P 2R5
(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 31-OCT-89

REPORT: V89-06950.0

PROJECT: KECHIKA-108 PAGE 1B

SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ir PPB	La PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 C-KC-1R		16	<100	100	<0.5	<2	0.22	<50	270	2.3	1.8	<10	17.0
R2 C-KC-2R		16	<100	120	<0.5	<2	0.22	<50	99	<0.2	1.4	<10	15.0
R2 C-KC-4R		7	<100	110	<1.2	53	1.00	<50	79	5.9	8.0	<10	49.2
R2 C-KC-5R		2	<100	30	<0.5	<2	0.18	<50	140	0.9	6.5	<10	42.2
R2 C-KC-6R		9	<100	45	<0.5	<2	0.19	<50	140	0.3	11.0	<10	6.9
R2 C-KC-7R		21	<100	65	<0.5	<2	0.43	<50	48	1.4	4.2	<10	10.0
R2 C-KC-8R		9	<100	98	<0.5	7	0.22	<50	220	0.3	1.4	<10	7.3
R2 C-KC-9R		<5	<100	150	8.5	<31	<0.57	<60	57	7.1	12.0	<53	233.0
R2 C-KC-9RA		3	<100	65	0.9	<7	1.20	100	130	1.8	21.0	<10	61.5
R2 C-KC-10R		7	<100	>7060	<1.3	<14	<2.00	<77	<60	2.9	6.5	<29	342.0
R2 C-KC-10RA		<2	<100	280	<0.5	76	0.36	<50	<10	4.5	4.8	<10	20.5
R2 C-KC-11R		<5	<100	4940	<1.9	42	<2.00	440	69	6.8	6.2	<41	132.0
R2 C-KC-11RA		<6	<230	6630	<2.1	50	<2.40	400	<75	8.2	7.9	<45	191.0
R2 C-KC-12R		2	<100	52	<0.5	2	0.23	100	100	0.5	23.0	<10	5.5
R2 C-KC-13R		8	<100	120	<0.5	<2	2.60	<50	87	0.2	1.1	<10	7.9
R2 C-KC-15R		1240	<100	712	2.2	<6	<0.53	<50	88	2.1	42.0	<10	127.0
R2 C-KC-16R		25	<100	81	<0.5	<2	0.82	<50	61	0.6	4.9	<10	15.0
R2 C-KC-22R		3	<100	89	<0.5	<2	0.13	99	66	0.9	8.5	<10	31.8
R2 C-KC-23R		6	<100	120	<0.5	<2	0.16	180	110	2.5	10.0	<10	14.0
R2 C-KC-26R		<2	<100	270	16.0	<13	<0.49	<62	<32	0.9	6.4	<23	305.0
R2 C-KC-27R		<2	<100	290	7.9	<8	<0.42	150	41	1.3	6.8	<10	107.0
R2 C-KN-1R		35	<100	120	<0.5	<2	1.40	<50	280	<0.2	7.3	<10	12.0
R2 C-KN-10R		13	<100	320	<0.5	<2	0.64	<50	84	<0.2	2.1	<10	29.8
R2 C-KS-1R		5	<100	200	<0.5	<2	4.20	<50	130	0.6	<0.5	<10	10.0
R2 C-KS-3R		6	<100	48	<0.5	<2	3.80	<50	120	0.4	<0.5	<10	2.7
R2 C-KS-4R		<2	<100	100	<0.5	12	1.00	<50	250	2.4	1.5	<10	5.1
R2 C-KS-5R		8	<100	57	<0.5	<2	0.19	<50	170	<0.2	<0.5	<10	7.8
R2 C-KS-8R		2	<100	23	<0.5	<2	0.26	<50	250	0.3	7.0	<10	6.0
R2 C-KS-8RB		4	<100	27	<0.5	<2	0.08	<50	190	2.1	6.1	<10	4.1
R2 C-KS-10R		3	<100	100	<0.5	<2	1.60	<50	100	0.5	4.1	<10	5.5
R2 C-KS-11R		<8	<320	320	15.0	<65	2.40	<89	380	3.1	21.0	<110	383.0
R2 C-KS-12R		5	<100	33	0.8	<2	1.50	<50	120	0.7	8.6	<10	9.4
R2 C-KS-15A		9	<100	170	<0.5	<2	2.40	<50	220	0.9	0.7	<10	9.0
R2 C-KS-17R		91	<100	210	8.0	<24	<0.54	<50	190	2.5	65.2	<41	113.0
R2 C-KS-18R		<2	<100	270	<0.5	>120	<0.49	<50	87	>21.0	7.6	<10	303.0
R2 C-KS-19R		3	<100	31	<0.5	11	1.00	<50	290	0.3	5.4	<10	5.2
R2 C-KS-20R		4	<100	100	<0.5	<2	1.80	<50	370	0.7	3.1	<10	8.5
R2 C-KS-21R		5	<100	130	<0.5	26	3.90	<50	150	1.1	1.5	<10	16.0
R2 C-KS-22R		2	<100	59	1.6	<2	1.40	<50	110	0.8	3.9	<10	18.0
R2 C-KS-23R		3	<100	250	<0.5	2	2.80	<50	350	<0.2	5.1	<10	10.0

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SAMPLE NUMBER	ELEMENT UNITS	Sn PPM	Ta PPM	Tb PPM	Te PPM	Th PPM	U PPM	W PPM	Yb PPM	Zn PPM	Zr PPM	Y PPM
R2 C-KC-1R		<200	12	2	<20	76.0	5.4	10	<5	520	1100	73
R2 C-KC-2R		<200	17	2	<20	32.0	6.9	3	5	<200	980	70
R2 C-KC-4R		<200	<1	7	<58	>3000.0	17.0	18	<5	<200	1700	120*
R2 C-KC-5R		<440	1	36	<20	705.0	40.0	4	42	<200	<500	1200
R2 C-KC-6R		<200	1	<1	<20	21.0	3.6	<2	<5	<200	<500	26
R2 C-KC-7R		<200	1	<1	<20	65.2	4.9	<2	<5	<200	1000	27
R2 C-KC-8R		<200	12	2	<20	61.4	12.0	8	<5	<200	<500	54
R2 C-KC-9R		<940	3	18	<160	>3000.0	21.0	38	<13	<460	3000	140=
R2 C-KC-9RA		<200	6	6	<20	1820.0	5.4	26	<5	<200	1100	140
R2 C-KC-10R		<620	<2	25	<72	>3000.0	15.0	<37	<5	<450	<1800	100*
R2 C-KC-10RA		<200	<1	3	<20	303.0	2.1	30	<5	<200	<500	77
R2 C-KC-11R		<770	<2	16	<170	>3000.0	10.0	51	<5	<570	3200	110*
R2 C-KC-11RA		<890	<2	19	<120	>3000.0	9.2	<47	<10	450	3300	100*
R2 C-KC-12R		<200	5	<1	<20	32.0	1.5	5	<5	<200	<500	19
R2 C-KC-13R		<200	9	<1	<20	96.5	9.1	5	<5	<200	510	36
R2 C-KC-15R		<200	14	21	<20	508.0	135.0	<2	56	<200	>30000	*
R2 C-KC-16R		<200	<1	2	<20	79.3	5.1	<2	<5	<200	1100	51
R2 C-KC-22R		<200	7	16	<20	218.0	9.5	34	15	<200	630	395
R2 C-KC-23R		<200	6	2	<20	70.4	2.7	43	<5	<200	<500	47
R2 C-KC-26R		<1200	4	166	<53	2570.0	70.9	<34	16	<560	2700	3000
R2 C-KC-27R		<200	5	72	<20	1430.0	56.1	<2	25	<200	1500	1800
R2 C-KN-1R		<200	51	2	<20	227.0	29.0	5	9	<200	1700	82
R2 C-KN-10R		<200	15	4	<20	92.1	9.4	6	10	<200	760	110
R2 C-KS-1R		<200	6	2	<20	59.6	10.0	5	6	<200	770	69
R2 C-KS-3R		<200	6	<1	<20	50.0	8.3	11	<5	<200	500	34
R2 C-KS-4R		<200	5	<1	<20	78.8	9.3	15	<5	<200	<500	27
R2 C-KS-5R		<200	21	2	<20	47.0	13.0	3	<5	<200	<500	60
R2 C-KS-8R		<200	2	<1	<20	25.0	1.0	25	<5	<200	<500	32
R2 C-KS-8RB		<200	<1	<1	<20	16.0	0.5	12	<5	<200	<500	14
R2 C-KS-10R		<200	5	1	<20	65.9	5.1	4	<5	<200	<500	29
R2 C-KS-11R		<1800	16	35	<250	>3000.0	22.0	<47	<26	<750	11000	300=
R2 C-KS-12R		<200	<1	2	<20	142.0	1.8	7	7	<200	<500	59
R2 C-KS-15A		<200	15	2	<20	170.0	22.0	18	7	<200	1100	100
R2 C-KS-17R		<670	1	13	<140	>3000.0	15.0	45	<11	<410	7500	300=
R2 C-KS-18R		<460	4	12	<60	1350.0	12.0	<20	<5	760	1500	100=
R2 C-KS-19R		<200	2	<1	<20	27.0	1.1	76	<5	<200	<500	31
R2 C-KS-20R		<200	8	1	<20	209.0	7.2	34	<5	<200	740	43
R2 C-KS-21R		<200	9	2	<20	124.0	14.0	16	<5	<200	<500	60
R2 C-KS-22R		<200	4	5	<20	1690.0	6.0	18	<11	<200	<500	180=
R2 C-KS-23R		<200	5	1	<20	41.0	6.6	3	<5	350	<500	<5

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PROJECT: KECHIKA-108 PAGE 2A

SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Ag PPM	As PPM	Ba PPM	Br PPM	Cd PPM	Ce PPM	Co PPM	Cr PPM	Cs PPM	Eu PPM	Fe PCT
R2 C-KS-24R		<5	<5	5	620	1	<10	400	<10	54	<1	<2	2.7
R2 C-KS-25R		<5	<5	7	570	<1	<10	130	<10	70	<1	<2	1.8
R2 C-KS-26R		<5	<5	8	390	<1	<10	140	<10	100	5	3	3.2
R2 C-KS-27R		<32	<5	53	440	<8	<40	2150	27	300	<1	100	6.9
R2 C-KS-28R		7	<5	3	130	<1	<10	480	<10	<50	6	4	3.1
R2 C-KS-29R		<34	<11	29	420	<11	<58	10600	<10	330	<2	33	2.9
R2 C-KS-33R		6	<5	26	1500	19	<10	190	24	160	3	3	3.8
R2 C-KS-35R		17	<5	2	570	<1	<10	320	18	<50	2	4	8.0
R2 C-KS-36R		<5	<5	2	150	<1	<10	910	16	130	<1	8	3.9
R2 C-KS-37R		<5	<5	6	1200	55	<10	510	<10	130	2	<2	4.1
R2 C-STH-1R		<5	<5	19	560	<1	<10	450	20	160	2	<2	3.0
R2 C-STH-2R		8	<5	37	330	<1	<10	120	<10	260	<1	<2	1.5
R2 C-STH-3R		<5	<5	105	<100	<1	<10	20	<10	250	<1	<2	6.5
R2 C-STH-4		<5	<5	8	160	<1	<10	120	17	270	<1	<2	4.5
R2 C-STH-4R		<5	<5	13	500	<1	<10	100	20	110	2	<2	3.9
R2 C-STH-5R		<5	<5	7	140	<1	<10	180	<10	210	<1	2	2.3
R2 C-STH-6R		<5	<5	9	1200	<1	<10	120	<10	110	2	<2	2.7
R2 REG-1		<5	<5	5	1000	<1	<10	180	12	77	<1	<2	2.6
R2 REG-2		<5	<5	18	1400	<1	<10	380	37	150	<1	6	10.0
R2 REG-3		<5	<5	11	2300	<1	<10	110	12	83	<1	<2	2.8
R2 REG-4		<5	<5	13	2900	<1	<10	140	15	57	<1	3	2.7
R2 REG-5		<5	<5	28	1700	<1	<10	77	98	780	<1	<2	7.5
R2 RE-89-6		<35	<11	49	1100	<11	<61	12500	30	460	<2	16	7.9
R2 RE-89-28		<5	<5	14	440	1	<10	300	<10	<50	<1	<2	2.5
R2 RE-89-36		13	<5	385	2400	2	<10	110	<10	<50	2	2	4.2
R2 RE-89-38B		440	<5	5470	350	9	<10	<21	160	<50	<1	<2	46.0
R2 RE-89-1001		<5	<5	8	1500	<1	<10	180	<10	56	<1	5	1.6
R2 RE-89-1002		<5	<5	23	1400	<1	<10	140	<10	110	<1	3	1.5
R2 RE-89-1003		<5	<5	13	3200	<1	<10	430	<10	<50	<1	10	4.7
R2 RE-89-1004		17	<5	17	8000	<1	<10	210	<10	92	<1	14	2.0
R2 RE-89-1005		<5	<5	8	520	<1	<10	110	<10	82	<1	3	1.1
R2 RE-89-1006		9	<5	12	2600	<1	<10	220	<10	100	<1	14	2.0
R2 RE-89-1007		<5	<5	7	3100	<1	<10	95	<10	56	<1	3	1.2
R2 RE-89-1008		8	<5	14	1500	2	<10	550	<10	71	<1	8	4.6
R2 RE-89-1009		<5	<5	6	1900	<1	<10	120	<10	<50	<1	2	1.6
R2 RE-89-1010		<24	<5	18	3600	<7	<33	850	17	220	<1	71	6.4
R2 RE-89-1011		<5	<5	11	5600	<1	<10	170	<10	93	<1	7	1.6
R2 RE-89-1012		<5	<5	11	8300	<1	<10	250	<10	96	<1	5	2.6
R2 RE-89-1013		<5	<5	14	4600	<1	<10	520	<10	86	<1	11	5.2
R2 RE-89-1014		<5	<5	6	350	<1	<10	110	<10	95	<1	3	1.9

