TAK 1-48 CLAIMS

GEOLOGY AND GEOCHEMISTRY, 1981

DAWSON MINING DISTRICT

NTS: 116B/9 and B/10

LATITUDE: 64°33'N

LONGITUDE: 138°32'W

AUTHOR: J. BICZOK, H.B.Sc.

OWNER: MATTAGAMI LAKE EXPLORATION LIMITED

DATE: JANUARY 1982

090980

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 4800 .

Pelletson

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

ABSTRACT

The TAK 1-48 claims, wholly owned by Mattagami Lake Exploration Ltd., are located 69km northeast of Dawson City, Yukon. The claims are underlain by an east-trending belt of largely clastic metasedimentary rocks ranging from Ordovician-Silurian to Cretaceous in age. These are intruded by a Cretaceous syenite-monzonite suite with associated lamprophyre dykes. Initial geologic mapping has been completed over the claims and surrounding area and indicates that future efforts should be concentrated in a Devonian Black Clastic Unit.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF MAPS

CHAPTER ONE: INTRODUCTION

1-1: Location and Access

The TAK 1-48 claims are located 69km NE of Dawson City, Yukon (Figure 1) at 64°33'N and 138°32'W on NTS mapsheets 116B/9 and 10. They are within the Tombstone Mountains, part of the Ogilvie Range, 13km west of the Dempster Highway (km 84) and 16km east of the company's MARN claims. Access to date has been by helicopter from a debarkation point at North Fork Pass (km 76) on the Dempster Highway. In future, if the property warrants it, a road could easily be constructed to the property. A wide, flat-bottomed valley connects the claims with the highway.

1-2: History of the Claims

The TAK claims were staked on July 16, 1980 by the company's geologists and recorded on August 4, 1980. They were located to cover the presumed source of anomalous lead-in-silt levels (180 ppm) with associated zinc, silver and copper anomalies. These anomalies were discovered during detailed follow-up of moderate GSC anomalies detected during a regional geochemical survey (Figure 2).

1-3: Work Program

The Yukon crew established camp on the claims on July 28th and 29th. The following personnel were involved in the work:

J. Biczok	Project Geologist
P. Wagner	Temporary Party Chief
S. Wiecek	Senior Assistant
K. Hyndman	Junior Assistant
K. Tomlinson	Junior Assistant
K. Anderson	Junior Assistant
B. Lockhart	Junior Assistant
D. Brierly	Pilot
T. Dube	Engineer
J. MacDonald	Cook

