# MAR 19950028: BIRCH

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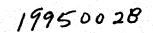
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FOCAL RESOURCES LIMITED

**Birch Property** 

**Assessment Report** 

Authors: M. Innes, B.Sc. D. Nikols, P. Geo. L. Smith, P. Geol. August 1995

Birch	Property
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#### Summary

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Focal Resources Limited began its Northeast Alberta exploration programme in the spring of 1994. The Birch Property was included in that study. The principal exploration objective was to find gold and other metals in the Devonian limestones. In order to test the mineralisation model, stream sediment and peat bogs were sampled.

Relatively high geochemical values were found in the peat samples. However, due to the difficulty in interpreting the results and the amount of work that would be required to obtain a meaningful data set, it is recommended that the property be dropped.

### Introduction

This report summarizes the exploration efforts carried out by Focal Resources Limited on the Birch Property (NTS 84 H and 84 A; Maps 1 and 2) during the 1994 summer field season.

#### **Regional Geology**

The Northeast corner of Alberta is occupied by rocks of the Canadian Shield belonging to the Churchill Structural Province. These rocks are overlain by Phanerozoic sediments, thickening westwards. The Precambrian rocks in the region consist of the basement complex of intrusive and metasedimentary gneisses, unconformably overlain by the flatlying sandstones of the Athabasca Group. During the Hudsonian Orogeny theses rocks were structurally deformed, and metamorphosed to amphibolite grade. A hematitic regolith (the La Loche Formation), is commonly found overlying the Athabasca Formation (if present) or the Precambrian basement. A wedge of Devonian limestones unconformably overlies the Precambrian rocks, but is rarely found in outcrop due to the thick layer of glacial cover. Further west the Devonian is overlain by Cretaceous sandstones and shales.

Map 3 shows the bedrock geology of North-eastern Alberta, and Diagram 1 represents the regional stratigraphy of Northeast Alberta.

#### **Mineralisation Model**

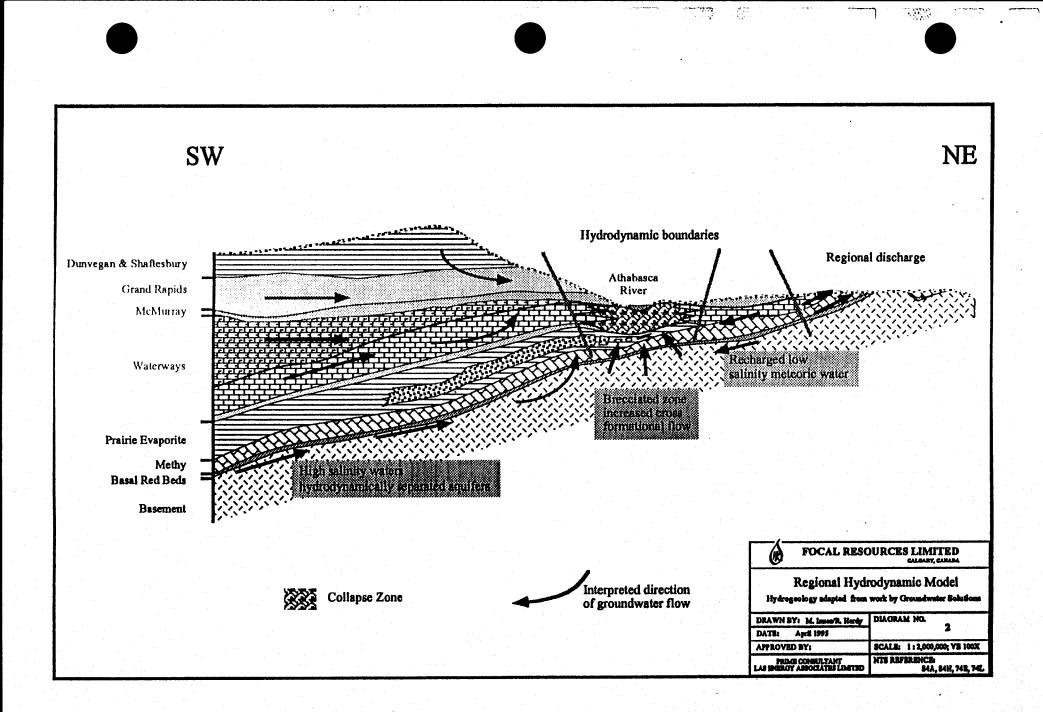
Several variations of a working model were developed before the field work began and have been improved upon since (Diagram 2).