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SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ir PPB	La PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 C-KS-24R		5	<100	290	<0.5	<2	1.10	<50	190	<0.2	7.0	<10	11.0
R2 C-KS-25R		5	<100	73	<0.5	12	2.10	<50	89	3.1	7.2	<10	6.9
R2 C-KS-26R		<2	<100	80	1.1	13	0.10	<50	210	0.5	6.6	<10	11.0
R2 C-KS-27R		<2	<100	1100	7.2	<13	<0.91	<55	<34	0.6	11.0	<23	451.0
R2 C-KS-28R		<2	<100	250	<0.5	190	0.08	<50	390	0.5	1.4	<10	19.0
R2 C-KS-29R		9	<100	8280	<0.5	<10	<2.20	<75	<59	<0.5	5.2	<24	262.0
R2 C-KS-33R		<2	<100	130	<0.5	22	2.90	57	310	<0.2	8.6	<10	11.0
R2 C-KS-35R		4	<100	180	<0.5	30	3.40	<50	130	0.5	1.3	<10	14.0
R2 C-KS-36R		<2	<100	715	4.0	<2	0.51	<50	28	0.3	4.9	<10	33.5
R2 C-KS-37R		5	<100	400	<0.5	<2	4.80	<50	200	<0.2	5.9	<10	13.0
R2 C-STH-1R		69	<100	190	<0.5	<2	0.70	<50	81	1.0	10.0	<10	35.9
R2 C-STH-2R		12	<100	68	<0.5	<2	0.05	<50	52	2.3	4.6	<10	7.4
R2 C-STH-3R		3	<100	13	<0.5	2	<0.05	<50	<10	6.5	0.7	<10	3.1
R2 C-STH-4		9	<100	39	<0.5	<2	<0.05	<50	36	0.5	4.6	<10	15.0
R2 C-STH-4R		8	<100	48	<0.5	<2	0.08	<50	140	0.6	11.0	<10	10.0
R2 C-STH-5R		24	<100	68	<0.5	<2	<0.05	<50	30	0.6	6.8	<10	18.0
R2 C-STH-6R		13	<100	55	<0.5	<2	0.14	<50	150	0.6	8.6	<10	9.4
R2 REG-1		<2	<100	110	<0.5	<2	0.11	<50	130	0.8	6.7	<10	6.3
R2 REG-2		<2	<100	130	<0.5	<2	0.36	<50	94	0.5	10.0	<10	48.2
R2 REG-3		<2	<100	66	<0.5	4	0.31	<50	200	0.9	5.6	<10	5.3
R2 REG-4		<2	<100	80	<0.5	<2	0.16	<50	230	1.0	4.5	<10	10.0
R2 REG-5		5	<100	36	<0.5	<2	1.50	380	97	1.1	28.0	<10	6.8
R2 RE-89-6		6	<100	9930	<1.0	<10	<2.40	<80	<62	5.4	10.0	<24	119.0
R2 RE-89-28		5	<100	150	<0.5	<2	0.28	<50	280	0.7	1.4	<10	14.0
R2 RE-89-36		9	<100	78	<0.5	16	1.20	<50	260	0.7	1.9	<10	5.1
R2 RE-89-38B		<2	<100	14	<0.5	8	<0.19	200	37	18.0	1.4	<10	2.1
R2 RE-89-1001		2	<100	84	<0.5	<2	0.12	<50	160	0.4	1.4	<10	24.7
R2 RE-89-1002		3	<100	62	<0.5	<2	0.11	<50	150	0.5	1.6	<10	17.0
R2 RE-89-1003		<2	<100	310	0.8	<2	0.07	<50	69	0.5	1.9	<10	46.8
R2 RE-89-1004		2	<100	120	1.1	<2	0.12	<50	160	1.7	1.2	<10	64.9
R2 RE-89-1005		<2	<100	51	<0.5	<2	0.10	<50	150	0.5	1.2	<10	16.0
R2 RE-89-1006		3	<100	120	0.7	<2	0.09	<50	140	1.0	3.8	<10	64.8
R2 RE-89-1007		<2	<100	47	<0.5	<2	0.07	<50	130	0.5	1.3	<10	14.0
R2 RE-89-1008		<2	<100	410	0.8	<2	0.10	<50	30	1.2	2.0	<10	49.6
R2 RE-89-1009		<2	<100	57	<0.5	<2	0.10	<50	150	0.3	1.9	<10	11.0
R2 RE-89-1010		4	<100	450	5.6	<10	<0.56	<50	78	1.0	6.4	<10	253.0
R2 RE-89-1011		<2	<100	9	<0.5	<2	0.08	<50	11	0.8	1.4	<10	31.5
R2 RE-89-1012		4	<100	150	<0.5	23	0.10	<50	140	0.7	1.8	<10	23.3
R2 RE-89-1013		3	<100	290	<0.5	<2	0.09	<50	82	0.6	3.0	<10	58.8
R2 RE-89-1014		<2	<100	54	<0.5	<2	0.07	<50	120	0.4	1.8	<10	11.0

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

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REPORT: V89-06950.0

PROJECT: KECHIKA-108 PAGE 2C

SAMPLE NUMBER	ELEMENT UNITS	Sn PPM	Ta PPM	Tb PPM	Te PPM	Th PPM	U PPM	W PPM	Yb PPM	Zn PPM	Zr PPM	Y PPM
R2 C-KS-24R		<200	2	1	<20	68.7	4.8	<2	<5	<200	510	<5
R2 C-KS-25R		<200	<1	1	<20	80.2	2.5	47	<5	<200	<500	17
R2 C-KS-26R		<200	2	3	<20	53.8	1.2	28	7	<200	<500	29
R2 C-KS-27R		<1000	3	88	<52	2980.0	15.0	<30	<11	<470	3800	1600=
R2 C-KS-28R		<200	2	2	<20	16.0	6.5	4	6	<200	<500	<5
R2 C-KS-29R		<530	<1	12	<63	745.0	<2.1	<37	<5	<450	1700	105
R2 C-KS-33R		<200	5	2	<20	62.1	3.2	3	<5	<200	<500	<5
R2 C-KS-35R		<200	7	2	<20	88.1	12.0	25	6	<200	<500	55
R2 C-KS-36R		<200	<1	9	<20	959.0	5.0	11	25	<200	<500	300
R2 C-KS-37R		<200	8	2	<20	64.7	7.8	<2	<5	<200	<500	19
R2 C-STH-1R		<200	3	4	<20	104.0	17.0	<2	10	<200	2900	390
R2 C-STH-2R		<200	1	1	<20	72.2	3.0	6	<5	<200	610	53
R2 C-STH-3R		<200	<1	<1	<20	6.9	2.1	<2	<5	<200	<500	12
R2 C-STH-4		<200	<1	3	<20	17.0	2.5	<2	6	<200	<500	66
R2 C-STH-4R		<200	1	2	<20	15.0	3.4	<2	<5	<200	<500	41
R2 C-STH-5R		<200	1	3	<20	32.0	6.9	<2	8	<200	1200	75
R2 C-STH-6R		<200	<1	1	<20	21.0	4.3	<2	<5	<200	530	41
R2 REG-1		<200	5	<1	<20	22.0	0.6	13	<5	<200	<500	32
R2 REG-2		<200	4	2	<20	210.0	1.2	16	<5	<200	<500	22
R2 REG-3		<200	6	<1	<20	16.0	1.1	15	<5	<200	<500	25
R2 REG-4		<200	6	<1	<20	25.0	1.0	12	<5	<200	<500	21
R2 REG-5		<200	4	1	<20	8.1	2.2	48	<5	<200	<500	27
R2 RE-89-6		<550	<2	8	<73	772.0	6.5	<39	<5	<460	<2000	100=
R2 RE-89-28		<200	16	<1	<20	37.0	4.1	4	<5	<200	<500	41
R2 RE-89-36		<200	9	2	<20	83.1	7.9	95	7	<200	590	78
R2 RE-89-38B		<200	<1	<1	<20	7.5	<0.5	28	<5	<200	<500	34
R2 RE-89-1001		<200	<1	2	<20	101.0	0.7	<2	<5	<200	<500	27
R2 RE-89-1002		<200	2	2	<20	77.5	1.0	3	<5	<200	<500	43
R2 RE-89-1003		<200	<1	9	<20	200.0	2.4	<2	10	<200	<500	130
R2 RE-89-1004		<200	2	15	<20	318.0	2.7	<2	12	<200	<500	330
R2 RE-89-1005		<200	1	1	<20	69.9	0.8	4	<5	<200	<500	19
R2 RE-89-1006		<200	3	16	<20	306.0	5.6	4	11	<200	550	350
R2 RE-89-1007		<200	1	2	<20	61.2	0.7	<2	<5	<200	<500	13
R2 RE-89-1008		<200	<1	6	<20	222.0	3.1	3	8	<200	<500	95
R2 RE-89-1009		<200	2	<1	<20	49.0	<0.5	2	<5	<200	<500	17
R2 RE-89-1010		<660	7	96	<20	1780.0	13.0	<27	<10	<430	3300	1700
R2 RE-89-1011		<200	2	5	<20	144.0	2.0	4	<5	<200	<500	81
R2 RE-89-1012		<200	2	4	<20	127.0	2.5	5	<5	<200	<500	64
R2 RE-89-1013		<200	2	6	<20	297.0	2.0	<2	<5	<200	<500	50
R2 RE-89-1014		<200	2	<1	<20	66.5	0.7	2	<5	<200	<500	20

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R2 RE-89-1015		<5	<5	18	3300	<1	<10	240	13	130	<1	11	2.6
R2 RE-89-1016		20	<5	32	9700	1	<10	590	<10	140	<1	21	7.1
R2 RE-89-1017		<5	<5	6	420	<1	<10	73	<10	85	<1	2	0.6
R2 RE-89-1018		<5	<5	8	1700	<1	<10	110	<10	61	<1	4	0.8
R2 RE-89-1019		<5	<5	7	2100	<1	<10	100	<10	94	<1	5	0.9
R2 RE-89-1020		<5	<5	12	12900	<1	<10	110	<10	100	<1	20	1.0
R2 RE-89-1021		26	<5	23	3500	1	<10	220	<10	95	<1	45	1.0
R2 RE-89-1022		<5	<5	8	3200	<1	<10	120	<10	73	<1	7	0.8
R2 RE-89-1023		<5	<5	9	4800	<1	<10	120	<10	100	<1	14	1.0
R2 RE-89-1024		<5	<5	5	500	<1	<10	100	<10	73	<1	2	1.4
R2 RE-89-1025		<5	<5	19	2000	<1	<10	320	13	110	<1	25	3.8
R2 RE-89-1026		9	<5	13	5900	<1	<10	170	16	160	<1	18	1.7
R2 RE-89-1027		<5	<5	9	1300	<1	<10	130	<10	<50	<1	<2	1.5
R2 RE-89-1028		<5	<5	6	670	<1	<10	110	<10	69	<1	6	1.4
R2 RE-89-1029		8	<5	10	1200	<1	<10	73	<10	70	<1	20	1.6
R2 RE-89-1030		<5	<5	6	1300	<1	<10	190	<10	67	<1	4	1.5
R2 RE-89-1031		<5	<5	13	2900	<1	<10	150	<10	70	<1	4	2.4
R2 RE-89-1032		<5	<5	6	1800	<1	<10	82	<10	110	<1	<2	1.4
R2 RE-89-1033		<5	<5	7	830	<1	<10	100	<10	61	<1	<2	1.9
R2 RE-89-1034		<5	<5	12	3500	<1	<10	270	<10	200	<1	11	4.4
R2 RE-89-1035		<5	<5	5	350	<1	<10	190	<10	83	<1	3	1.0
R2 RE-89-1036		<5	<5	4	240	<1	<10	120	<10	51	<1	2	3.8

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PROJECT: KECHIKA-108 PAGE 3B

SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ir PPB	La PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 RE-89-1015		2	<100	150	0.9	<2	0.11	<50	180	4.2	4.8	<10	42.3
R2 RE-89-1016		<2	<100	390	0.9	<2	0.06	<50	<10	1.2	4.1	<10	100.0
R2 RE-89-1017		<2	<100	39	<0.5	<2	0.06	<50	100	0.4	<0.5	<10	10.0
R2 RE-89-1018		3	<100	54	<0.5	<2	0.07	<50	120	0.5	0.6	<10	19.0
R2 RE-89-1019		2	<100	57	<0.5	<2	0.07	<50	120	0.4	0.9	<10	18.0
R2 RE-89-1020		<2	<100	70	2.0	<2	0.08	<50	130	0.5	0.9	<10	67.5
R2 RE-89-1021		3	<100	69	5.6	<5	<0.23	<50	120	0.8	1.3	<10	138.0
R2 RE-89-1022		2	<100	63	<0.5	<2	0.08	<50	120	0.4	0.9	<10	25.7
R2 RE-89-1023		<2	<100	62	1.2	<2	0.05	<50	96	0.5	1.1	<10	45.5
R2 RE-89-1024		<2	<100	51	<0.5	<2	0.09	<50	120	0.3	2.4	<10	10.0
R2 RE-89-1025		<2	<100	230	1.5	<2	0.07	<50	80	1.0	3.2	<10	102.0
R2 RE-89-1026		3	<100	130	1.2	<2	0.07	<50	120	1.2	5.3	<10	77.0
R2 RE-89-1027		2	<100	68	<0.5	<2	0.08	<50	120	0.4	2.6	<10	12.0
R2 RE-89-1028		<2	<100	55	<0.5	<2	0.08	<50	120	0.2	1.7	<10	24.2
R2 RE-89-1029		2	<100	58	1.8	<2	0.08	<50	110	<0.2	1.3	<10	59.0
R2 RE-89-1030		<2	<100	110	<0.5	<2	0.09	<50	150	0.5	2.2	<10	19.0
R2 RE-89-1031		<2	<100	85	<0.5	<2	0.13	<50	190	0.4	2.7	<10	16.0
R2 RE-89-1032		<2	<100	40	<0.5	4	0.07	<50	130	0.3	2.0	<10	7.9
R2 RE-89-1033		<2	<100	56	<0.5	<2	0.09	<50	120	0.5	3.3	<10	10.0
R2 RE-89-1034		<2	<100	190	2.5	<2	0.13	<50	120	0.8	6.8	<10	41.1
R2 RE-89-1035		<2	<100	110	<0.5	<2	0.10	<50	130	0.4	2.0	<10	17.0
R2 RE-89-1036		<2	<100	70	<0.5	<2	0.10	<50	110	0.2	2.3	<10	12.0

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R2 RE-89-1015		<200	5	12	<20	233.0	4.2	19	11	<200	<500	225
R2 RE-89-1016		<200	<1	19	<20	447.0	4.6	<2	15	<200	<500	310
R2 RE-89-1017		<200	2	2	<20	38.0	1.4	<2	<5	<200	<500	21
R2 RE-89-1018		<200	2	4	<20	71.3	1.6	<2	<5	<200	<500	72
R2 RE-89-1019		<200	2	4	<20	71.7	1.7	<2	<5	<200	<500	75
R2 RE-89-1020		<470	1	26	<20	409.0	6.2	<2	24	<200	<500	585
R2 RE-89-1021		<420	<1	64	<20	977.0	22.0	<2	<5	<200	1900	1400
R2 RE-89-1022		<200	1	7	<20	128.0	2.5	<2	6	<200	<500	125
R2 RE-89-1023		<300	<1	17	<20	261.0	3.9	<2	14	<200	670	355
R2 RE-89-1024		<200	3	<1	<20	43.0	0.7	3	<5	<200	<500	12
R2 RE-89-1025		<660	4	29	<20	527.0	5.3	7	19	<200	<500	570
R2 RE-89-1026		<200	3	26	<20	338.0	6.6	4	16	<200	<500	540
R2 RE-89-1027		<200	3	1	<20	57.6	0.8	7	<5	<200	<500	17
R2 RE-89-1028		<200	3	8	<20	117.0	2.6	3	6	<200	<500	155
R2 RE-89-1029		<480	3	26	<20	323.0	6.1	2	22	<200	<500	580
R2 RE-89-1030		<200	4	2	<20	84.9	1.0	7	<5	<200	<500	20
R2 RE-89-1031		<200	3	2	<20	96.0	1.2	6	<5	<200	<500	14
R2 RE-89-1032		<200	3	<1	<20	47.0	0.6	4	<5	<200	<500	<5
R2 RE-89-1033		<200	3	1	<20	52.9	0.6	4	<5	<200	<500	<5
R2 RE-89-1034		<360	4	16	<20	313.0	4.9	32	16	<200	<500	470
R2 RE-89-1035		<200	3	2	<20	80.5	0.6	5	<5	<200	<500	24
R2 RE-89-1036		<200	3	1	<20	71.4	0.6	4	<5	<200	<500	15

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PROJECT: KECHIKA-108 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Y PPM	SAMPLE NUMBER	ELEMENT UNITS	Y PPM
R2 C-KC-1R		73	R2 C-KS-24R		<5
R2 C-KC-2R		70	R2 C-KS-25R		17
R2 C-KC-4R		120*	R2 C-KS-26R		29
R2 C-KC-5R		1200	R2 C-KS-27R		1600=
R2 C-KC-6R		26	R2 C-KS-28R		<5
R2 C-KC-7R		27	R2 C-KS-29R		105
R2 C-KC-8R		54	R2 C-KS-33R		<5
R2 C-KC-9R		140=	R2 C-KS-35R		55
R2 C-KC-9RA		140	R2 C-KS-36R		300
R2 C-KC-10R		100*	R2 C-KS-37R		19
R2 C-KC-10RA		77	R2 C-STH-1R		390
R2 C-KC-11R		110*	R2 C-STH-2R		53
R2 C-KC-11RA		100*	R2 C-STH-3R		12
R2 C-KC-12R		19	R2 C-STH-4		66
R2 C-KC-13R		36	R2 C-STH-4R		41
R2 C-KC-15R		*	R2 C-STH-5R		75
R2 C-KC-16R		51	R2 C-STH-6R		41
R2 C-KC-22R		395	R2 REG-1		32
R2 C-KC-23R		47	R2 REG-2		22
R2 C-KC-26R		3000	R2 REG-3		25
R2 C-KC-27R		1800	R2 REG-4		21
R2 C-KN-1R		82	R2 REG-5		27
R2 C-KN-10R		110	R2 RE-89-6		100=
R2 C-KS-1R		69	R2 RE-89-28		41
R2 C-KS-3R		34	R2 RE-89-36		78
R2 C-KS-4R		27	R2 RE-89-380		34
R2 C-KS-5R		60	R2 RE-89-1001		27
R2 C-KS-8R		32	R2 RE-89-1002		43
R2 C-KS-8RB		14	R2 RE-89-1003		130
R2 C-KS-10R		29	R2 RE-89-1004		330
R2 C-KS-11R		300=	R2 RE-89-1005		19
R2 C-KS-12R		59	R2 RE-89-1006		350
R2 C-KS-15A		100	R2 RE-89-1007		13
R2 C-KS-17R		300=	R2 RE-89-1008		95
R2 C-KS-18R		100=	R2 RE-89-1009		17
R2 C-KS-19R		31	R2 RE-89-1010		1700
R2 C-KS-20R		43	R2 RE-89-1011		81
R2 C-KS-21R		60	R2 RE-89-1012		64
R2 C-KS-22R		180=	R2 RE-89-1013		50
R2 C-KS-23R		<5	R2 RE-89-1014		20