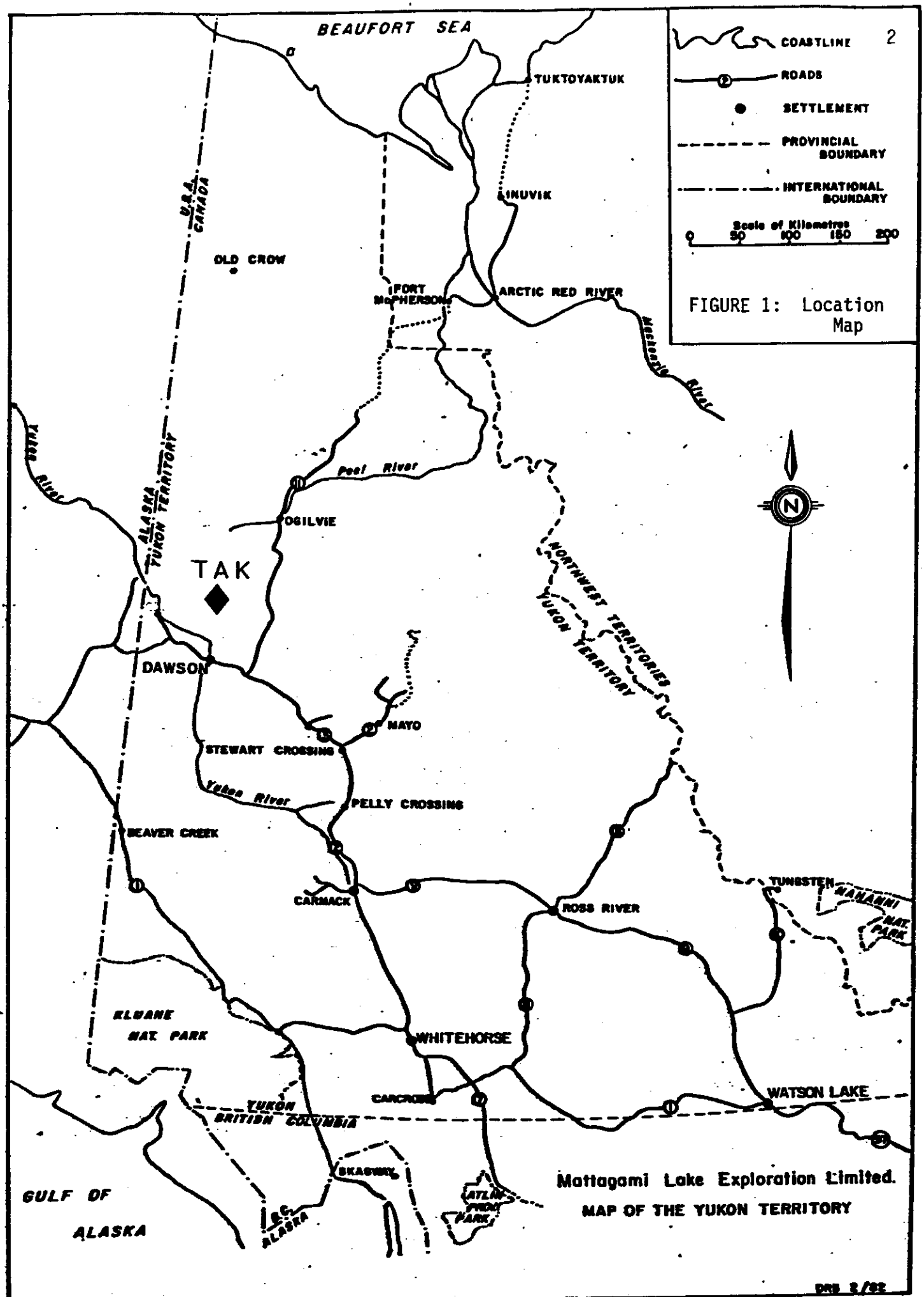
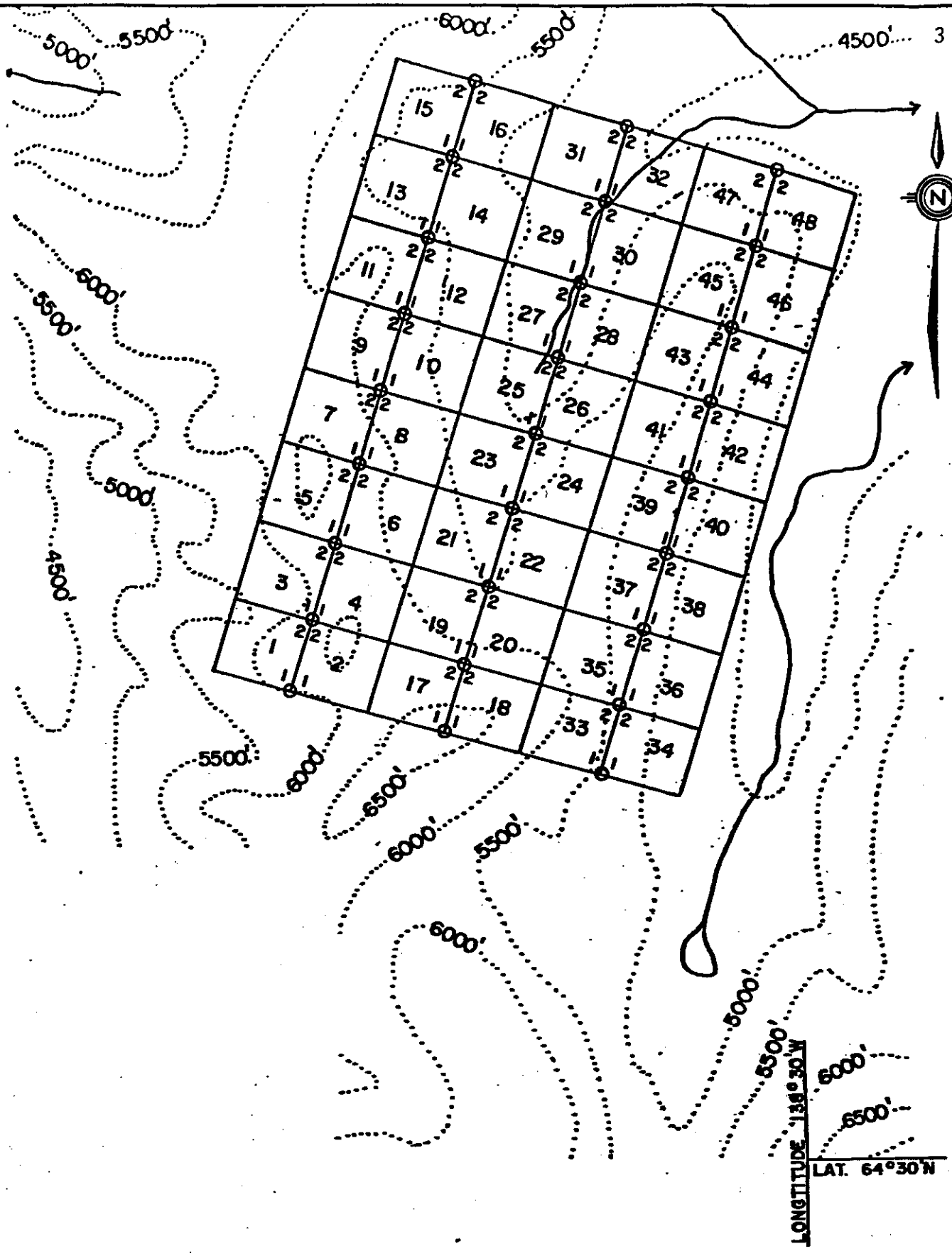