The generic model for metallic mineral deposition involves ion rich waters migrating upwards and precipitating metals upon reaching an appropriate change in redox conditions. The upward migration of such fluids from the basal red beds or granite wash (La Loche

Diagram 1. Generalized Stratigraphy of Northeastern Alberta.

	SYST	STEM GROUP		FORMATION	MEMBER	DOMI	NANT LITHOLOGY
		lecent- zistocene		Drift	<u>^</u>		till outwash gravels acolian sands
		H	La Biche	La Biche			shale
	2	Upper		Dunvegan			sandstone, siltstone
	Cretaceous			Shaftsbury			shale, bentonites fish scale horizon
	Creta			Pelican			sand
		ų		Joli Fou			shale
		Lower	Mannville	Grand Rapids			lithic sands
		Ι		Clearwater			shale & glauconite sands
				McMurray	<u>^ ^ </u>		quartzose sands, heavy oil
	Ĭ		Beaverhill Lake	Waterways	Mildred		argillaceous limestone
		CL			Moberly		limestone & shale
		Upper			Christina		shale & limestone
					Calumet		limestone & shale
					Firebag		shale, minor limestone
				Slave Point	~ .		limestone
	Devonian	Middle	Upper Elk Point	Prairie Evaporite			salts, anhydrite, shale & dolomite
	Dev	Mi		Methy			dolomite, minor reefs
			Lower Elk Point	McLean River			shale, siltstone, dolomite
				Cold Lake		//////	salt, minor shale
		ver		Erestina			shale, limestone, anhydrite
		Lower		Lotsberg			salt, minor shale
	$\sim$		$\sim$	La Loche			arkosic sand & conglomerate (basal red beds/granite wash)
	Precan	nbrian	$\sim$ $\sim$ $\sim$	Athabasca Group			sandstone
				Basement Complex			granitoids

Modified after Dufresne et al (1994), and Hamilton and Mellon (1973).



Formation) is dependent on the breaching of aquatards in the overlying formations. Dissolution of the Prairie Evaporite salts results in collapse structures, and the associated faulting/brecciation would provide the necessary fluid conduits for cross-formational fluid migration. The salts also provide a source of ions for the migrating fluids. Fluids with meteoric compositions moving downward through the overlying surficial material will also affect overall fluid chemistry. The resultant fluids have a high oxygen content, and precipitation of the dissolved ions will occur when the fluids encounter a reducing environment. The McMurray Formation in the area contains hydrocarbons, providing the necessary reducing conditions. The redox boundary may not be a planar horizon, such as the base of the McMurray Formation, but due to leakage of hydrocarbons into the underlying rocks may be a wider zone enveloping the McMurray/Waterways contact. As such, there is potential for mineralisation in the Cretaceous sands as well as in the Devonian limestones.

The model described above is a variation of the two-fluid mixing model for the deposition of Mississippi Valley Type lead-zinc ores. The carbonate rocks in the area exhibit several of the regional characteristics of MVT deposits: high porosity and permeability as a result of karstification, fracturing or faulting; the presence of biostromal carbonates; dolomitization and silicification; and an association with hydrocarbons (Olson et al, 1994).

In order to determine the potential for the type of mineralisation described above, geological interpretation (air photo and Landsat image analysis) and subsequent geochemical sampling of peat bogs and stream sediments was conducted. The analyses indicate elevated geochemical values for several metals in the peat samples.

### Location, Access and Permit Tabulation

The Birch Property comprises the lands listed in Table 1. They are found within NTS map 84 H and 84 A. Map 1 shows the regional context of the property, and Map 2 shows the boundaries and permit numbers in detail. All Metallic Mineral Permits for the Birch Property are curently in Cieszynski's name, but are on option to Focal.