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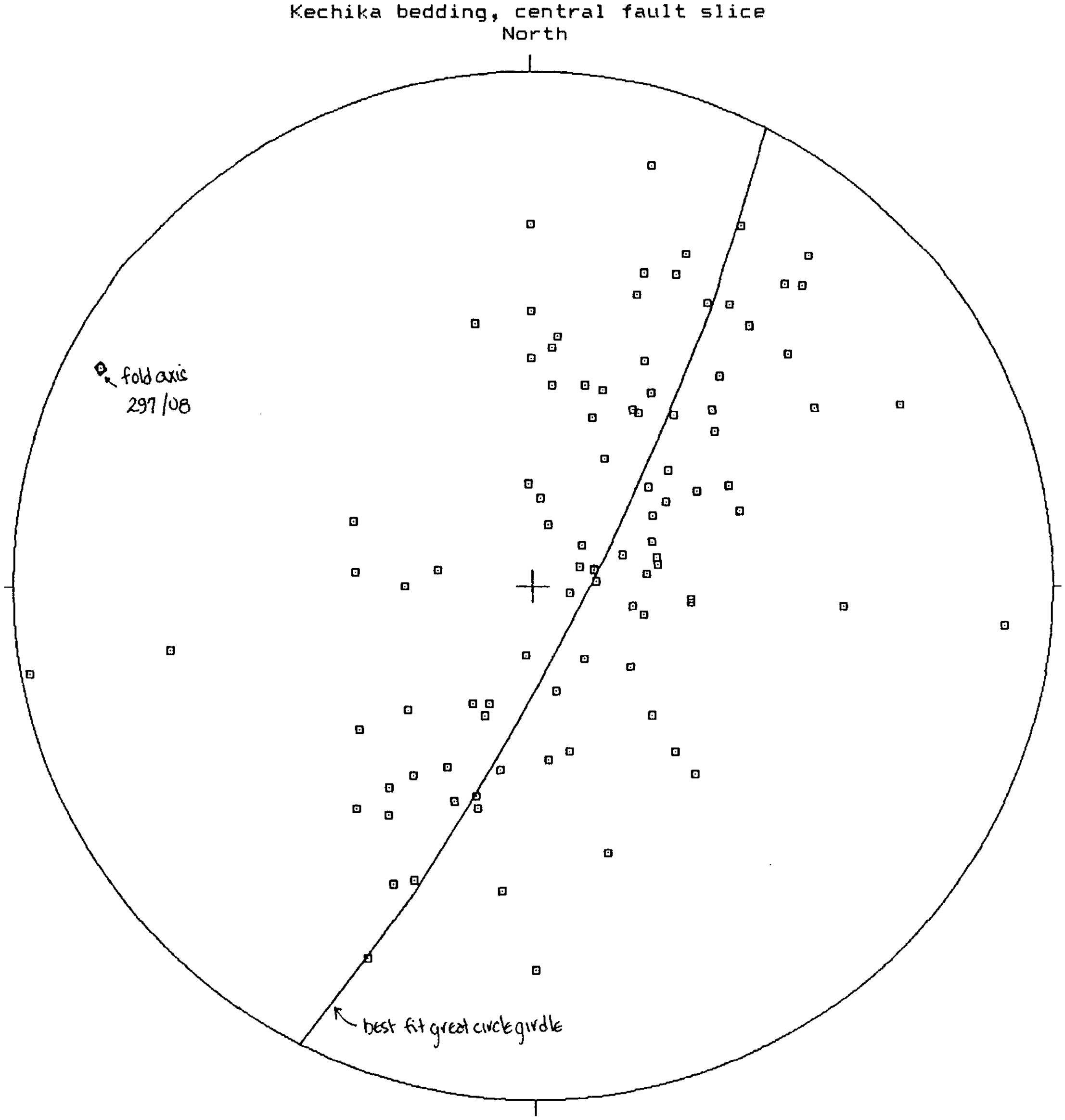
R2 RE-89-1015		225
R2 RE-89-1016		310
R2 RE-89-1017		21
R2 RE-89-1018		72
R2 RE-89-1019		75
R2 RE-89-1020		585
R2 RE-89-1021		1400
R2 RE-89-1022		125
R2 RE-89-1023		355
R2 RE-89-1024		12
R2 RE-89-1025		570
R2 RE-89-1026		540
R2 RE-89-1027		17
R2 RE-89-1028		155
R2 RE-89-1029		580
R2 RE-89-1030		20
R2 RE-89-1031		14
R2 RE-89-1032		<5
R2 RE-89-1033		<5
R2 RE-89-1034		470
R2 RE-89-1035		24
R2 RE-89-1036		15

APPENDIX II

STRUCTURAL ANALYSIS

Kechika bedding, central fault slice



EQUAL AREA PROJECTION

Kechika bedding, central fault slice

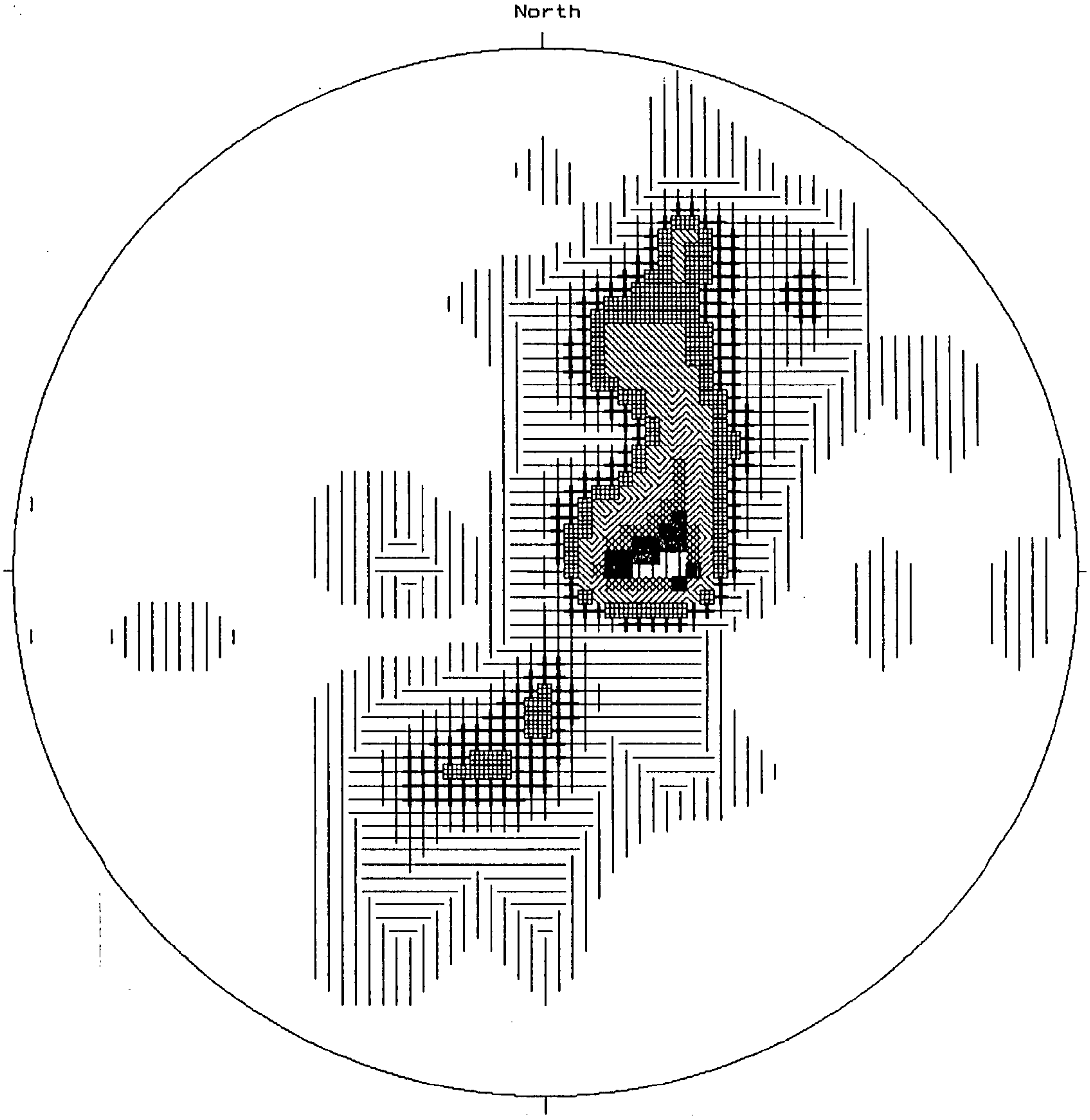
Symbol

98 Points

98 Points Total

SPLOT by Darton Software

Kechika bedding, central fault slice



98 Points

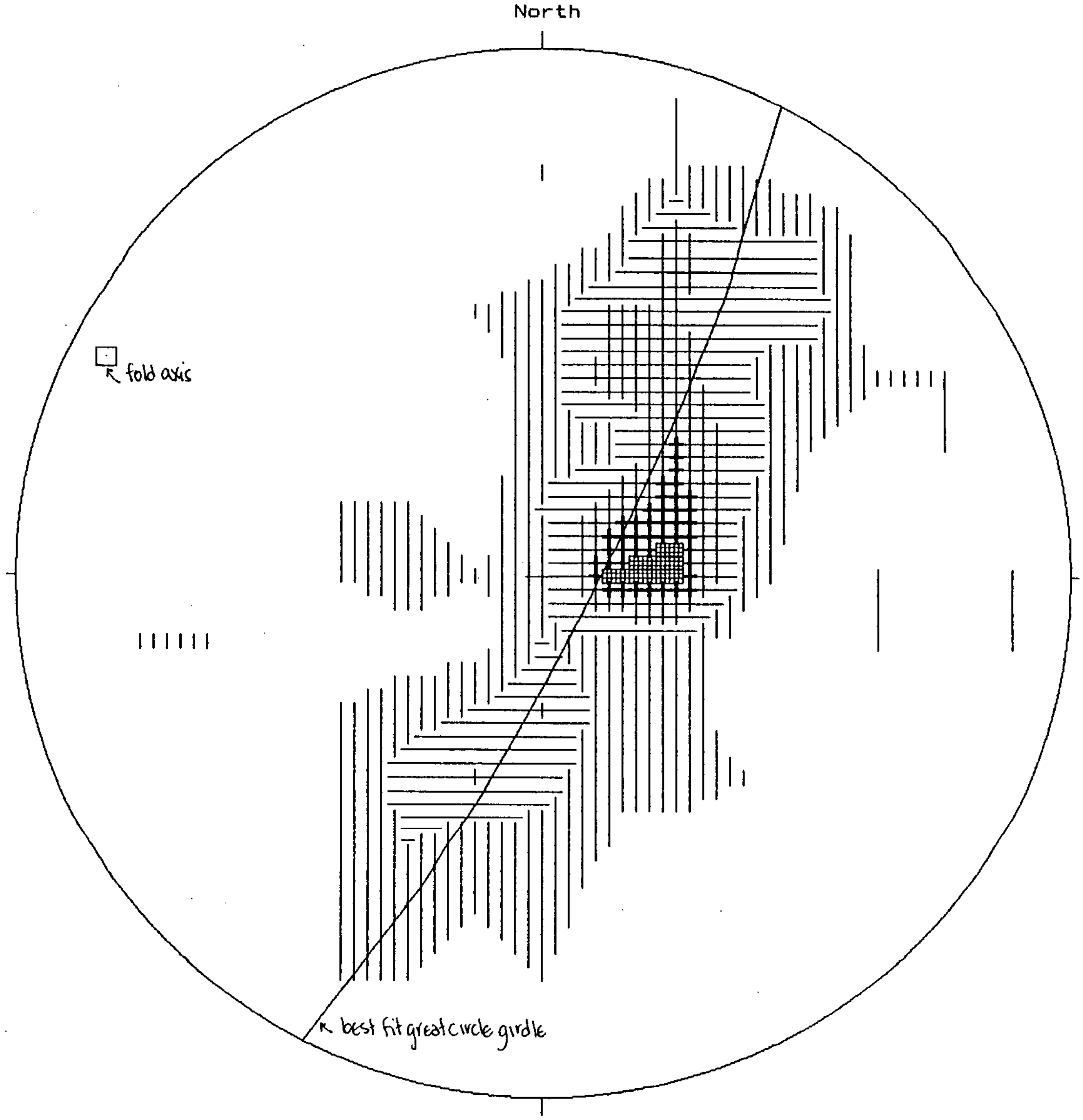
LEGEND (for first 9 intervals)

1- 1	6- 6		
2- 2	7- 7		
3- 3	8- 8		
4- 4	9- 9		
5- 5			

Contour Method: Schmidt (1925)
Counting Area: 0.010
Contour Interval: 1% Points per 1% Area
Maximum Contour: 10

NOTE: Contour Patterns Repeat Every 9 Intervals

Kechika bedding, central fault slice



98 Points

LEGEND (for first 9 intervals)

◫	1- 2	▧	11- 12
⊟	3- 4	▨	13- 14
⊞	5- 6	▩	15- 16
⊞	7- 8	■	17- 18
⊞	9- 10		

Contour Method: Schmidt (1925)
Counting Area: 0.010
Contour Interval: 2% Points per 1% Area
Maximum Contour: 10

NOTE: Contour Patterns Repeat Every 9 Intervals

SPLOT Statistical Summary

DataType : Planar
Number of Data Pairs : 98

Test of Uniformity :
The data differ significantly from uniform at the 95% level

Test of Distribution
Ak = 0.64421
Expected Type of Distribution : Girdle
Cstat = 2.25641
Data have weak preferential orientation

Test of Rotational Symmetry S(G)
SG = 39.63181
This differs significantly from a girdle at the .95 level

Best-Fit Gridle on Data:
Strike = 207 Dip = 82
Dip Azimuth = 117
Pi-Point = 297/08