FIGURE 1: Location Map

Mattagami Lake Exploration Limited.

MAP OF THE YUKON TERRITORY

DRB 2/82



Mattagami Lake Exploration Limited

FIGURE 2

Tak 1 - 48 Claims
Staked 16th July 1980

CLAIM MAP SHEETS 116 B-9., 116 B-10

DRB 7/81

Helicopter support was provided by a Jet Ranger 206B on contract from Buffalo Airways of Ft. Smith, N.W.T. A total of 61 mandays were expended on the property, predominantly in geological mapping and collection of stream silt and water samples. Geological mapping was concentrated on the southern half of the claim block and adjacent lands. It was felt that the previously detected geochemical anomalies were most likely to be derived from formations in this area. Mapping was conducted on a 1:10,000 scale using enlargements of 1:50,000 scale topographic maps and airphotographs. "Zinc zap" solution was used in the field in an effort to locate the weathering products of sphalerite in shale.

CHAPTER TWO: GEOLOGY

2-1: Introduction

The TAK claims are situated near the western end of a >350km long, east trending belt of Ordovician to Cretaceous, mainly clastic, metasedimentary rocks that extends from Dawson City to Keno Hill and beyond. (Mapping to the east of Keno Hill is not as complete but it appears that the belt may extend to the Sekwi Mountains on the Yukon-N.W.T. border.) Within this belt are situated the company's MARN and RIKI properties and the numerous Pb-Ag deposits and occurrences of the Keno Hill area.

The Dawson City-Keno Hill area was mapped by L.H. Green of the GSC (1972) and he delineated five formations in the western part of the belt and two in the eastern part (Table 1). From oldest to youngest these formations are:

1) The Ordovician-Silurian Road River Formation, predominantly chert, cherty shale and argillite

2) The Permian Tahkandit Limestone, a bioclastic formation up to 30m thick and 16km long

3) The Jurassic "Lower Schist" division, a mixture of phyllite, quartzite, argillite, slate, etc.

4) The Cretaceous Keno Hill Quartzite, a very thick, massive quartzite formation

5) A Cretaceous maroon and green shale and brown siltstone sequence.

Only the Lower Schist and Keno Hill Quartzite extend much beyond the Dawson area. Both are intruded by numerous diabase dykes and sills throughout the region. A northwest trending belt of Cretaceous intrusions, ranging from dyke to batholith proportions, intersects the clastic belt in the Tombstone Range and several of these dykes are found on the TAK property.