#### Table 1

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Permit Numbers and Locations

Permit Number	Section(s)	Township	Range	Meridian	Commencement Date
9393100091	1-8; 9S,NE, L11,L12;;10- 15;16N,SE;17 -36	94	20	W4	October 20, 1993
9393100093	1-36	93	20	W4	October 20, 1993
9393100093 4	1-36	95	20	W4	October 20, 1993

Access was gained via helicopter from Fort McMurray as there are no roads in the area.

## Work Performed

Tables 2 and 3 show the work carried out on and/or in support of work on the Birch property from May 1994 - June 1995, and the cost of that work.

#### Table 2

Work Performed - Geological and Geochemical Surveys

Type of Work	Dates	Statistics
Compilation of Existing Information	May - July 1994	
Peat Sampling	August 1994	3 samples
Stream Sediment Sampling	October 1994	2 samples
Sample Analysis	September & October 1994	
Data Analysis, Interpretation and Consolidation	November 1994	

#### Table 3

Cost of Work Performed, as of September 30, 1995 (as per the attached)

### Sampling Rationale, Procedures and Analysis

#### Exploration Strategy

The permits discussed in this report form a portion of the lands considered in Focal Resources Limited overall Northeast Alberta exploration programme. Positioning any specific property in a regional geological framework is an essential step in the interpretation of any data collected from that property. The information gathered from the literature was assembled and interpreted, an exploration and data collections strategy was developed, the appropriate field work was implemented, and the results were interpreted within a regional framework.

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	Table 3		
FOCAL RESOURCES LIMITED			
BIRCH PROPERTY EXPENDITURE STATEMENT			
AS OF SEPTEMBER 30, 1995			
ode	EXPENDITURES		
1 Company Labour	\$ 3,468.98		1
2 Travel & vehicles	2,036.93		 1
3 Contract Labour	1,761.09		
10 Consulting Fees	8,822.22		
15 Meals & Entertainment	120.57		
90 Safety & Security	0.73		
100 Site access & prep.	71.05	· · · ·	
110 Camp & catering	2,147.20		
120 Communications	199_47		
160 Permits & licenses	23.70	•	
190 Surveying & photogrammetry	524.53		
200 Assaying & testing	3,287.30	~	
210 Studies - geological & mapping	3,765.51		
211 Studies - geophysical	2,882.15		
212 Studies - geochemical	5,543.18	r	
255 Fuel, lubricants & utilities	33.44		
260 Printing & reproduction	443.99		
300 Non-controllable material	709.59		
Z10 Controllable equipment	1,812.85		
Transportation - helicopters	1,805.94		
412 Transportation - fixed wing aircraft	269.24		
413 Transportation - vehicles	27.27		
430 Move- in/out	18.40		
480 Equipment rentals	509.36		
900 Miscellaneous	16.95		
990 Overhead	5,778.37		
TOTAL EXPENDITURES	\$ 46,080.00		

Due to the lack of bedrock exposure in this area, alternatives to the conventional approach were taken. Based on the literature and the available sampling media stream sediment and peat samples were collected for geochemical analysis.

#### Stream Sediment Sampling

Sample sites were selected based on previous work and aerial reconnaissance of the property. The sampling was done in the fall to take advantage of low water levels. A 6mm screen was used to remove course material in the field. Approximately 40 kg of >6mm material was collected in a large plastic pail. The stream samples were taken to the University of Alberta Minerals Benefaction Laboratory and screened to 60 mesh. The minus 60 mesh fraction was run over a shaker table, and each sample was divided into concentrate, middling and tails; the heavy mineral fraction making up most of the concentrate. The fractions were subsequently examined under the light microscope and the concentrate assayed for gold using FA-AA (Appendix 1,Table 5 and 6).

#### Peat Sampling

Peat samples were taken, using a peat sampler designed by Dr. J.D Campbell of Jaycon Reconnaissance.

The peat samples were assayed using ICP-AES and FA-AA for gold (Appendix I, Table 5 and 6).