Directional Cosine
L = 7.6484
M = 14.5857
E = 75.0615

Directional Cosine Matrix

22.8151	9.4212	3.6787
9.4212	13.5967	10.5552
3.6787	10.5552	61.5882

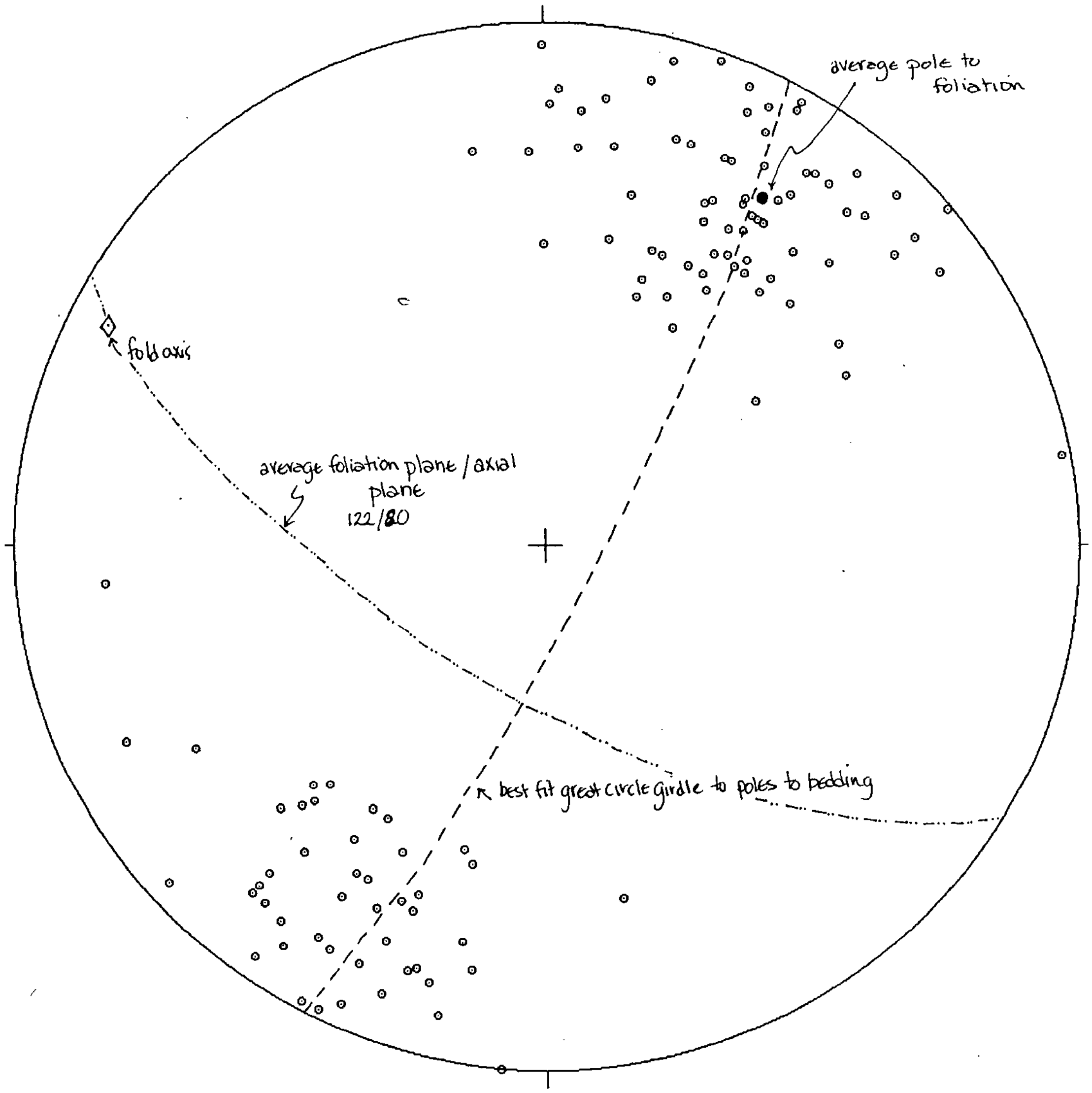
Eigenvalues
6.7618
26.6720
64.5662

Eigenvectors
-0.4783
0.8677
-0.1350

Contents of file: kk1s0.dat
Title: Kechika bedding, central fault slice
Data type: Planar
Number of data pairs: 98

005,28	138,56	130,55	230,35	174,18
175,10	290,20	160,35	150,22	315,28
136,40	192,16	170,20	360,20	265,28
305,40	228,28	110,50	165,10	160,20
132,45	220,20	350,60	350,88	130,65
140,10	150,30	184,50	185,80	230,40
154,68	120,32	110,50	190,06	185,25
105,10	122,32	096,40	090,60	157,08
120,70	302,36	125,56	122,36	258,17
110,28	132,67	295,54	110,54	010,15
235,14	297,21	096,32	195,18	186,25
122,54	148,54	140,38	148,25	110,50
088,16	117,40	115,56	095,38	167,20
120,23	090,36	090,44	020,30	078,43
164,10	140,24	284,37	153,35	161,15
130,35	290,37	258,27	292,52	295,32
110,33	140,28	275,11	105,33	280,30
255,45	285,35	320,36	096,14	302,44
294,68	276,50	308,46	106,74	290,22
270,64	130,72	115,60		

Kechika, foliations, central fault slice

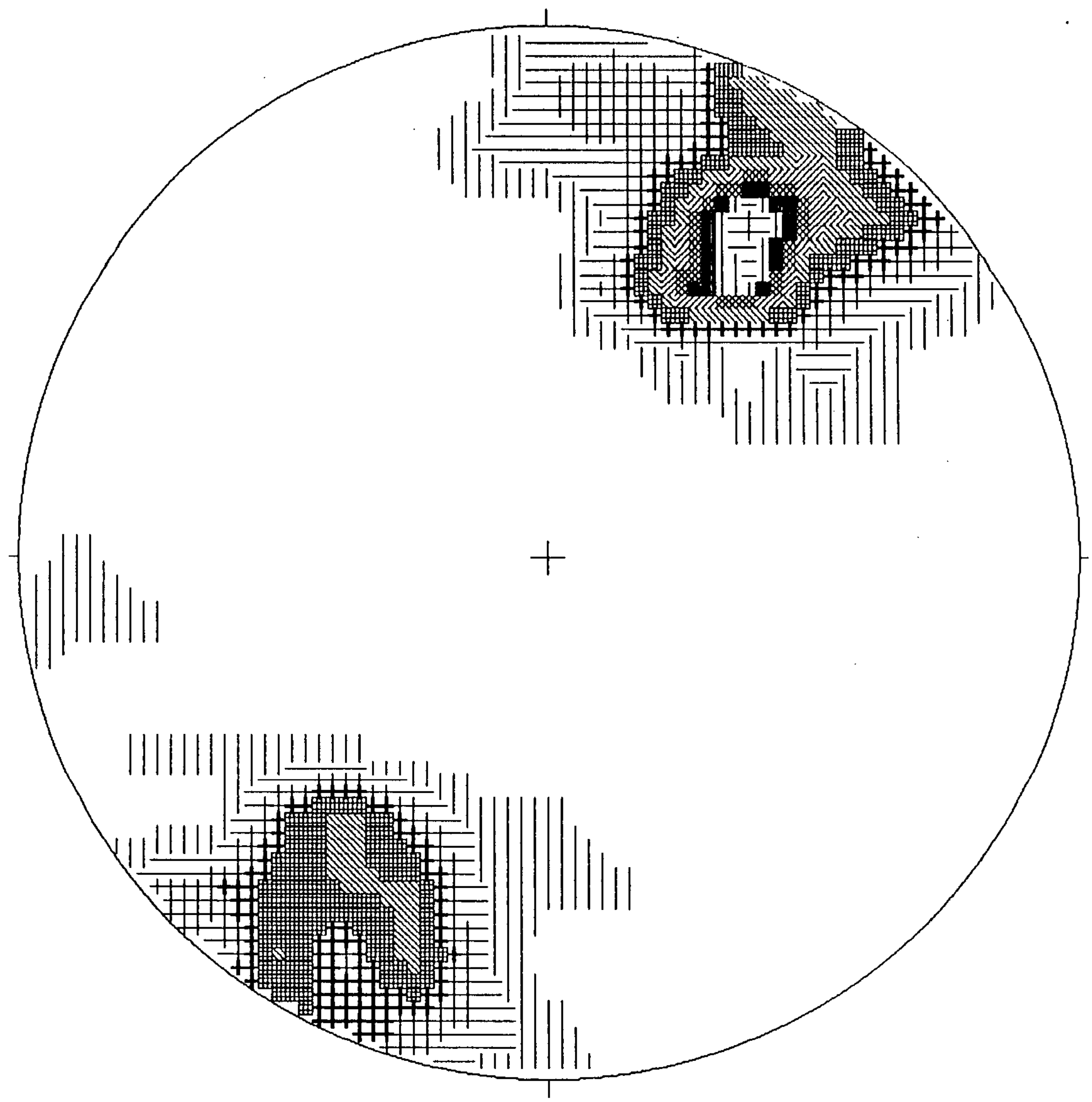


EQUAL AREA PROJECTION

		Symbol
Kechika, foliations, central fault slice	124 Points	O
	124 Points Total	

SPLOT by Darton Software

Kechika, foliations, central fault slice



124 Points

LEGEND (for first 9 intervals)

1- 1	6- 6		
2- 2	7- 7		
3- 3	8- 8		
4- 4	9- 9		
5- 5			

Contour Method: Schmidt (1925)
Counting Area: 0.010
Contour Interval: 1% Points per 1% Area
Maximum Contour: 12

NOTE: Contour Patterns Repeat Every 9 Intervals

SPLOT Statistical Summary

DataType : Planar
Number of Data Pairs : 124

Test of Uniformity :
The data do not differ significantly from uniform at the 95% level

Average Pole Direction
Trend =

Directional Cosine
L = 16.8589
M = 11.4459
E = 47.7807

Directional Cosine Matrix

72.3415	36.9572	7.8588
36.9572	28.0645	4.6816
7.8588	4.6816	23.5940

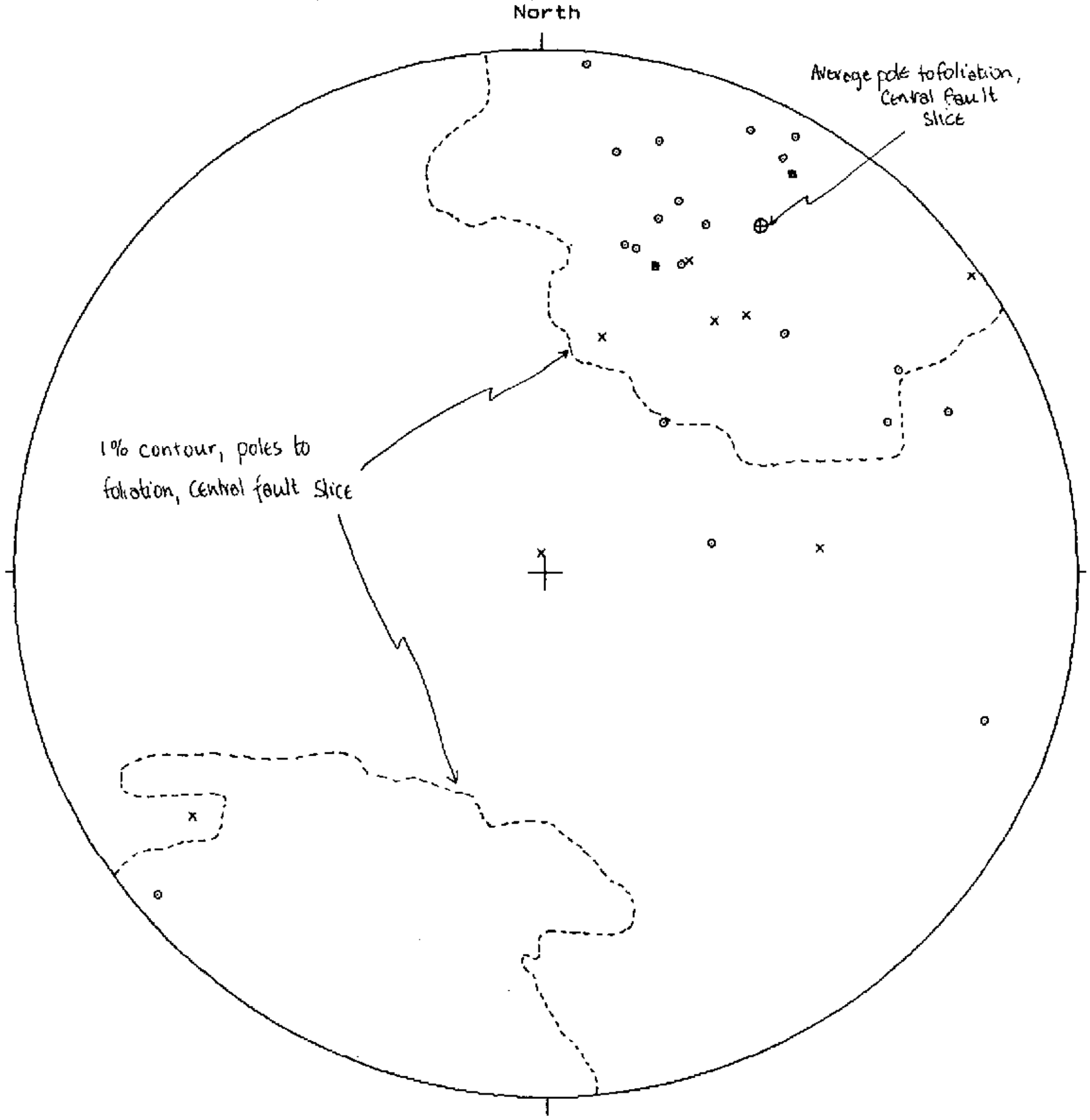
Eigenvalues
7.1197
22.4164
94.4639

Eigenvectors
-0.4918
0.8706
-0.0128

Contents of file: kk1s1.dat
Title: Kechika, foliations, central fault slice
Data type: Planar
Number of data pairs: 124

145,57	308,63	318,85	125,75	303,50
290,80	135,55	108,70	310,70	120,87
104,58	100,66	275,90	120,64	116,70
296,88	110,50	092,76	088,64	116,44
310,75	140,75	130,56	335,76	305,85
098,75	308,75	140,89	110,70	145,80
315,60	120,65	135,65	292,70	122,55
120,40	145,40	112,50	110,45	135,65
122,60	115,80	115,70	130,81	095,65
292,62	282,66	150,55	355,72	090,48
110,42	312,55	135,83	095,72	287,73
120,50	294,76	122,63	298,61	303,80
298,88	120,54	303,56	130,53	117,83
280,71	105,85	110,88	091,73	116,62
170,88	140,89	118,78	080,65	305,85
114,85	130,62	130,53	120,59	300,50
125,56	295,54	314,23	102,50	116,58
117,50	090,85	115,61	290,60	283,81
123,63	294,85	283,52	290,63	313,57
295,65	300,75	103,80	285,75	120,85
300,50	300,61	140,80	330,65	305,76
312,51	288,74	124,68	122,48	298,76
300,66	258,58	126,54	125,70	128,76
132,74	124,63	134,76	126,76	310,73
120,72	285,50	123,63	124,54	

Bedding/foliation data, Cambro-Ordovician rocks



EQUAL AREA PROJECTION

		Symbol
Kechika, foliations, Cambro-Ordovician phyllites	22 Points	O
Kechika, bedding, Cambro-Ordovician phyllites	10 Points	X
	32 Points Total	

SPLOT by Darton Software

Contents of file: kk2s0.dat
Title: Kechika, bedding, Cambro-Ordovician phyllites
Data type: Planar
Number of data pairs: 10

115,55	080,03	124,48	110,52	122,78
325,70	175,43	145,88	128,52	104,38

Contents of file: kk2s1
Title: Kechika, foliations, Cambro-Ordovician phyllites
Data type: Planar
Number of data pairs: 22

199,76	135,54	105,74	104,54	115,82
128,30	170,26	100,70	120,80	120,85
156,60	110,52	122,78	114,54	095,87
115,62	108,60	110,64	106,54	158,71
320,85	150,66			

APPENDIX III

THIN SECTION DESCRIPTIONS

THIN SECTION DESCRIPTIONS

Section #: K89-1
Grid ref./location: RAR 7 grid, 0+51N, 1+55E
Rock type: Fine crystal tuff, Unit A2
Hand sample/field description: Orange weathering, pale green fresh surface, weakly foliated sample; contains small chrome-green spots and round carbonate spots.
Mineralogy: 15-20% plagioclase laths, 0.25-0.75mm size
2-8% siderite, in subround to elliptical spots, up to 2.5-3mm size, as single crystals, crystal aggregate or crystal aggregates rimmed with sericite
2-3% pseudomorphed crystals (clinopyroxenes?) with good six sided outlines, now pseudomorphed mainly by very fine-grained carbonate
25-30% fine-grained carbonate
15-20% fine-grained, amorphous, semi-opaques (clay alteration or iron stained alteration minerals)
10-15% fine-grained sericite (and/or talc)
5% feldspar microlites
Trace opaques
Textures: Plagioclase laths display subparallel alignment; siderite spots concentrated in layers, probably are devitrified spherulites.
Comments: Welded to partly welded tuff?