TABLE 1: Table of Formations

Period	Formation	Description
CRETACEOUS	7. Syenitic Intrusions	Sills and dykes of Hbl-Kfd (7a) and Musc. Porphyritic (7b) Syenite and Biotite Lamprophyre (7c).
	6. Diabase	Medium-grained Diabase dyke.
	5. KENO HILL QUARTZITE	Thick sequence of massive orthoquartzite with shale and phyllite partings (5a) and minor sandy limestone (5b).
JURASSIC	4. LOWER SCHIST	Mainly phyllitic to graphitic slate and shale, minor quartzite (4a) with minor green phyllite (4b).
DEVONIAN	3. BLACK CLASTIC UNIT	Basal chert pebble conglomerate and grey quartzite (3a) overlain by a thick sequence of grey-black shale.
ORDOVICIAN-SILURIAN	2. ROAD RIVER FORMATION	Largely a cherty sequence with green-grey to black cherty shale and argillite (2a) and grey-black to green chert, cherty shale (2b), slate; minor quartzite.
PRECAMBRIAN OR LATER	1. "GRIT UNIT"	Mainly clastic sequence of maroon and green slates with minor quartzite (1a), green phyllite (1b) and olive-green to grey phyllite and mudstone (1c).

Recent mapping by Bob Thompson of the GSC (1982), D. Tempelman-Kluit (pers. comm. 1981) and the company's geologists, has indicated that a Devonian "Black Clastic" sequence lies between the Road River Formation and overlying strata (either Tahkandit Limestone or Lower Schist depending on location). This formation may be correlative with the Canol Formation which hosts important Pb-Zn-Ag-Ba deposits in the Selwyn Basin.

2-2: Description of Units

The oldest rocks exposed in the TAK area are members of a Precambrian(?) clastic sequence termed the *"Grit Unit"*(1). The term was first coined by Roddick and Green (1961) to describe similar rocks in the Sheldon Lake mapsheet (104J) to the southeast and has been adopted for this area. Within the claims area three members of the formation were distinguished - a lower unit of maroon and green slates with minor quartzite (1a); a thin green phyllite member (1b) and a thick upper sequence of olive-green to grey phyllite and mudstone. The first member is exposed only to the north of the map area. The green phyllite is thinly laminated, micaceous, light green in color and is probably a metamorphosed siltstone. The olive-green to grey phyllite and mudstone member is locally somewhat cherty and contains minor shale interbeds. It varies from thinly bedded to massive and is commonly highly contorted. The formation is assumed to be in thrust contact with the overlying Road River Formation (Map 1). This assumption is based largely on the work of Bob Thompson; the company's geologists have not yet seen this fault.

The *Road River Formation* is largely a cherty unit with minor shale, slate and quartzite. Two members have been distinguished to date on the property - a lower green-grey to black argillite/shale member (2a) and an upper grey-black

to green chert member with interbedded cherty shale, slate and quartzite (2b). Unit 2a occurs near the northern limit of mapping and has not been fully delineated. Unit 2b features both massive and brecciated chert which is locally pyritiferous - up to 5% fine-grained pyrite.

The *"Black Clastic" Formation* consists of a lower thin member of chert pebble conglomerate (3a) and a thick upper sequence of monotonous grey-black shale (3b). The chert pebble conglomerate has been equated with a grey quartzite unit in the western part of the map area. It appears to be a facies equivalent and occupies the same stratigraphic position as the conglomerate. The quartzite is a very distinct unit - very hard, fine-grained, uniquely grey in color with rare chert pebbles to 1cm. It contains 5% very fine-grained hematite spots after pyrite(/). The overlying shale member is generally thin bedded, occasionally phyllitic and usually very black in color.

The Jurassic *"Lower Schist"* is a complex sequence of clastic metasediments and has not been extensively mapped in the claims area. Two members have been distinguished to date - an upper green phyllite member (4b) and a more diverse lower member (4a) of slate, shale and minor quartzite. The green phyllite is generally quite sheared and contains abundant pyrite crystals up to 5mm across. The lower member is also commonly sheared and weathers black to brown.

The youngest strata in the area belong to the Cretaceous *Keno Hill Quartzite*, a 540m thick sequence of massive orthoquartzite with minor interbedded slate and phyllite, generally as thin partings (5a). Thin, brown weathering, sandy limestone members crop out locally but are generally too small to depict at the scale of mapping (5b).