#### Regional Ground Water Study

Water chemistry data from deep formations was collected over a wide area in the vicinity of this and other properties of interest. Existing wells were sampled using the best technology available. The waters were treated and analysed as described above for the surface waters. Existing water observation wells drilled by the Alberta Research Council and others formed the bulk of those sampled. Additional samples were taken from water supply wells and gas well separators in areas not covered by the existing piezometers. None of these samples were taken from within the boundaries of this property, however, the analysis of this data formed an important part of the overall evaluation of the mineral potential of these permits.

### Results

The analytical results are presented in Appendices II and III. Table 4 summarizes the ranges of selected elements.

### Table 4 Analytical Results - Ranges of Selected Elements

	Gold	Copper	Lead	Zinc	Nickel
Peat	12-16 ppb	6-14 ppm	6-11 ppm	20-56 ppm	10-26 ppm
Stream Sediment	20-21 ppb				

### Conclusions

This area is geochemically interesting due to the presence of elevated values for several base metals. There is not enough data to conduct meaningful statistics, but a review of the data shows that the values are relatively high. Background values for the various elements has not been statistically defined, but it can be assumed to be well above detection for Pb, Zn, Cu, Ni, and Au in peats.

The small number of samples from the area makes interpretation difficult. The fact that the background for the various elements in peats is undefinable, coupled with the fact that the correlation between peats and other sampling media is unknown makes interpretation of this data almost impossible.

From the field work done to date, there is no indication that the elevated values have a bedrock source. The fact that the area is covered with muskeg underlain by thick glacial sediments lends credence to the alternative: that the elevated values have a surficial source.

At the present time there is no evidence that these values are anomalous, because we have no indication of background abundances of the various elements. Detailed geochemical study of suites of elements will be the key to understanding the geology and mineralisation potential of this area.

### Recommendation

Although there are seemingly high geochemical values on the property, it is recommended that Focal not proceed with further work at this time. The amount of work necessary to determine the meaning of the geochemical results found to date would be phenomenal, and the costs would outweigh the benefits. Thick overburden and lack of easy access to the property compound the problem.

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### **Author Information**

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This report was prepared by L.A. Smith, D. Nikols, M. Innes, and D. Reynolds. The geological service work and results reported herein was carried out by or under the supervision of the preparation team.

Leslie A. Smith, B.Sc., P. Geol. is a registered geologist in Alberta and has over 20 years of experience in mining and petroleum geology and project management.

Dennis J. Nikols, B.Sc., P. Geo. is a registered geoscientist in British Columbia. He has 26 years of experience in mineral exploration and mining geology and the management of geoscience projects for industry and the Alberta Geological Survey.

Michele B. Innes, B.Sc., MBA, G.I.T., a recent graduate of the University of Saskatchewan was directly involved in the mapping, sampling, and data collection on this project.

Darryl M. Reynolds, B.Sc., (Wildlife Biology), a recent graduate of the University of Montana was directly involved in the mapping, sampling, and data collection on this project.

# Appendices

- Interest

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Appendix I Analytical Techniques and Detection Limits

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# Table 5 ICP-AES Element Suite and Detection Limits

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Element	Atomic Number	Symbol	Detection Limit	Units	
Molybdenum			1	ppm	
Copper	29	Cu	1	ppm	
Lead	82	Pb	3	ppm	
Zinc	30	Zn	1	ppm	
Silver	47	Ag	0.3	ppm	
Nickel	28	Ni	1	ppm	
Cobalt	27	Со	1	ppm	
Mangenese	25	Mn	2	ppm	
Iron	26	Fe	0.01	%	
Arsenic	33	As	2	ppm	
Uranium	92	U	5	ppm	
Thorium	90	Th	2	ppm	
Strontium	38	Sr	1	ppm	
Cadmium	48	Cd	0.2	ppm	
Antimony	51	Sb	2	ppm	
Bismuth	83	Bi	2	ppm	
Vanadium	23	V	1	ppm	
Calcium	20	Ca	0.01	%	
Phosphorous	15	P	0.001	%	
Lanthium	57	La	1	ppm	
Chromium	24	Cr	1	ppm	
Magnesium	12	Mg	0.01	%	
Barium	56	Ba	1	ppm	
Titanium	22	Ti	0.01	%	
Boron	5	В	3	ppm	
Aluminum	13	Al	0.01	%	
Sodium	11	Na	0.01	%	
Potassium	19	K	0.01	%	
Tungsten	74	W	2	ppm	