Section #: K89-2
Grid ref./location: RAR 7 grid, 5+45S, 1+84W
Rock type: Mafic dyke; Unit A9b
Hand Sample/field description: Light to dark green weathering, massive rock with a dark grey to black fresh surface
Mineralogy: 30-40% amorphous to slightly fibrous, very fine-grained, weakly pleochroic pale brown to reddish brown micaceous mineral (very fine-grained phlogopite?).
15-25% very fine-grained feldspar
10-12% feldspar laths (albitic), altered
8-10% opaques (magnetite identified by XRD; brookite may also be present)
5-8% biotite flakes, dark red brown
2-3% carbonate, fine-grained

Textures: Predominantly a massive fine-grained rock; may be feldspar porphyritic; matrix very fine-grained.

Comments: Carbonate veins present; XRD indicates presence of muscovite, albite, calcite, magnetite and brookite(?).

Section #: K89-3

Grid ref./location: RAR 7 grid, 3+18S, 2+81W

Rock type: Greenstone, Unit A12

Hand sample/field description: Light to medium green weathering, massive mafic volcanic.

Mineralogy:
15-25% tremolite/actinolite; very pale green, extremely weak pleochroism; locally with darker green pleochroic patches
10-25% chlorite; secondary after amphibole
10-20% epidote
5-10% fine-grained carbonate
2-3% white mica, fine-grained
2-3% sphene (?)
1-2% very fine-grained, low birefringence, low relief material, possibly feldspar or clay minerals
Tr-1% biotite, green-brown
Tr-1% opaques

Textures: Weakly foliated

Comments: Greenschist facies greenstone, does not appear to be highly alkaline.

Section #: K89-4

Grid ref./location: RAR 7 grid, 0+00S, 0+75W

Rock type: Trachyte; Unit A4-A8

Hand sample/field description: Greyish to buff weathering aplite with light grey fresh surface; massive, contains minor (1-%5) lithic clasts and traces of fluorite.

Mineralogy:
70-75% very fine-grained feldspar microlites (+/- clay minerals)
10-15% siderite, in coarse and fine aggregates (may be altered clasts)
3-5% perthitic feldspar phenocrysts
2-3% sericite, disseminated and in clots
Tr-2% fluorite

Textures: Felty mass of feldspar microlites with minor perthite phenocrysts and rare exotic clast

Comments: Trachyte flow or sill.

Section #: K89-5
Grid ref./location: RAR 7 grid, 1+32S, 0+37.5E
Rock type: Quartz-feldspar-carbonate-sericite rock; Unit A5
Hand sample/field description: Massive, white weathering quartz-feldspar-carbonate-sericite rock with well developed rusty carbonate spots.
Mineralogy: 70-80% feldspar+quartz; very very fine-grained, low birefringence, low relief, anhedral to subhedral grains
10-15% muscovite/sericite
2-8% carbonate (dolomite)
1-2% microcline phenocrysts, 1-1.5 mm size
Tr-1% opaques (pyrite?)
Textures: Generally fine-grained and massive; white mica distributed in lenticular patches; carbonate present as large grains or in clots; some in veins
Comments: XRD indicates the presence of K-feldspar (microcline?), quartz, muscovite and dolomite.

Section #: K89-7
Grid ref./location: RAR 7 grid, 9+95S, 1+80W
Rock type: Breccia dyke or plug; Unit A11
Hand sample/field description: Coarse biotite-rich fragments in fine-grained light green-gray matrix.
Mineralogy: Matrix:
25-30% white mica, very fine-grained flakes; may contain other similar looking minerals (clay or talc?)
30% carbonate
20-25% feldspar, very fine-grained
1-2% pseudomorphed pyroxene (?) crystals
2% biotite, light brown, slightly pleochroic
5% opaque iron oxides with rusty, stained halos
2% hematite (?), red, translucent
8-10% unidentified mineral, very fine-grained, high relief, dusty looking

Biotite-rich Clasts:
20-25% biotite, crystals to 10 mm size, cleavage flakes form "pull-apart" structures
5% quartz, present in "pull-apart" zones between biotite cleavage flakes
Tr-1% apatite
30-35% carbonate, patchy distribution
20-25% white mica, patchy distribution
10-15% feldspar, very fine-grained, may contain some quartz

Tr-2% very fine-grained biotite
Tr-2% opaques

Textures: Matrix has an overall felty/fibrous texture; clasts have very unevenly distributed carbonate/feldspar/white mica. White mica in particular looks as though it were replacing clasts or crystals.

Comments:

Section #: K89-8 (RE89-6)
Grid ref./location: Main diatreme, RAR 5 claim, NTS 94L/12, UTM co-ordinates 6508658N, 586305E
Rock type: Fluorite-pyrite-carbonate dyke or vein cutting main diatreme breccia
Hand sample/field description: Buff weathering, fine-grained massive dyke or vein with irregular fluorite patches
Mineralogy:
80-85% carbonate
10-12% fluorite
3-5% quartz
5% plagioclase
1-2% semiopaques, reddish brown; possibly rutile or perovskite
2-3% opaques, probably pyrite
Trace mica with faint emerald green pleochroism; Cr-rich muscovite or fuchsite?

Textures: Predominantly massive, medium-grained carbonates with some fine-grained patches; cut by fluorite and quartz-fluorite veinlets; some disseminated fluorite and fluorite occurring as large clots (replacements?); feldspar also in clots or felspar-rich bands

Comments:

Section #: K89-9
Grid ref./location: RAR 7 grid, 0+25S, 0+47W
Rock type: Mafic syenite; Unit A6
Hand Sample/field description: Dark green weathering, dark fresh surface, chloritic mafic syenite with white fresh-looking feldspars.
Mineralogy:
30-40% leucocratic clots; may have been large feldspar phenocrysts but are now 5-10% epidote; 5-10% carbonate and 15-20% plagioclase feldspar (visual estimate gives An~36)
25-30% biotite, green to green-brown
10-15% chlorite
5-8% opaques, cubic to 6-sided and black when viewed optically, possibly magnetite

1-2% subopaques, high relief, dusty brown body colour, occur as discrete grains or associated with opaques
2-5% epidote (locally allanite?: associated with radioactive damage in biotite)
1-2% very fine-grained feldspar
1-2% apatite

Textures: Massive, no well developed foliation

Comments: XRD indicates presence of chlorite, biotite/muscovite, albite, calcite, magnetite and titanite.

Section #: K89-10
Grid ref./location: RAR 7 grid, 5+00S, 2+12.5W
Rock type: Volcanic tuff breccia; Unit A7
Hand sample/field description: Buff, blocky weathering breccia with angular fragments in a buff, aplitic-looking matrix
Mineralogy: Fragments:
70-75% feldspar laths, probably plagioclase and K-feldspar
25-30% rusty spots with some opaques and sphene

Matrix:
80% unflattened pumice fragments with round to slightly flattened vesicles, some devitrified glass
20% fine-grained carbonates, clays, etc.

Texture: Fragments have a felted texture; matrix is composed of unflattened pumice, fragments of various sizes

Comments: Lapilli tuff to volcanic tuff breccia, no evidence of welding

Section #: K89-12
Grid ref./location: RAR 7 grid, 2+25S, 1+31W (B)
Rock type: Extremely deformed volcanic tuff breccia; Unit A7
Hand sample/field description: Buff weathering, well foliated rock with flattened, elongated fragments and fluorite
Mineralogy: Matrix:
25-35% feldspar, very fine-grained
20-30% white mica
20-25% carbonate
2-5% opaques and rust staining
10% fluorite, both as small disseminated grains, large patches (replacing clasts?) and in veinlets

Clasts and Phenocrysts:
1-3% feldspar phenocrysts, perthites
5% recognizable clasts; some all siderite, some fine-grained quartzo-feldspathic material

Textures: Clasts and crystal fragments set in a wispy inhomogeneous matrix with an anastamosing texture; matrix may contain small, sheared clasts.

Comments: Highly deformed.

Section #: K89-13

Grid ref./location: RAR 7 grid, 5+25S, 1+25W

Rock type: Highly deformed feldspar porphyritic trachyte; Unit A8

Hand sample/field description: Buff to rusty pinkish weathering, well foliated rock with silvery to yellowish sericitic patches.

Mineralogy:
10-15% sericite patches
50-55% very fine-grained sericite + carbonate
15-20% fine-grained feldspar (+/- quartz)
10-15% siderite, brownish, slightly pleochroic, in masses, patches, and finely disseminated grains.
1-4% opaques

Textures: Sericite patches in very fine-grained aggregate of above minerals

Comments: Field relationships suggest that this is a highly deformed feldspar porphyritic trachyte; impossible to determine protolith from thin section.

Section #: K89-14

Grid ref./location: RAR 7 grid, 0+50S; 1+12.5W

Rock type: Deformed feldspar porphyritic trachyte or crystal tuff; Unit A7/A8

Hand sample/field description: Rusty to buff weathering, foliated aplite

Mineralogy:
5% perthitic feldspar porphyroblasts up to 1.5 mm size
25-30% carbonate, probably siderite; grains have rusty margins
60-65% feldspar (+/- quartz); all very fine-grained, low birefringence
Tr-2% fluorite
Trace sericite
Trace unknown mineral; moderate relief circa 1.60; birefringence is first order yellow circa 0.009-0.010; biaxial positive; 2V 30-50; 2

cleavages at 90°; extinction parallel to cleavage.

Textures: Feldspar porphyroclasts in a very fine-grained matrix that is well foliated (strongly sheared).

Comments: Hard to define protolith, probably was feldspar porphyritic trachyte.

Section #: K89-15

Grid ref./location: RAR 7 grid, 0+25S, 1+37.5W (B)

Rock type: Feldspar-quartz-carbonate-sericite rock; Unit A5

Hand sample/field description: White weathering massive feldspar-quartz-carbonate-sericite rock with abundant disseminated fluorite.

Mineralogy:
3-5% perthitic feldspar phenocrysts
10-20% carbonate
5-15% sericite
20-35% quartz+feldspar, fine-grained but grains are distinct.
20-35% very very fine-grained to amorphous material with low relief and low birefringence; probably also quartz and feldspar but may contain clays or other alteration products
1-2% fluorite, very fine-grained; disseminated
Tr-1% opaques

Textures: Feldspar phenocrysts set in a very fine- to medium-grained very inhomogeneous matrix; some areas of the matrix have an irregular radiating texture

Comments: XRD identifies microcline, quartz, fluorite, pyrite and muscovite/sericite

Section #: K89-16 (KN23)

Grid ref./location: North of the property, south of Moodie Lakes; NTS 94L/13; UTM grid ref: 580675E, 6517325N

Rock type: Porphyritic syenite or crystal tuff?

Hand sample/field description: Grey, weakly foliated rock with abundant feldspar phenocrysts

Mineralogy:
20-30% feldspar phenocrysts, locally altered to sericite
30-35% sericite, very fine-grained groundmass mineral, may contain some carbonate
10-15% feldspar, very fine-grained
5-10% opaques and rusty patches
5-10% quartz, generally as small rounded grains
5-10% carbonate
Tr-1% apatite

Textures: Crowded porphyry of randomly oriented feldspar crystals up to 2 or 3 mm size in a fine-grained groundmass with a weakly defined foliation.
Comments: Appears as if it may have been a tuff

Section #: K89-17
Grid ref./location: RAR 7 grid, 5+00S, 1+50W
Rock type: Trachyte; Unit A8
Hand sample/field description: Buff, blocky weathering, aplitic looking rock with feldspar phenocrysts
Mineralogy:
20% microperthitic K-feldspar phenocrysts
55-60% plagioclase and K-feldspar microlites
8-10% carbonate, probably siderite as small, anhedral grains with rusty rims
5-8% opaques, small, equant, anhedral
2-5% clots or veinlets of carbonate; two generations present; earlier one as euhedral rhombs with iron stain along edges and crystal faces; later generation as anhedral grains and interstitial infillings, unstained

Textures: Feldspar phenocrysts in a matrix of felted to radiating feldspar microlites
Comments: Some of the euhedral carbonate grains may be pseudomorphed pyroxenes; XRD identifies microcline, minor ferroan dolomite and trace pyrite.

Section #: K89-18 (RE89-44)
Grid ref./location: REE 7 claim; NTS 94L/12; UTM grid reference: 581875E, 6512150N.
Rock type: Feldspar porphyritic mafic syenite (malignite); Unit A6
Hand sample/field description: Medium to dark green, massive to weakly foliated mafic syenite with white feldspar phenocrysts.
Mineralogy:
5-10% plagioclase phenocrysts, visual estimate gives An_{35-36}, Andesine (Michel-Levy method).
10-15% plagioclase, fine-grains in matrix
30-40% chlorite with anomalous brown birefringence
15% carbonate
5-7% epidote
5-7% opaques, in large (1/8-1/2 mm) grains exhibiting skeletal growth textures
Tr-1% apatite

Textures: Weakly defined preferred orientation of grains
Comments:

Section #: K89-19 (RE89-28)
Grid ref./location: RAR 8 claim; NTS 94L/12; UTM grid reference: 585350E, 6509675N.
Rock type: Trachyte dyke; Unit A8
Hand sample/field description: Very fine-grained, massive, rusty to pinkish weathering felsite dyke
Mineralogy: 5-10% perthite, grains up to 5 mm size
70-75% fine-grained plagioclase microlites (may also include some K-feldspar)
5-10% disseminated carbonate, probably siderite
5-10% opaques and rust spots
5-10% vein filling carbonates
Textures: Groundmass feldspars in radiating aggregates
Comments: XRD identifies microcline and minor pyrite.

Section #: K89-20 (AH89-1)
Grid ref./location: RAR 4 claim; NTS 94L/11; UTM grid reference: 589225E, 6506750N.
Rock type: Intermediate (dacitic?) tuff
Hand sample/field description: Banded green and white tuff with minor fluorite
Mineralogy 35-40% epidote, brownish green, pleochroic, distributed in layers; epidote-rich layers 30-35%, epidote-poor layers contain on average 10% epidote
45-50% plagioclase (+/- quartz)
10% carbonate, in veinlets and disseminated grains
Tr-1% opaques
Trace fluorite
Textures: Banded or layered epidote and feldspar-rich rock
Comments: Protolith may have been a welded tuff of calc-alkaline affinity; does not appear to be part of the alkaline suite.

Section #: K89-21 (RE89-1034)
Grid ref./location: RAR 7 grid; 2+80S; 0+00W
Rock type: Feldspar-quartz-carbonate-sericite rock; Unit A5a
Hand sample/field description: Buff to rusty weathering carbonate-rich; carbonate-feldspar-quartz-sericite rock
Mineralogy: 80-90% carbonate; very very fine-grained to amorphous
5-10% quartz, in patches or pockets
3-5% rust stained zones
2-3% white mica

2-3% opaques
Tr-1% apatite
Trace fine-grained disseminated quartz
Trace unidentified mineral; reddish brown, sub-isotropic

Textures: Very fine-grained carbonate-rich rock with wispy white mica laminae and pronounced rusty laminae; some carbonate filled extension fractures and quartz filled patches or pockets

Comments: 470 ppm Y, 313 ppm Th, 41 ppm Sm, 190 ppm La, 3500 ppm Ba, 270 ppm Ce.

Section #: K89-22 (KN-21)
Grid ref./location: North of the property, south of Moodie Lakes; NTS 94L/13; UTM grid reference 580550E, 6516925N.
Rock type; Porphyritic metasyenite
Hand sample/field description: Dark grey to black porphyritic syenite, slightly foliated.
Mineralogy: 15-25% plagioclase phenocrysts; visual estimate An_{39} (Andesine)
35-40% white mica
5-10% biotite (olive green in thin section)
25% feldspar (+/- quartz) very fine-grained matrix mineral
1-2% chlorite, generally concentrated in one patch, a replaced fragment?
Tr-1% apatite
Tr-1% opaques
Tr-1% unidentified red translucent mineral
Trace zircon
Textures: Micas define foliation in thin section
Comments:

Section #: K89-23
Grid ref./location: RAR 7 grid, 8+85S, 1+50W
Rock type: Carbonatite dyke with nucleated autoliths; Unit A10
Hand sample/field description: Rusty orange weathering carbonatite dyke full of round clasts some of which appear to be nucleated autoliths or globular segregations: 55-60% clasts; 40-45% matrix
Mineralogy: Clast Cores:
90-95% carbonate, very fine-grained
5-7% very fine-grained feldspar (probably)
Trace opaques

Clast Rims:

50% coarse, untwinned feldspars, probably plagioclase, possibly some K-feldspar
10-15% perthitic feldspar
30% very fine-grained carbonate
1-2% fluorite
Tr-2% opaques

Matrix:
35-40% very fine-grained carbonate
55-60% feldspars
Trace opaques

Textures: Clasts generally rounded with very fine-grained cores and rims that contain small feldspar laths oriented subparallel to edge of clast; matrix generally fine-grained with no visible preferred orientation of grains.