Two types of intrusions were detected in the area - a sole outcrop of *diabase* (6) southeast of the claims, and a complex series of porphyritic *syenite-lamprophyre* sills or dykes (7). Two varieties of syenite were mapped

within the same sills and therefore represent phases of a multiple intrusion or the results of flow banding. One syenite phase is hornblende±K-feldspar±biotite porphyritic with hornblende and K-feldspar porphyritic phases predominating. Phenocrysts of all minerals are subhedral to euhedral, generally less than 0.7cm in length and range from 0% to 15% in abundance. The muscovite porphyritic phase contains 10-15% subhedral to euhedral muscovite phenocrysts and is generally barren of other phenocryst types. These two phases make up the vast majority of the intrusions. The biotite lamprophyre occurs in three outcrops, possibly two of the same sill, near the Lower Schist-Keno Hill Quartzite contact. It contains 10-15% biotite phenocrysts in a fine-grained, grey, syenitic groundmass. The biotite is frequently altered(?) to a lime-green color and closely resembles fuchsite, a chromium mica.

All syenitic intrusions are dominantly sill-like in form, being parallel, or sub-parallel, to the adjacent country rock. The maximum true thickness is about 10m.

CHAPTER THREE: GEOCHEMISTRY

3-1: Stream Geochemistry

Only four stream sediment and eight water samples were collected during the 1981 program. Previously the area had been sparsely sampled by the company in 1980 and the GSC in 1977. Results from several of the GSC samples are presented in Table 2 along with Mattagami's 1981 sample results. Unfortunately the exact locations of the 1980 samples are uncertain (Metcalfe, 1980) so this data is not presented. Most probably the sample with the highest lead level (180 ppm) was collected at the mouth of the small north flowing creek draining the TAK claim block. The highly anomalous GSC sample (#1078) was collected immediately below the junction of this stream with a stream flowing from the north (Figure 3). Locations are plotted on Map 1 and Figure 3.

Only one stream sample collected in 1981 proved to be anomalous. Sample S-2504 contained 1200 ppm Zn and 4800 ppm Ba. It was collected on the north flowing stream east of the camp stream, apparently in the centre of the black clastic unit. A sample collected from a stream cutting the black clastics southwest of the claims (S-6) is also slightly anomalous in zinc (450 ppm) and silver (0.6 ppm). Unfortunately several other samples from the black clastic terrain were destroyed in transit. The entire area will have to be systematically sampled in detail in 1982.

TABLE 2: STREAM SAMPLE RESULTS

Silt Samples (in ppm)

Sample Number	Cu	Pb	Zn	Ag	Mo	U	Ba	
81-173-S- 6	100	16	450	0.6	12	-	-	
2504	46	16	1200	0.2	14	4.8	4800	
GSC- 1077	89	14	248	0.6	15	5.9	1480	
1078	99	108	360	1.0	8	5.9	2000	
1243	78	24	320	0.6	7	5.9	2350	duplicates
1244	79	23	325	0.8	7	6.2	2450	

Water Samples (in ppb)

Sample Number	Cu	Pb	Zn	U	F	pH	
81-173-W-1	10	20	20	0.08	40	6.12	
2	10	20	10	0.12	10	6.35	
3	10	20	970	0.12	170	3.57	
4	10	20	20	0.02	20	6.42	
5	10	20	10	0.10	20	6.76	
6	10	20	10	0.06	30	6.70	
7	10	20	10	0.02	20	6.83	
8	10	20	10	0.02	10	7.05	
GSC- 1077	N/A	N/A	N/A	0.02	220	5.30	
1078	N/A	N/A	N/A	0.02	54	7.50	
1243	N/A	N/A	N/A	0.02	100	7.60	duplicates
1244	N/A	N/A	N/A	0.02	100	7.60	