 Table 6

 Fire Assay Elements and Detection Limits (ICP-AES samples)

Element	Atomic Number	Symbol	Detection Limit	Units	
Gold	79	Au	5	ppb	

Table 7

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Neutron Activation Analysis Element Suite and Detection Limits

Element	Atomic	Symbol	Detection	Units
	Number	Symoor	Limit	01110
Silver	47	Ag	5.0000	ppm
Arsenic	33	As	2.0000	ppm
Gold	79	Au	5.0000	ppb
Barium	56	Ba	100.0000	ppm
Bromine	35	Br	1.0000	ppm
Calcium	20	Ca	1.0000	%
Cadmium	48	Cd	5.0000	ppm
Chromium	24	Cr	10.0000	ppm
Cesium	58	Cs	3.000	ppm
Iron	26	Fe	0.1000	%
Hafnium	72	Hf	1.0000	ppm
Molybdenum	42	Мо	5.0000	ppm
Sodium	11	Na	500.0000	ppm
Nickel	28	Ni	100.0000	ppm
Rubidium	37	Rb	30.0000	ppm
Antimony	51	Sb	0.2000	ppm
Selenium	34	Se 5.0000		ppm
Strontium	38	Sr	500.0000	ppm
Tantalum	73	Ta	1.0000	ppm
Thorium	90	Th	0.5000	ppm
Uranium	92	U	0.5000	ppm
Tungsten	74	W	4.0000	ppm
Zinc	30	Zn	50.0000	ppm
Lanthanum	57	La	1.0000	ppm
Cerium	58	Ce	3.0000	ppm
Neodymium	60	Nd	10.0000	ppm
Samarium	62	Sm	0.5000	ppm
Europium	63	Eu	0.2000	ppm
Terbium	65	Tb	0.5000	ppm
Ytterbium	70	Yb	0.2000	ppm
Lutetium	71	Lu	0.0500	ppm
Iridium	77	ŀ	20.0000	ppb

Appendix II Summary of Analytical Results

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### Stream Sediments

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Sample Number	Gold in Gross Sample (g/t)	Gold in Gross Sample (ppb)
Dunkirk # 1	0.020	20
Dunkirk # 2	0.021	21



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### **ICP-AES** Corrected Data

Loring Laboratories

Corrected Data			atomic number		5	11	12	15	19	20	21	22	23
Datapoint Id	Sample Id	Sample Type	Lab 1d	LOI	В	Na	Mg	Al	Р	K	Ca	Ti	V
			units	%	ppm	%	%	%	%	%	%	%	ppm
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	detection limit		3	0.01	0.01	0.01	0.001	0.01	0.01	0.01	1
BMMI-PT-1	BMMI-PT-1	peat	73052	28.36	20	0.04	0.30	2.35	0.04	0.38	0.64	0.01	46
BMMI-PT-2	BMMI-PT-2	peat	73053	49,44	9	0.02	0.15	1.14	0.05	0.20	0.56	0.02	20
BMMI-PT-3	BMMI-PT-3	peat	73054	85.99	22	0.04	0.25	0.28	0.11	0.12	1.18	0.00	6



### ICP-AES Corrected Data

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Corrected Data		24	25	26	27	28	29	30	33	38	42	47	48	51
Datapoint Id	Sample Id	Cr	Mn	Fe	Co	Ni	Cu	Zn	As	Sr	Mo	Ag	Cd	Sb
		ppm	ppm	%	ppm									
· · · · · · · · · · · · · · · · · · ·		1	2	0.01	1	1	1	1	2	1	1	0.3	0.2	2
BMMI-PT-1	BMMI-PT-1	77	82	1.43	6	26	14	56	5	79	1	0.1	0.4	< 2
BMMI-PT-2	BMMI-PT-2	73	71	0.69	5	15	7	28	1	48	2	0.2	0.5	< 2
BMMI-PT-3	BMMI-PT-3	33	368	0.26	1	10	6	20	1	52	1	0.1	0.2	< 2