Comments: In hand specimen, clasts and matrix appear quite different; the matrix is recessive while the clasts are prominent. In thin section, this contrast is less marked; the clast rims and matrix are of only very slightly different compositions.

Section #: K89-24 (RE89-24)
Grid ref./location: RAR 8 claim; NTS 94L/12; UTM Grid reference: 585275E, 6509700N.
Rock type: Mafic/ultramafic breccia dyke
Hand sample/field description: Dark green, fresh looking breccia dyke containing small rock fragments (generally 1-2 cm size or less) and possible olivine crystals.
Mineralogy: 40-45% rock fragments; predominantly aggregates of carbonate+quartz+green biotite and minor chlorite
1-2% siderite porphyroblasts
2-3% pseudomorphed crystals; original crystals were 6 or 8 sided; now replaced by biotite, quartz, epidote? and minor chlorite.
2-3% crystal fragments, possibly orthopyroxene, unaltered
30-35% biotite, green-brown, matrix mineral
5-10% fine carbonate
5-10% fine-grained feldspar (+/- quartz)
2-5% opaques
2-3% unidentified mineral, very fine-grained high relief, highly birefringent - epidote or sphene?
1-2% chlorite

Texture: Randomly oriented fragments and crystals in a fine-grained matrix with a felted texture.

Comments:

Section #: K89-25
Grid ref./location: RAR 7 grid; 0+75S, 0+87.5W
Rock type: Multilithic tuff breccia; Unit A7
Hand sample/field description: Buff, blocky weathering breccia with an aplitic matrix and fluorite/calcite veins; locally fluorite replaces breccia fragments.
Mineralogy: Clasts:
a) fluorite >>> calcite ≥ opaques > fine-grained feldspar (+/- quartz)
b) polycrystalline feldspar fragments
c) single feldspar crystals

Matrix:
-fine-grained feldspar (+/- quartz)
-carbonate
-devitrified glass
-opaques
-iron staining

Veins:
-fluorite
-calcite
-feldspar

Textures: Fragments replaced by fluorite have calcite developed along the rims and as fine grains disseminated throughout. Matrix generally very fine-grained; locally, however, it exhibits spherulitic devitrification textures with radial extinction.
Comments: Fluorite/calcite/feldspar veinlets generally grade from feldspar+fluorite to fluorite+calcite along their length.

Section #: K89-26
Grid ref./location: RAR 7 grid, 0+25N, 0+87.5E
Rock type: Grey quartz-feldspar-sericite rock with oblate sericite patches; Unit A5b
Hand sample/field description: Dark grey moderately well foliated rock with yellowish, flattened oblate sericite patches
Mineralogy: 40% sericite in distinct elliptical zones, with minor quartz (+/- feldspar)
40-50% fine-grained quartz (+/- feldspar)
3-5% fine-grained carbonate, possibly siderite
2-3% fine-grained, disseminated sericite
1-2% opaques
Trace zircon

Textures: Very fine-grained, quartz-rich matrix largely annealed (triple junctions common); opaques very fine-grained and distributed in wispy bands; sericite predominantly concentrated in patches.
Comments: Sericite patches may represent altered feldspar phenocrysts or feldspar-rich rock fragments.

Section #: K89-27 (RE89-1021)
Grid ref./location: RAR 7 grid, 1+88.5S, 0+22.5E
Rock type: Feldspar-quartz-sericite-carbonate-(apatite) rock; Unit A5
Hand sample/field description: Massive to weakly lineated, white weathering rock with some buff carbonate mottling
Mineralogy: 60-65% fine-grained feldspar and quartz, probably feldspar>quartz
8-12% fine-grained apatite
5-15% carbonate, probably siderite with rust stained edges
5-10% sericite
1-2% perthitic feldspar porphyroclasts
Tr-2% opaques
Textures: Siderite is randomly mottled throughout; sericite weakly defines a banding.
Comments: 3500 ppm Ba, 220 ppm Ce, 69 ppm La, 138 ppm Sm, 1900 ppm Zr, 977 ppm Th, 1400 ppm Y.

Section #: K89-29
Grid ref./location: RAR 7 grid, 3+34.5S, 0+06W
Rock type: Mafic dyke with black and mint green flattened fragments; Unit A9a
Hand sample/field description: Light greenish gray weathering, well foliated rock with black and mint green flattened oblate patches.
Mineralogy: Dark Patches:
- pale green pleochroic mica aggregates; probably green biotite

Mint Green Patches:
- pseudomorphed olivine crystals containing alteration products, opaque oxides, sphene (?), and in some cases, cores of green mica aggregates

Groundmass:
- pale green mica (Cr muscovite?)
- carbonate
- sphene
- iron oxides

- quartz

Textures: Foliated rock with flattened green mica aggregates and pseudomorphed olivine (?) crystals which display a serpentine-like texture.

Comments: XRD indicates mica, dolomite/ankerite, quartz.

Section #: K89-30

Grid ref./location: RAR 7 grid, 0+25N, 0+87.5W

Rock type: Volcanic tuff breccia; Unit A7

Hand sample/field description: Buff, blocky weathering breccia, locally with carbonate spots

Mineralogy: Clasts:
- feldspar laths
- carbonate
- opaques
- iron staining

Matrix:
- carbonate
- clays and other alteration products (devitrified glass, etc.)
- opaques (dusty)
- large feldspar crystals
- feldspars +/- quartz, very very fine-grained

Textures: Matrix consists of pumice fragments and glass shards in a fine carbonate-rich matrix. Pumice fragments commonly flattened and have flattened vesicles; some glass shards round devitrification textures now replaced by carbonate.

Comments: Welded crystal and lapilli tuff.

APPENDIX IV

LABOUR COSTS BREAKDOWN

LABOUR COSTS BREAKDOWN

KECHIKA PROJECT 1989

Personnel	Period worked	M	C	7	S	N	O	Total days worked	Pay-rate	Total
R. Morris	1 July - 30 Sept	13	16.5	22	3	1	2.75	67.25	$175/day	11,768.75
R. Lowery	1 Aug - 29 Sept	17	27.5	13			2.75	63.25	$150/day	9487.50
J. Pell	9 Aug - 24 Sept	4	17	22	7	1	18.5	69.5	$275/day	19,112.50
L. Martin	24 Aug - 24 Sept	6	6	22				34.0	$150/day	5,180.00
L. Martin	24 Aug - 24 Sept						0.5	0.5	$160/day	80.00
C. Batchelor	6 Aug - 1 Sept	2	16	9				27.0	$95/day	2,565.00
D. Leighton	1 July - 31 Oct						28	28.0	$300/day	8,400.00
Sub-total										56,513.75
25% benefits, inc. insurance, etc.									14,128.44	
TOTAL										70,642.19

Abbreviations:

M	Mobilization
C	Camp duties/supply run/etc.
7	RAR 7 grid
S	South Group/RAR 5 grid
N	North Group
O	Office preparation/Report writing/Supervision etc.

APPENDIX V

KECHIKA SEPARATION TEST REPORT

KECHIKA SEPARATION TEST REPORT

SUMMARY

Preliminary tests (including mineralogical, magnetic, gravity, and flotation) were carried out on a Kechika high grade Y_2O_3 sample.

Mineralogical tests show that the main constituents are quartz and apatite with minor phlogopite and K-feldspar. Xenotime is the only rare-earth mineral present, identified by X-ray diffraction.

The H.G.M.S. (high gradient magnetic separation) test shows that, on a +200 mesh sample, recovery of Y_2O_3 was 37.3% (assaying 1.88%) by 300A mag; on the -200 mesh split, recovery of Y_2O_3 was 69.1% (assaying 1.93%) by 300A mag.

HIGH GRADIENT MAGNETIC SEPARATION TEST

The results of the H.G.M.S. tests on +200 and -200 mesh samples are summarized below:

HGMS Examination			ASSAY %		DISTRIBUTION %	
		Wt.%	Y_2O_3	TREO	Y_2O_3	TREO
+200 MESH	HEAD	100.0	0.80	1.40	100.0	100.0
	300A MAG	15.6	1.88	3.16	37.3	36.5
	500A MAG	14.2	1.13	1.95	20.4	20.5
	800A MAG	13.2	0.84	1.46	14.1	14.3
	NMAG	57.0	0.39	0.68	28.2	28.7
-200 MESH	HEAD	100.0	0.80	1.40	100.0	100.0
	300A MAG	28.6	1.93	3.17	69.1	63.5
	500A MAG	23.9	0.62	1.09	18.6	18.3
	800A MAG	12.4	0.34	1.19	5.3	10.3
	NMAG	35.1	0.16	0.32	7.0	7.9

Magnetic minerals include apatite, phlogopite and quartz.

In the +200 mesh split, 28.2% Y_2O_3 remained in the non-magnetic portion, which could be due to partially enclosed xenotime grains.

In the H.G.M.S. test, weakly magnetic minerals (such as apatite and phlogopite) are also collected, resulting in a lower recoverable Y_2O_3 grade.

TABLE (GRAVITATIONAL)- MAGNETIC SEPARATION TEST

The +200 and -200 mesh sample splits were further sorted on a gravitational table to separate heavy and light minerals. A magnetic separation test was carried out on the resulting splits, and results are tabulated below:

Table-Magnetic Separation Test:

		ASSAY %			DISTRIBUTION %	
		Wt.%	Y_2O_3	TREO	Y_2O_3	TREO
+200 MESH	HEAD	100.0	0.77	1.32	100.0	100.0
	HEAVY	22.7	1.40	2.40	41.4	41.0
	MIDDLING	29.6	0.81	1.40	31.3	31.2
	LIGHT	47.7	0.44	0.75	27.4	27.0
	3.0A MAG	3.6	4.36	7.36	20.5	20.0
	NMAG	19.1	0.84	1.52	20.9	21.9
-200 MESH	HEAD	100.0	0.71	1.24	100.0	100.0
	HEAVY	3.9	1.46	2.54	8.0	8.0
	MIDDLING	8.9	0.85	1.48	10.7	10.6
	LIGHT	87.2	0.66	1.16	81.3	81.4
	0.7A MAG	0.4	7.23	11.62	4.1	3.7
	NMAG	3.5	0.80	1.50	4.0	4.2
	1.2A MAG	0.3	3.81	6.92	1.6	1.7
	NMAG	3.2	0.51	0.94	2.3	2.4

<u>In +200 mesh sample</u>: Table concentrate grade is 1.4% Y_2O_3, with recovery of 41.0%. Magnetic concentrate grade is 4.36% Y_2O_3, with recovery of 20.5%. (Magnetic separator is RAPID magnetic separator).

Recovery of Y_2O_3 in the +200 mesh split is low due to partially enclosed grains. Apatite, phlogopite and quartz, as well as xenotime, are recognized in the magnetic concentrate.

In -200 mesh sample: Table concentrate grade is 1.46% Y_2O_3, with recovery of 8.0%; Magnetic concentrate is 7.23% Y_2O_3, with recovery of 4.1% (Magnetic separator is the FRANTZ magnetic separator).

Recovery in the -200 mesh sample split is extremely low in the table separation due to most minerals ending up in the tails. Quartz, apatite, hematite and goethite, as well as xenotime, are found in the magnetic concentrate.

FLOTATION TEST

For xenotime flotation, NaOL (sodium oleic acid), NaLi (sodium linoleic acid), DAA (dodecylammonium acetate) were used as collectors, while lead acetate and ammonium oxalate were used as activators. The results of the test are as follows:

- More than half of the froth from the anionic collector (NaOL, NaLi) is apatite with minor amounts of quartz; no xenotime is collected.

- Quartz and phlogopite are the main minerals captured by the cationic collector, with a relatively minor amount of apatite. No xenotime is collected.

- Activator - lead acetate and ammonium oxalate have no effect on xenotime.

The test results indicate that normal flotation conditions do not work for xenotime. It will be necessary to study the collector, pH controller, activator and waste depressor for xenotime.

METALLURGICAL TESTS

The previous mineralogical study showed that xenotime in Kechika ore is fine-grained (~20 - 100 microns) and is partailly enclosed by apatite, barite, goethite, etc. It is therefore necessary to grind the ore to a very fine grain for separation, and physical ore dressing such as magnetic or specific gravity separation is not recommended.

Due to the large amount of apatite, which has a flotational behaviour similar to xenotime, it is difficult to selectively separate xenotime by the usual flotation method.

To use the flotation method, it will be necessary to find out:

a) the essential conditions to separate the phosphate minerals (such as xenotime and apatite) from quartz, phlogopite and K-feldspar; and

b) the conditions required to separate xenotime from apatite.

Generally, apatite contains rare earth elements such as Y_2O_3, etc., therefore detailed studies are required. For xenotime, it will be necessary to study associated minerals (especially enclosing minerals) and separation possibilities.

Test Results:

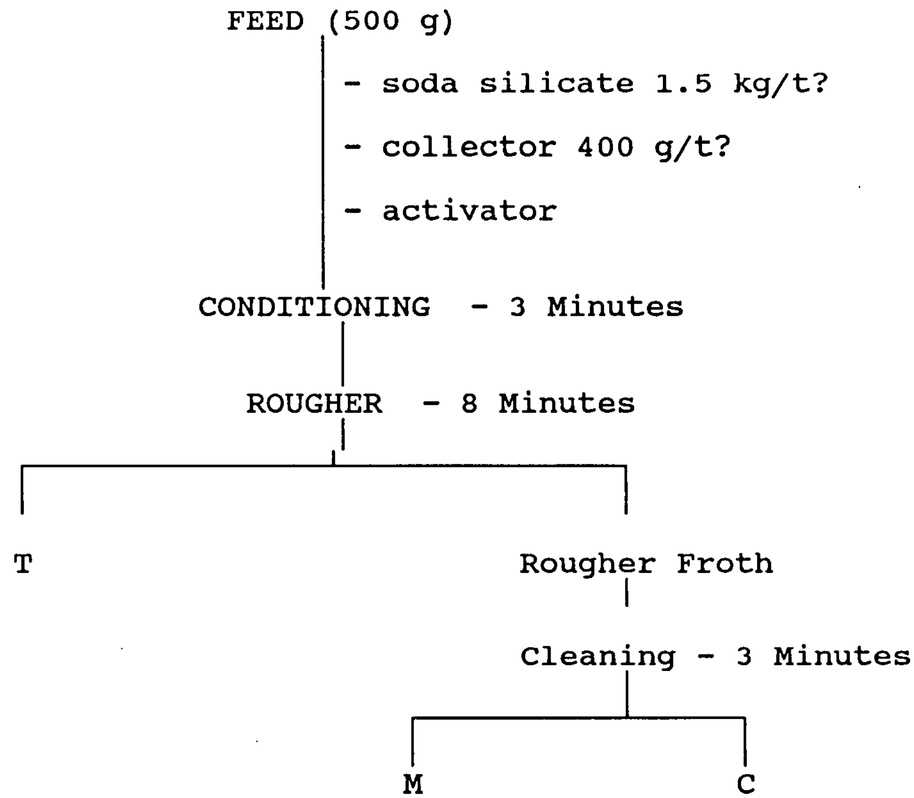
Kechika ore samples A, B, C, and D were collected, and of these, samples B and C, with a higher Y_2O_3 content, were selected for the test.