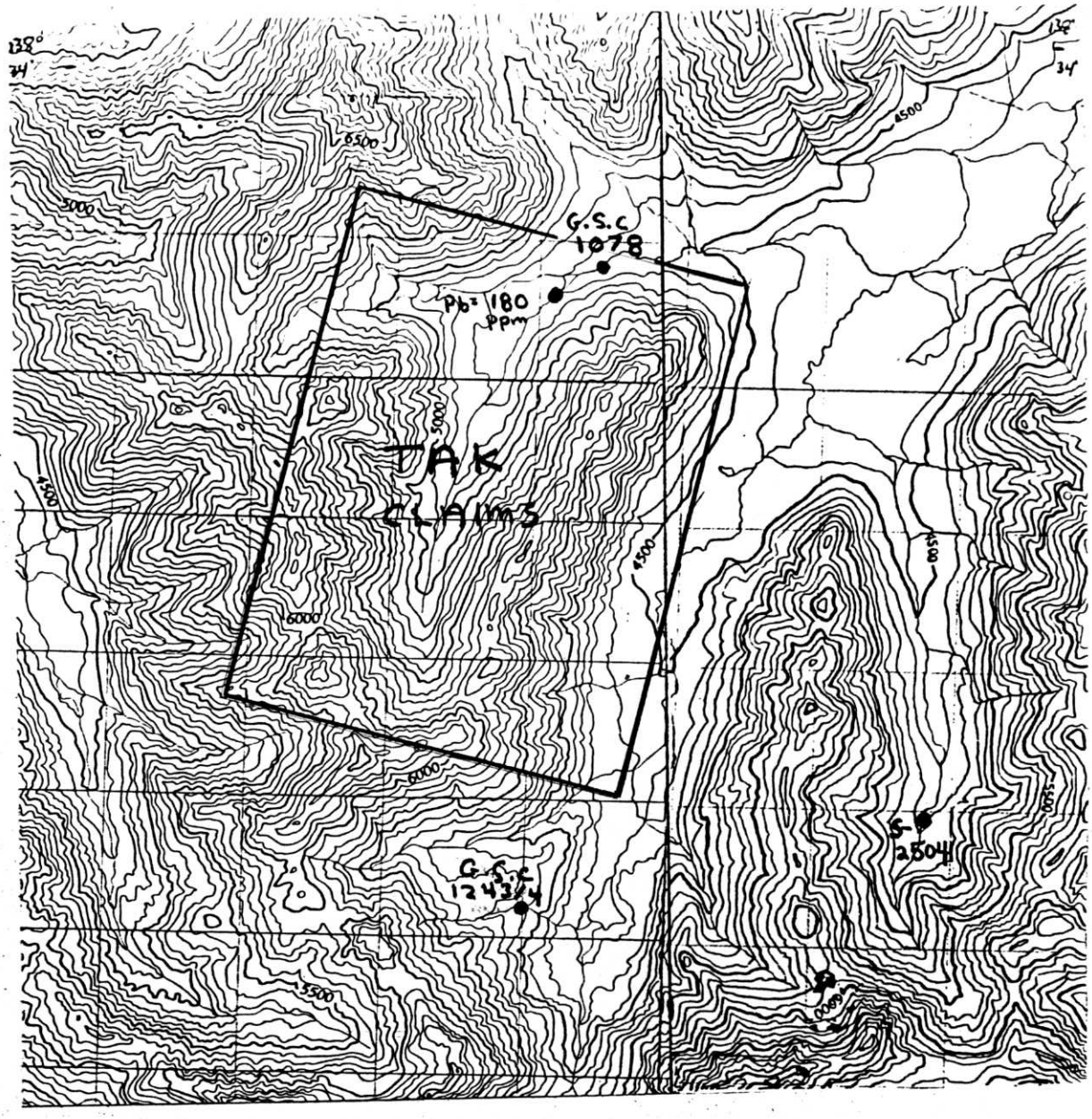


FIGURE 3: Stream Sample Location Map

3-2: Rock Geochemistry

49 rock samples were collected from the claims area and analysed for Cu, Pb, Zn, Ag, Mo, Au and U. Results are presented in Table 3 and sample descriptions in Table 4. No appreciable metal enrichment was discovered in any of the metasedimentary formations except for minor gold enrichment (185 ppb) in a green chert member of the Road River Formation. Elevated base metal levels were discovered in the porphyry suite, however, this is not considered significant because there was no indication of local concentration.