### ICP-AES Corrected Data

## Loring Laboratories

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Corrected Data		56	57	74	79	82	83	90	92
Datapoint Id	Sample 1d	Ba	La	W	Au	Pb	Bi	Th	U
		ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm
		1	1	2	5	3	2	2	5
BMMI-PT-1	BMMI-PT-1	220	24	2	16	11	< 2	5	< 5
BMMI-PT-2	BMMI-PT-2	177	14	2	12	6	< 2	4	< 5
BMMI-PT-3	BMMI-PT-3	31	3	< 1	NSS	7	0	1	< 5

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To: FOCAL RESOURCES.	
640. 910 - 7th Avenue S.W	
Calgary, Alberta T2P 3N8	/4
	/4-
ATTN: Eric Allen	TD

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nless specific arrang are made in advance.

month.

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File No	. 37030	5		
Date Nov		dan sa ta	1994	
Samples	Sand			-

# Certificate of Assay LORING LABORATORIES LTD.

·	SAMPLE	NO.	OZ./TON GOLD	OZ./TON SILVER	OZ./TON PLATINUM
	•				
	"Assay Ana	lysis"			
	DUNKIRK #	1 CONC	0.366	0.17	
	DUNKIRK #	2 CONC	0.250	0.21	· · · · · · · · · · · · · · · · · · ·

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

Assayer

Birch	Pharety





Raw ICP Data	Atomic number		5	11	12	13	15	19	20	22	23	24
Sample Id	Lab Id	LOI	В	Na	Mg	AI	P	К	Ca	Ti	V	Cr
	Units	%	ppm	%	%	%	%	%	%	%	ppm	ppm
	Detection limit		2	0.01	0.01		0.001	0.01	0.01	0.01	2	
BMMI-PT-1	73052	28.36	28	0.06	0.42	3.28	0.06	0.53	0.9	0.01	64	107
BMMI-PT-2	73053	49.44	18	0.04	0.3	2.26	0.098	0.4	1.11	0.03	40	145
BMMI-PT-3	73054	85.99	156	0.31	1.77	1.99	0.784	0.85	8.39	0.02	45	233

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Birch	Perty	





Raw ICP Data	Atomic number		25	26	27	28	29	30	33	38	42	47
Sample Id	Lab Id	LOI	Mn	Fe	Со	NI	Cu	Zn	As	Sr	Mo	Ag
	Units	%	ppm	%	ppm							
	Detection limit				1	1	1	1	2		1	0.1
BMMI-PT-1	73052	28.36	115	1.99	0	36	19	78	7	110	2	0.1
BMMI-PT-2	73053	49.44	140	1.35	9	29	14	56	2	94	3	0.3
BMMI-PT-3	73054	85.99	2625	1.85	9	74	44	143	6	369	10	1