Rot	A	B	C	D
Y_2O_3%	0.53	0.71	0.96	0.10

Grain size distribution:

MESH SIZE	DISTRIBUTION	CUMULATIVE %
-65 ~ +100	7.50	100.00
-100 ~ +150	10.68	92.50
-150 ~ +200	5.41	81.82
-200 ~ +325	18.99	76.41
-325 ~ +400	3.62	57.42
-400	53.80	

FLOTATION FLOW CHART:



KECHIKA FLOTATION TEST RESULTS

FLOTATION TEST		ASSAY %			DISTRIBUTION%		REAGENT
		Wt.%	Y_2O_3	TREO	Y_2O_3	TREO	
Test No.6 (NaOl)	HEAD	100.0	0.78	1.29	100.0	100.0	NaOL:400g/t pH 9.7
	Conc.	4.1	0.47	0.91	2.5	2.9	
	Middling	0.4	0.66	1.17	0.3	0.4	
	Tailing	95.5	0.79	1.31	97.2	96.8	
Test No.2 (NaLi)	HEAD	100.0	0.79	1.31	100.0	100.0	NaLi:400g/t pH 9.4
	Conc.	5.9	0.66	1.19	4.9	5.4	
	Middling	16.1	0.86	1.46	17.4	17.9	
	Tailing	78.0	0.79	1.29	77.6	76.7	
Test No.3 (DAA)	HEAD	100.0	0.80	1.31	100.0	100.0	DAA:400g/t
	Conc.	5.1	0.49	0.79	3.1	3.1	
	2nd midd.	3.9	0.69	1.12	3.4	3.3	
	1st midd.	11.1	0.73	1.20	10.2	10.2	
	Tailing	79.9	0.83	1.37	83.3	83.4	
Test No.4 (NaLi+ Pb acetate)	HEAD	100.0	0.81	1.33	100.0	100.0	Lead acetate: 1.0kg/t NaLi:400g/t pH 9.5
	Conc.	1.8	0.60	1.09	1.3	1.5	
	Middling	10.6	0.77	1.31	10.1	10.4	
	Tailing	87.6	0.82	1.34	88.6	88.1	
Test No.5 (NaLi+ ammonium oxalate)	HEAD	100.0	0.80	1.31	100.0	100.0	ammonium oxalate: 1.3kg/t NaLi:400g/t pH 9.3
	Conc.	13.2	0.80	1.40	13.2	14.2	
	2nd midd.	14.0	1.04	1.76	18.3	18.9	
	1st midd.	19.7	1.02	1.66	25.2	25.1	
	Tailing	53.1	0.65	1.03	43.3	41.9	

REPORT ON THE MINERALOGICAL TEST ON KECHIKA ORE

1st February, 1990

Attached Data:

1. X-ray chart (2 pieces)
11. Thin section (Pl. 1 - Pl. 3)

1. PURPOSE

Ten samples were collected from radioactive anomalous areas in the Kechika area in order to study the composition and content of REE and RM. Further, based on microscopic observation, the constituent minerals, texture, mineral paragenesis, etc. were studied to understand the characteristic of the Kechika ore.

2. SAMPLE AND TEST METHODS

Ten samples were collected from the radioactive anomalous zones outlined by Formosa Resources Corporation in the Kechika area in 1988. All mineralogical and metallurgical samples were collected from the same zone (the alkaline rock zone).

Ten samples were analyzed for thirty-one elements, including REE's. Two relatively high Total R_2O_3 content samples (KCK01, KCK06) were selected for X-ray diffraction and microscopic analyses.

3. TEST RESULTS

<u>3-1 Chemical Analyses</u> (see Tables 1 & 2)

a) Total R_2O_3 - Highest value obtained was 3214 ppm, lowest 298 ppm. This is relatively low compared to the previous test (see 1989-5-10 report).

b) Y_2O_3 content is high in KCK01 and KCK06 (1700 ppm and 1240 ppm respectively). Also, these contents are almost 50% of total R_2O_3. Relative contents of the samples are as follows:

Sample No.	Tot.R_2O_3* (ppm)	Y_2O_3 (ppm)	LRE** (ppm)	HRE*** (ppm)
KCK01	3214	1700 (53%)	729 (23%)	2485 (77%)
KCK02	1018	314 (31%)	536 (53%)	482 (47%)
KCK03	2392	199 (8%)	2007 (84%)	385 (16%)
KCK04	1105	233 (21%)	735 (67%)	370 (33%)
KCK05	796	308 (39%)	353 (44%)	443 (56%)
KCK06	2395	1240 (52%)	592 (25%)	1803 (75%)
KCK07	339	23 (75%)	316 (93%)	23 (7%)
KCK08	1489	563 (38%)	653 (44%)	836 (56%)
KCK09	327	14 (4%)	297 (91%)	30 (9%)
KCK10	298	18 (6%)	280 (94%)	18 (6%)
AVERAGE:	1337	461 (34%)	650 (49%)	688 (51%)

c) Besides REE, there are no high element contents. Valuable elements such as Ti, Zr, and Nb are low.

d) Although ThO_2 is not anomalously high, the content is proportional to Total R_2O_3 content in each sample.

e) Ba content can be grouped into two populations: Samples KCK03, 04, 05, 07 and 09 are higher in Ba, containing between 2110 and 4890 ppm.

3-2 X-ray Diffraction (See Table 3)

X-ray diffraction analysis was carried out on samples KCK01 and 06, with the following conclusions:

a) KCK01 contains mainly quartz and sericite with trace carbonates (calcite and dolomite).

b) KCK06 is similar to KCK01 but no carbonates were detected.

---

* Tot.R_2O_3 = Lanthanoid 14 compositions + Y_2O_3 + Sc_2O_3.
** LRE = Light REE: La_2O_3 - Eu_2O_3 (total 6 compositions) + Sc_2O_3.
*** HRE = Heavy REE: Gd_2O_3 - Lu_2O_3 (total 8 compositions) + Y_2O_3.
Note: Bracketed numbers denotes percentage setting Total R_2O_3 at 100%.

3-3 Microscopic Observation (See Plates 1-3)

Samples KCK01 and KCK06 were studied microscopically.

a) Sample KCK01: Fine-grained, well recrystallized anhedral quartz, banded with muscovite = MUSCOVITE SCHIST.

Muscovite forms lath-shaped, euhedral crystals, showing distinct parallel orientation. Subhedral to anhedral carbonate minerals are closely associated.
Quartz is fine-grained (0.03 to 0.1 mm dia.), anhedral, equigranular to mosaic textured, with poor schistosity. Locally, coarser anhedral crystalline aggregates are surrounded with muscovite crystals forming a lenticular shape.
Some fine-grained (<0.1 mm dia.) euhedral pyrite is scattered throughout; rims are mostly oxidized.
Trace barite is present. No xenotime or monazite are present.

b) Sample KCK06: Compared to KCK01, this sample is more strongly schistose MUSCOVITE SCHIST. Main constituents are quartz and muscovite, with rare microscopic unidentified minerals (possibly rutile, zircon or REE mineral?).
Muscovite forms distinct lath-shaped euhedral crystals with notably parallel-oriented banded texture.
Microscopic (<0.01 mm dia.) unidentified minerals, with high refractory index and euhedral form are scattered throughout the muscovite. No carbonate minerals are observed. Quartz is fine-grained (0.01 to 0.04 mm dia.) and anhedral showing weak schistosity. Pyrite is completely oxidized.

Conclusions:

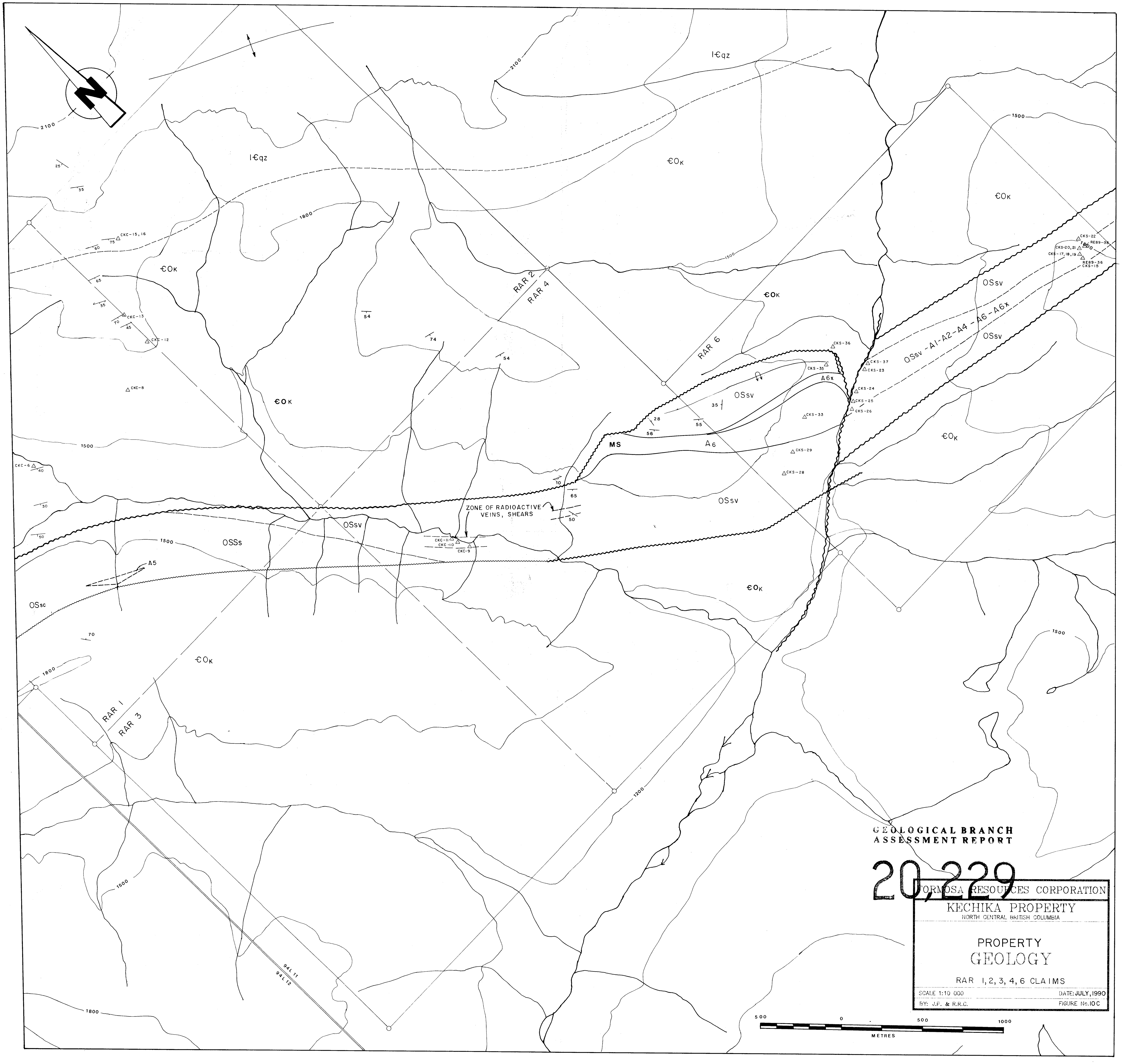
a) Chemical analyses indicate a high Y_2O_3 content of the samples, and indicate a very attractive REE resource due to the high content of heavy rare earths. Although no rare earth minerals were observed due to the low grades, it was determined that the ore contains mainly xenotime and monazite: therefore the leaching of RE minerals should not be a problem.

b) There was a large variation in the Total R_2O_3 content in the ten samples studied (max 3214 ppm, min. 298 ppm; avg.

1337 ppm). Detailed studies on the grade distribution and mineralized zone distribution will be required.

c) Since no rare earth mineral was observed in this study. the mineral mode of occurrence and paragenesis could not cannot be determined microscopically.

While the last test on the high grade ore separated xenotime and monazite as the rare earth minerals, no actual mode of occurrence and mineral paragenesis could be determined due to the crushed nature of the sample. Also, while the high grade ore of the previous test contained large amounts of apatite (detected by X-ray), none was detected in this study. It is therefore necessary to collect uncrushed high grade (Total R2O3 >2%) samples to study the mineralogical characteristics.



GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,229

FORMOSA RESOURCES CORPORATION

KECHIKA PROPERTY

NORTH CENTRAL BRITISH COLUMBIA

PROPERTY
GEOLOGY

RAR 1,2,3,4,6 CLAIMS

SCALE 1:10 000	DATE: JULY, 1990
BY: J.F. & R.R.C.	FIGURE No. 10C

LEGEND:

KECHIKA ALKALINE IGNEOUS COMPLEX

A14	FELDSPAR PORPHYRITIC METASYENITE
A13	HETEROLITHIC DIATREME BRECCIA
A12	LIGHT TO MEDIUM GREEN WEATHERING GREENSTONE; LOCALLY CONTAINS ASBESTIFORM VEINLETS; A12a – DARK GREEN TO BLACK, STRONGLY FOLIATED, SERPENTINE-RICH SHEARED GREENSTONE.
A11	LIGHT GREEN WEATHERING BRECCIA; CONTAINS LARGE SUBROUNDED CLASTS OF A COARSE GRAINED BIOTITE RICH ROCK.
A10	ORANGE BROWN WEATHERING CARBONATITE DYKES; LOCALLY FRAGMENTAL.
A9	SILVER-GREEN TO RUSTY WEATHERING BRECCIA DYKES, LOCALLY PORPHYRITIC AND VESCICULAR
A8	FELDSPAR PORPHYRYTIC, BUFF TO LIGHT GREY APLITE (TRACHYTE).
A7	BUFF, BLOCKY WEATHERING, MULTILITHIC BRECCIA; SUBANGULAR CLASTS, APLITIC MATRIX; A7a – RUSTY WEATHERING, MULTILITHIC BRECCIA; SUBROUNDED CLASTS, CARBONATE RICH MATRIX; FLUORITE AND PYRITE COMMON ACCESSORY MINERALS IN BOTH PHASES.
A6	DARK GREEN WEATHERING MAFIC SYENITE (MALIGNITE); LOCALLY CHLORITE RICH.
A5	MOTTLED POTASSIUM FELDSPAR-QUARTZ-CARBINATE-SERICITE PHYLLITES AND QUARTZ-CARBONATE-SERITE-APATITE ROCKS
A4	BUFF TO GREY, BLOCKY WEATHERING APLITE (TRACHYTIC).
A3	BUFF TO LIGHT BROWN WEATHERING MULTILITHIC BRECCIA, GRADED BEDS AND OTHER 'SEDIMENTARY' STRUCTURES LOCALLY PRESENT IN FINER GRAINED LAYERS, BRECCIA MATRIX LOCALLY CALCAREOUS (TUFF BRECCIA CONGLOMERATE).
A2	LIGHT GREEN TO LIGHT ORANGE WEATHERING, MASSIVE TO WEAKLY FOLIATED TUFF (?); LOCALLY CALCAREOUS; CONTAINS RARE CHROME SPINELS; MAY BE IN PART EQUIVALENT TO A9.
A1	SILVER TO PALE GREEN PHYLLITES, GREASY LUSTER; WEAKLY RADIOACTIVE.