TABLE 3: Rock Sample Analyses, in ppm except Au in ppb

Sample Number		Ag	Cu	Pb	Zn	Mo	Au	U
81-173-R-	1	0.6	23	22	140	16	<5	
	2	0.4	4	3	20	2	<5	
	3	0.1	14	5	80	3	<5	0.2
	4	0.2	70	8	80	2	<5	
	5	0.2	16	21	70	3	<5	
	6	0.2	22	2	45	2	<5	<0.1
	7	0.4	118	56	225	2	<5	<0.1
	8	0.2	34	10	85	2	<5	
	9	0.2	12	4	150	1	<5	
	10	0.2	16	14	55	4	<5	
	11	0.3	12	9	70	2	<5	
	12	0.2	14	2	60	2	<5	
	501	0.2	19	10	60	2	<5	
	502	0.4	87	40	100	2	<5	
	503	0.2	16	55	150	2	<5	
	504	0.2	90	7	225	2	<5	
	505	0.2	16	5	25	3	<5	
	506	0.2	14	6	30	2	<5	5.2
	507	0.2	15	44	50	1	<5	5.0
	508	0.3	7	69	95	4	<5	4.8
	509	0.1	12	10	15	3	<5	
	510	0.2	56	5	65	3	10	
	511	0.1	4	56	50	7	<5	2.2
	512	0.2	9	13	35	2	<5	15.0
	513	0.3	21	36	25	3	<5	9.6
	1001	0.2	4	3	5	4	<5	0.4
	1002	0.2	4	5	5	3	<5	<0.1
	1006	<0.1	26	2	5	3	40	<0.1
	1007	0.2	13	5	65	2	<5	<0.1
	1010	0.2	16	4	25	2	40	<0.1
	1011	0.1	11	7	10	3	185	<0.1
	1015	0.2	3	6	10	6	<5	<0.1
	1016	0.8	21	55	100	6	5	1.2
	1500	0.6	20	48	70	4	<5	<0.1
	1501	0.3	6	13	20	2	5	<0.1
	1502	0.1	16	80	95	3	5	2.8
	1503	0.2	4	10	60	3	5	1.6
	1505	0.2	62	28	130	5	5	
	1506	0.6	36	36	315	3	5	
	1507	0.1	12	44	40	2	5	

TABLE 3: Rock Sample Analyses, in ppm except Au in ppb

Sample Number	Ag	Cu	Pb	Zn	Mo	Au	U
81-173-R-1508	0.4	14	9	55	2	10	<0.1
1509	0.2	6	9	100	2	5	0.2
1510	0.2	14	8	65	2	5	<0.1
1511	0.5	25	13	55	8	5	
1512	<0.1	20	9	60	4	5	
1513	<0.1	20	4	60	2	5	
2005	0.2	4	4	185	3	5	
2500	2.0	65	15	975	64	5	20.0
3000	0.4	30	65	65	8	<5	

TABLE 4: Rock Sample Descriptions

Sample Number	Description
1	K.H.Q. - Grey Quartzite, numerous quartz veinlets
2	K.H.Q. - Phyllitic chert with pyrite veinlets
3	Biotite lamprophyre
4	Biotite lamprophyre with fuchsite
5	Quartz vein
6	Hbl-Fd Porphyry
7	Bio Porphyry
8	Black shale from B.C. unit
9	Grey quartzite with chert pebbles, base of B.C. unit
10	Sheared, hematized quartzite, B.C. unit(?)
11	Grey chert, 5% pyrite
12	Fe-Mn oxide vein, honeycomb texture
501	Grey-black shale, B.C. unit
502	Green phyllite, trace cp, B.C. unit(?)
503	"Hornblende hornfels", B.C. unit
504	"Hornfels" with pyrrhotite, B.C. unit
505	Siliceous shale(?)
506-512	N/A
1001	K.H.Q. - arkosic bed
1002	K.H.Q. - arkosic sandstone
1006	B.C. unit - black chert layer
1007	Bio-Fd porphyry
1010	R.R.Fm. - Agrillaceous Quartzite
1011	R.R.Fm. - Green Chert
1015	R.R.Fm. - Dark grey chert
1016	Chert pebble breccia, B.C. unit(?)
1500	Quartz vein
1501	Quartz vein
1502	Hornblende porphyry
1503	Feldspar porphryry
1505	1m chip sample across fault in shales, B.C. unit
1506	Highly weathered, rock type unknown
1507	
1508	Chert Pebble Conglomerate, B.C. unit
1509	Quartz vein, trace sp
1510	Phyllite, J.S.
1511	Chip sample of red shale, B.C. unit(?)
1512	White weathering shale(?), B.C. unit
1513	Shale with white coating, B.C. unit
2005	Orange stained volcanic rock, several km north of claims
3000	N/A

K.H.Q. = Keno Hill Quartzite
B.C. unit = Black Clastic Unit
J.S. = Jurassic Lower Schist
R.R.Fm. = Road River Formation

CHAPTER FOUR: DISCUSSION AND RECOMMENDATIONS

Initial geological mapping of the TAK claims area has now been completed. Only the Devonian Black Clastic Unit and Road River Formation have significant potential for hosting stratiform mineralization. Further work should consist of detailed mapping and sampling - both stream and rock - of these units.