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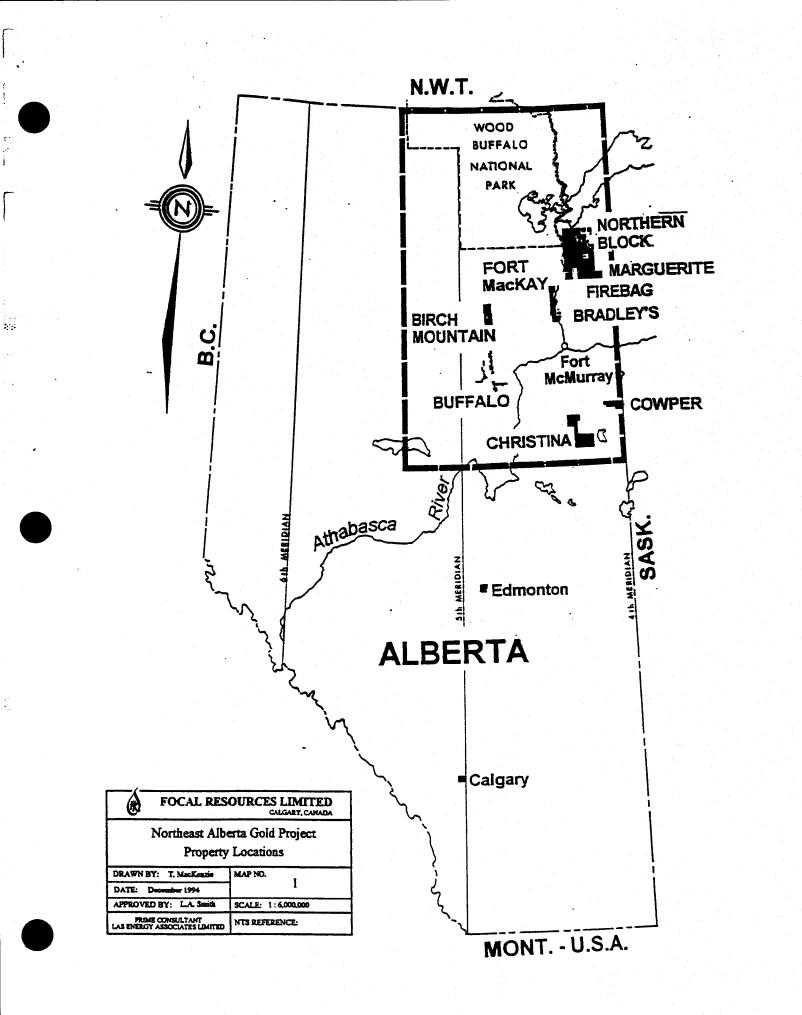
Birch Party				Raw	AES							Low, L
Raw ICP Data	Atomic num	ber	48	51	56	57	74	79	82	83	90	92
Sample Id	Lab Id	LOI	Cd	Sb	Ba	La	W	Au	Pb	Bi	Th	U
	Ur	its %	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm
	Detection li	mit	0.2	2		2	1	5	2	2.	2	5
BMMI-PT-1	73052	28.36	0.6	<2	307	33	3	22	15	< 2	7	< 5
BMMI-PT-2	73053	49.44	0.9	<2	351	27	3	23	11	< 2	7	< 5
BMMI-PT-3	73054	85.99	1.5	<2	220	18	<1	NSS	51	2	4	< 5