SEDIMENTARY AND METASEDIMENTARY SEQUENCE
MID-PALEOZOIC (ORDOVICIAN-SILURIAN)
SANDPILE GROUP

OSsq	BLACK AND GREY QUARTZITE, SILICEOUS ARGILLITE, DOLOMITE
OSss	GRAPHITIC ARGILLITE, SILEOUS ARGILLITE
OSsc	DOLOMITES AND LIMESTONES, LOCALLY FOSSILIFEROUS
OSsv	THINLY INTERBEDDED TUFFS, CHERTY TUFFS AND LIMESTONE

CAMBRIAN AND ORDOVICIAN
KECHIKA GROUP

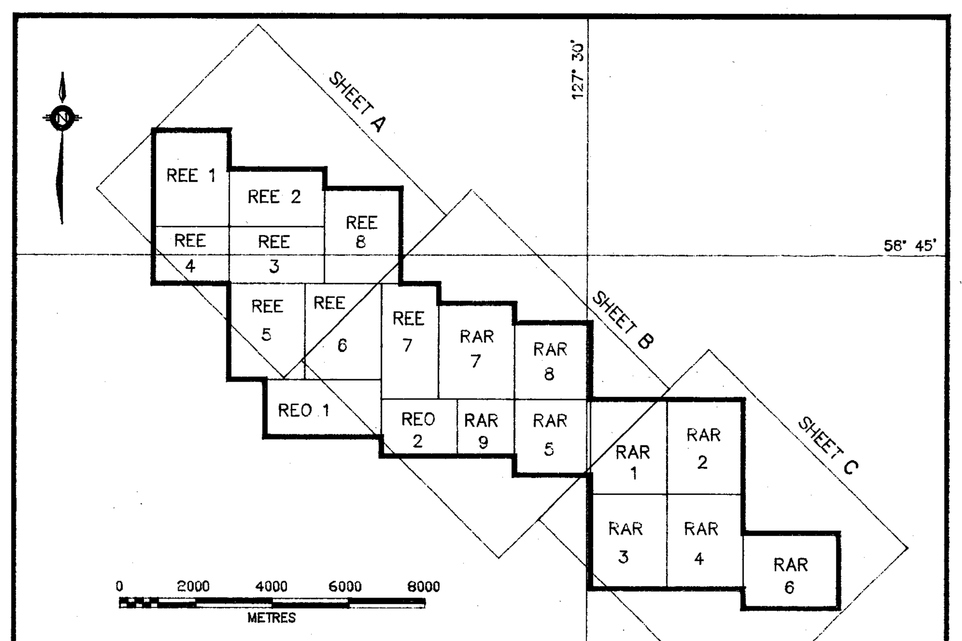
€OK	SERICITIC PHYLLITE, GRAPHITIC PHYLLITE, CHLORITIC PHYLLITE, DOLOMITE, CALCAREOUS PHYLLITE AND ARGILLACEOUS LIMESTONE

LOWER CAMBRIAN
ATAN GROUP

l€qz	QUARTZITE

SYMBOLS

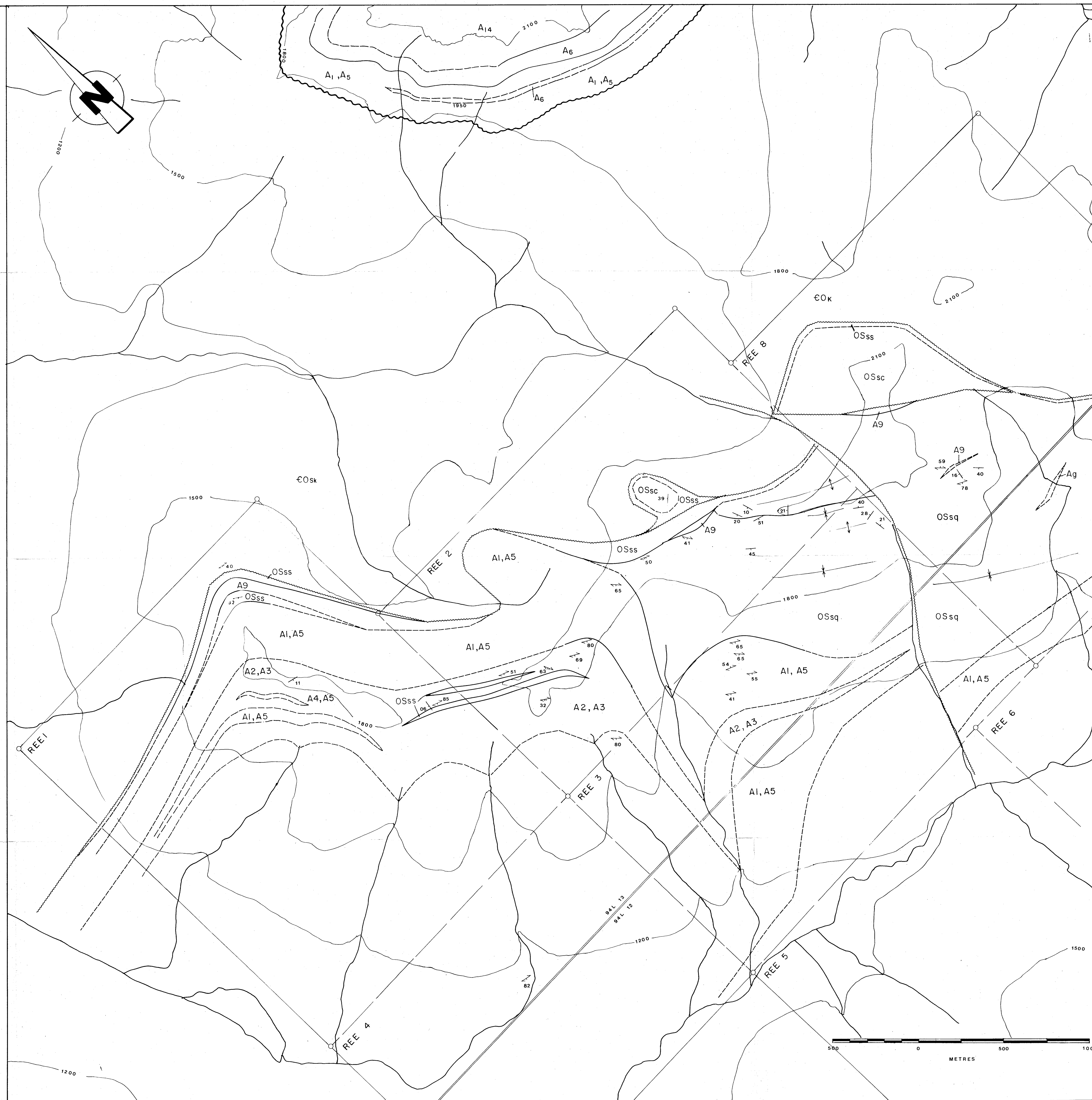
- Geologic contact, approximate, assumed
- Fault, approximate, assumed
- Bedding
- Schistosity
- Schistosity and bedding, parallel
- —1200— Contour, metres
- Claim post
- △ Sample location



INDEX MAP

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,229



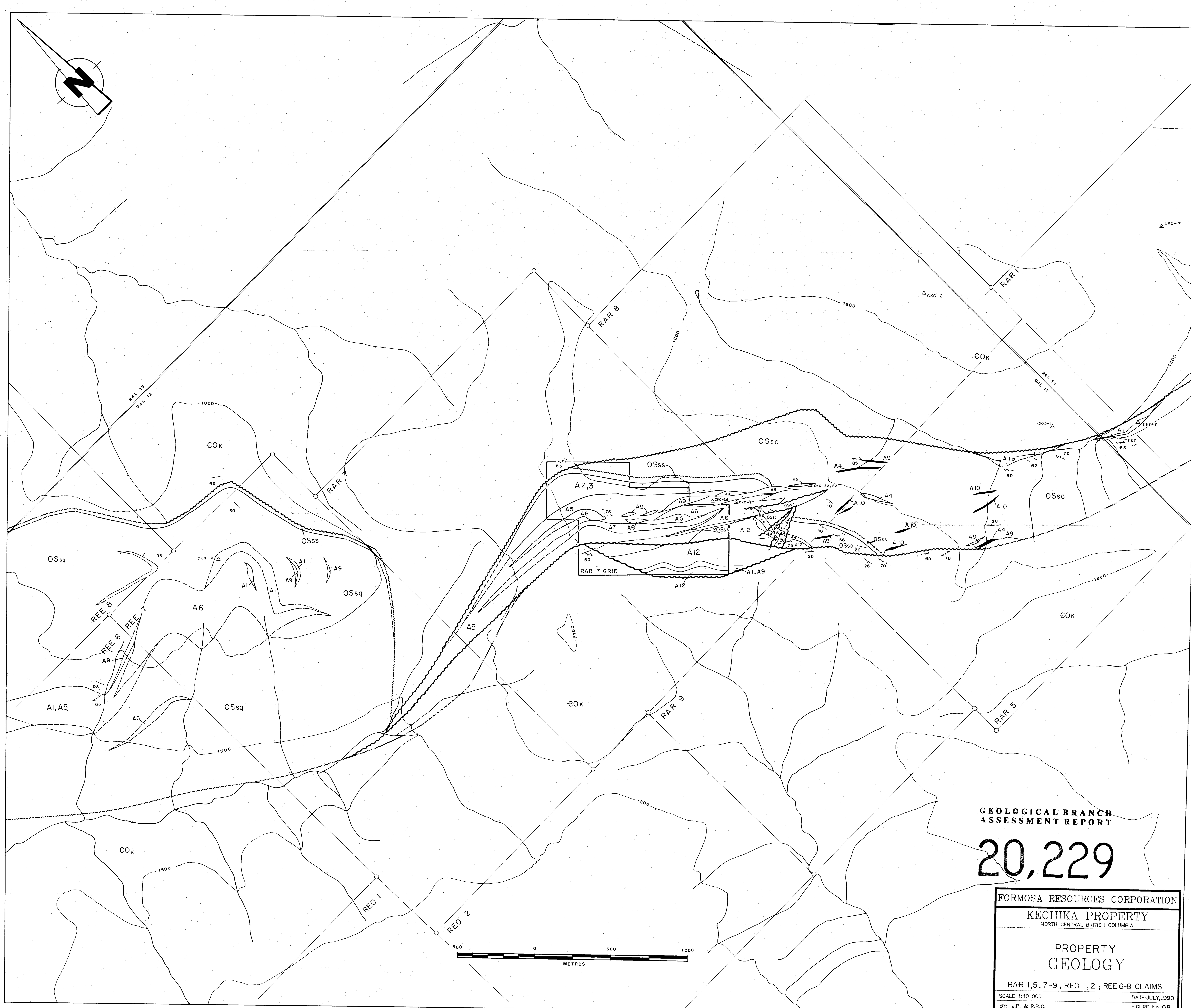
FORMOSA RESOURCES CORPORATION

KECHIKA PROPERTY
NORTH CENTRAL BRITISH COLUMBIA

PROPERTY
GEOLOGY

REE 1,2,3,4,6 & 8 CLAIMS

SCALE 1:10 000 | DATE: JULY, 1990
BY: J.P. & R.R.C. | FIGURE No. 10A



GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,229

FORMOSA RESOURCES CORPORATION

KECHIKA PROPERTY

NORTH CENTRAL BRITISH COLUMBIA

PROPERTY
GEOLOGY

RAR 1,5,7-9; REO 1,2; REE 6-8 CLAIMS

SCALE 1:10 000	DATE: JULY, 1990
BY: J.P. & R.R.C.	FIGURE No. 10B


LEGEND:
KECHIKA ALKALINE IGNEOUS COMPLEX
A12 LIGHT TO MEDIUM GREEN WEATHERING GREENSTONE; LOCALLY CONTAINS ASBESTIFORM VEINLETS;
A12a – DARK GREEN TO BLACK, STRONGLY FOLIATED, SERPENTINE-RICH SHEARED GREENSTONE.
A11 LIGHT GREEN WEATHERING BRECCIA; CONTAINS LARGE SUBROUNDED CLASTS OF A COARSE GRAINED BIOTITE-RICH ROCK.
A10 ORANGE BROWN WEATHERING CARBONATITE DYKES; LOCALLY FRAGMENTAL.
A9 LIGHT GREEN TO LIGHT ORANGE WEATHERING, STRONGLY FOLIATED DYKE OR SILL MAY CONTAIN RARE CHROME SPINELS; LOCALLY EXHIBITS REMNANT DEVITRIFICATION TEXTURE OR CONTAINS FRAGMENTS;
A9a – CONTAINS DARK GREEN TO BLACK AND/OR MINT GREEN FLATTENED FRAGMENTS;
A9b – DARK GREEN WEATHERING VARIETY; MAY CONTAIN ABUNDANT CHLORITE &/OR BIOTITE.
A8 FELDSPAR PORPHYRYTIC, BUFF TO LIGHT GREY APLITE (TRACHYTE)
A7 BUFF, BLOCKY WEATHERING, MULTILITHIC BRECCIA; SUBANGULAR CLASTS, APLITIC MATRIX;
A7a – RUSTY WEATHERING, MULTILITHIC BRECCIA; SUBROUNDED CLASTS, CARBONATE RICH MATRIX; FLUORITE AND PYRITE COMMON ACCESSORY MINERALS IN BOTH PHASES.
A6 DARK GREEN WEATHERING MAFIC SYENITE (MALIGNITE); LOCALLY CHLORITE RICH.
A5 QUARTZ – FELDSPAR – CARBONATE – SERICITE ROCK; WHITE TO BUFF TO PINKISH WEATHERING; WEAKLY TO MODERATELY WELL FOLIATED, STRONGLY LINEATED; LOCALLY CONTAINS APATITE – RICH ZONES THAT CONTAIN ELEVATED YTTRIUM VALUES;
A5a – EXTREMELY CARBONATE – SERICITE RICH PHASE; GENERALLY CONTAINS FLATTENED ELIPTICAL SERICITE PATCHES.
A5b – DARK GREY TO BLACK WEATHERING QUARTZ – FELDSPAR – SERICITE ROCK, POSSIBLY GRAPHITIC.
A5c – MASSIVE, EXTREMELY FINE GRAINED, RUSTY WEATHERING VARIETY (ULTRA MYLONITE)
A5d – BUFF TO WHITE WEATHERING, MASSIVE TO WEAKLY FOLIATED, CARBONATE & SERICITE POOR VARIETY.
(CONTACTS BETWEEN A5 SUBUNITS, GRADATIONAL)
A4 BUFF TO GREY, BLOCKY WEATHERING APLITE (TRACHYTIC)
A3 BUFF TO LIGHT BROWN WEATHERING MULTILITHIC BRECCIA, GRADED BEDS AND OTHER 'SEDIMENTARY' STRUCTURES LOCALLY PRESENT IN FINER GRAINED LAYERS, BRECCIA MATRIX LOCALLY CALCAREOUS (TUFF BRECCIA / AGGLOMERATE)
A2 LIGHT GREEN TO LIGHT ORANGE WEATHERING, MASSIVF TO WEAKLY FOLIATED TUFF (?); LOCALLY CALCAREOUS; CONTAINS RARE CHROME SPINELS; MAY BE IN PART EQUIVALENT TO A9.
A1 SILVER TO PALE GREEN PHYLLITES, GREASY LUSTER; WEAKLY RADIOACTIVE.
PALEOZOIC SEDIMENTS
S2 CHLORITE – PHYLLITES; CALC-PHYLLITES; MARBLES; GRAPHITIC PHYLLITES, DOLOSTONES.
S1 BLACK SILTSTONES; BLACK SILICEOUS SILTSTONES; BLACK PHYLLITES.
FAULT (DEFINED, APPROXIMATE)
GEOLOGICAL CONTACT (DEFINED, APPROXIMATE)
CLIFF EDGE
LIMIT OF MAPPING
NNE SSW LINE OF SECTION
2237 RIDGE ZONE
NNE
SSW
B.L.
2+00 E
1+00 E
1+00 W
2+00 W
3+00 W
0+00 S
1+00 S
2+00 S
3+00 S
4+00 S
5+00 S
6+00 S
7+00 S
8+00 S
9+00 S
10+00 S
INDEX MAP
RAR 7 GRID
GEOLOGICAL BRANCH
ASSESSMENT REPORT
20,229
FORMOSA RESOURCES CORPORATION
KECHIKA PROJECT
LIARD MINING DIVISION, B.C.
GEOLOGICAL MAP
RAR 7 GRID
0 50 100 200 m
SCALE 1:2,000
NTS: 94L/11, 12, 13
DRAWN BY:
DATE: OCTOBER, 1989
FIGURE: 7
Rev., JULY, 1990
GEOLOGY MAP: J. PELL (1988, 1989) & R. MORRIS (1989); COMPILED BY: J. PELL, 1989

NNE - SSW CROSS-SECTION; NW END OF RAR 7 GRID; FACING ESE

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,229

FOR LEGEND SEE FIGURE 7

FORMOSA RESOURCES CORPORATION	
KECHIKA PROJECT LIARD MINING DIVISION, B.C.	
CROSS-SECTION	
NTS: 94L/11, 12, 13	DRAWN BY:
DATE: OCTOBER, 1989	FIGURE: 8

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,229

FORMOSA RESOURCES CORPORATION

KECHIKA PROJECT

LIARD MINING DIVISION, B.C.

RAR 7 (2237) RIDGE ZONE

RADIOMETRIC SURVEY

SCALE 1:200

NTS: 94L/11, 12, 13	DRAWN BY: L.M.
DATE: OCTOBER, 1989	FIGURE: 9