Respectfully submitted,

John Biczok

J. Biczok

JB/sal

STATEMENT OF COSTS

Wages

J. Biczok	8 mandays x $ 68.22/manday =	$	545.76
P. Wagner	12 mandays x $ 79.33/manday =		951.96
S. Wiecek	10 mandays x $ 56.37/manday =		563.70
K. Tomlinson	10 mandays x $ 45.93/manday =		459.30
K. Anderson	10 mandays x $ 50.10/manday =		501.00
K. Hyndman	8 mandays x $ 42.17/manday =		337.36
B. Lockhart	3 mandays x $ 52.19/manday =		156.57
J. MacDonald	8 mandays x $ 70.00/manday =		560.00
			$ 4,075.65

Assays	1,491.57
Truck Rental	619.37
Camp Supplies	1,137.01
Expeditor's Fees & Accomodation	544.55
Aircraft Charter	
12.8 hours of 206B plus fuel	5,184.00
TOTAL 1981 Costs	$ 13,052.15

CERTIFICATE

I, John Biczok, of Edmonton, Province of Alberta, do hereby certify that:

1. I am a geologist at 8615 - 64 Avenue, Edmonton, Province of Alberta.
2. I am a graduate of Lakehead University, Ontario with a H.B.Sc. (1976) in geology and am presently completing an M.Sc. at the University of Manitoba, Winnipeg.
3. I have been practising my profession since 1973 and am at present Exploration Geologist with Mattagami Lake Exploration in Edmonton.
4. I was party chief for the crew that conducted the work in this report and the report is correct to the best of my knowledge and ability.

Dated:_____

_____

John Biczok, H.B.Sc.

LIST OF REFERENCES

METCALFE, P., 1980, "Yukon Moly Report", Internal Company Report.

TAK CLAIMS

Long. 138° 30' W

Lat. 64° 30' N

CAMP

Kill Zone

R-12 R-11 R-9,10 R-8 R-6,7 R-4,5 R-1,2 R-1000 R-1001 R-1002 R-1004 R-1005 R-1006 R-1007 R-1008 R-1012 R-1013 R-1015 R-1016 R-1502 R-1503 R-1504 R-1505 R-1506 R-1000 S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8

Prismacolor			
	CRETACEOUS		DEVONIAN
929	7 SYENITIC INTRUSIONS a. Hornblende - K-Feldspar porphyritic syenite b. Muscovite porphyritic syenite c. Biotite Lamprophyre	905	3 BLACK CLASTIC SEQUENCE a. Chert pebble conglomerate, grey quartzite with chert clasts. b. Grey-black shale
907	6 DIABASE		ORDOVICIAN - SILURIAN
915	5 KENO HILL QUARTZITE a. Massive orthoquartzite, minor interbedded slate & phyllite b. Sandy Limestone, minor slate.	956	2 ROAD RIVER FORMATION - chert, cherty shales shale & argillite. a. Green-grey to black argillite/shale b. Grey-black to green chert, interbedded cherty shale & slate, minor quartzite.
	JURASSIC		PRECAMBRIAN OR LATER
913	4 LOWER SCHIST a. Slate, shale, minor quartzite, commonly phyllitic or graphitic b. Green Phyllite	940	1 "GRIT UNIT" a. Maroon & green slates, minor quartzite b. Green Phyllite c. Olive green - grey phyllite & mudstone, interbedded.

Outcrop perimeter

Geologic contact, defined, assumed

Fault

Thrust fault (arrowheads on upthrust side)

Fold; syncline, anticline

Bedding, foliation, jointing

Float

R-1006 x Rock sample location & number.

S-W-501 x Silt & water sample location & number

P-1000 x Soil sample location & number

N

MATTAGAMI LAKE EXPLORATION LIMITED.

WESTERN FIELD OFFICE

EDMONTON, ALBERTA.

YUKON TAK PROJECT

MAP 1

GEOLOGY MAP 090980

DRAWN BY: D.R.BULL.

DATE: OCTOBER 1981

SCALE OF METRES

0 100 500 1000 metres