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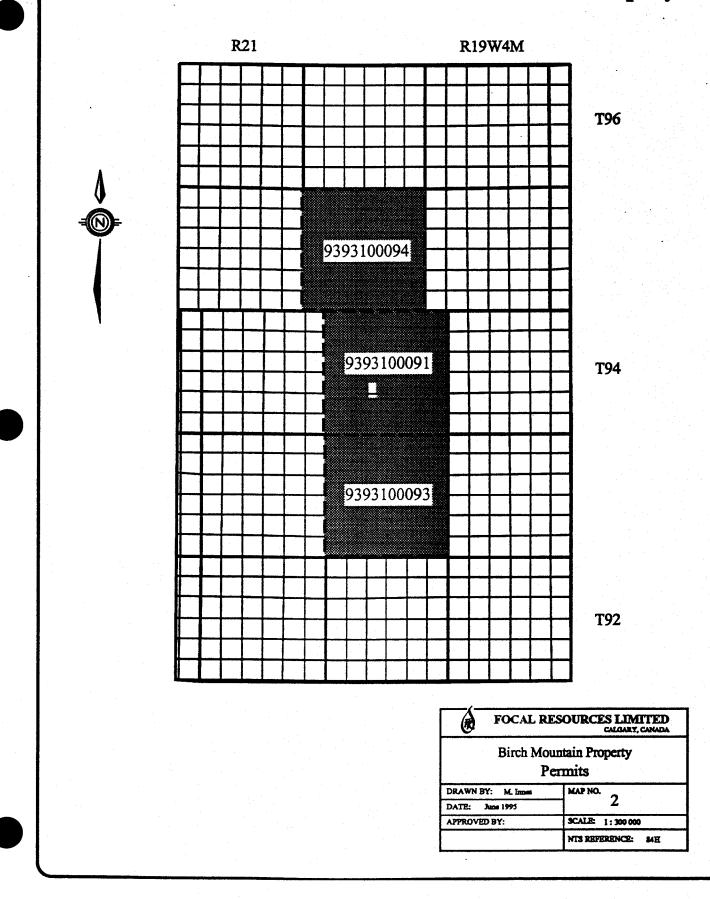
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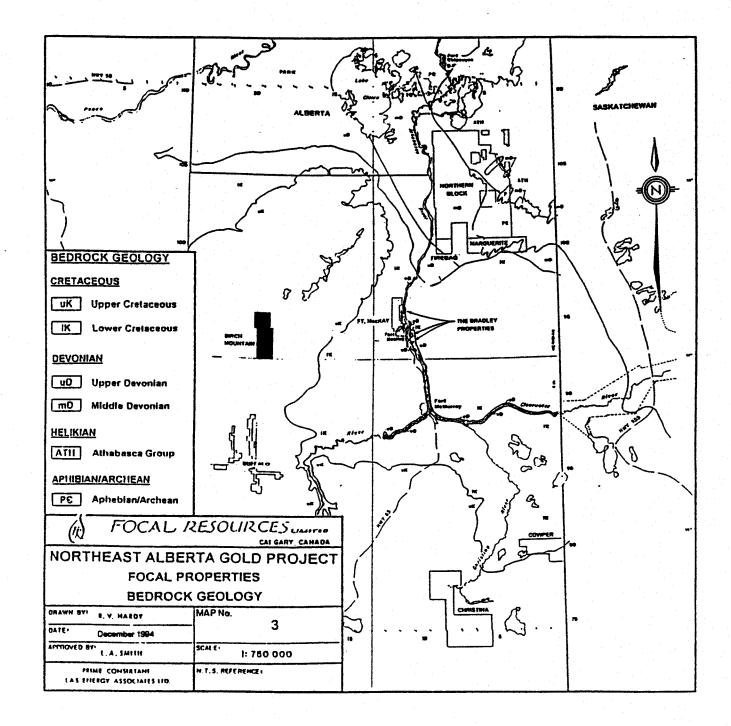
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# Birch Mountain Property





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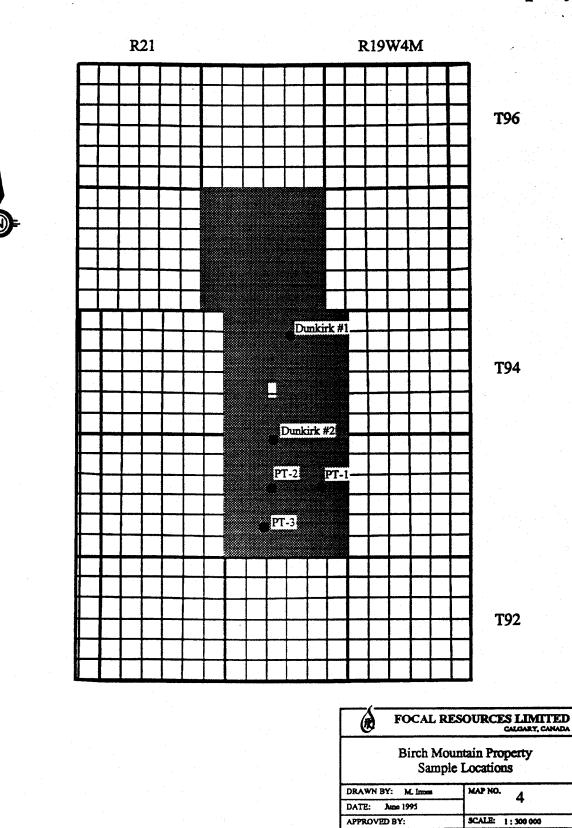
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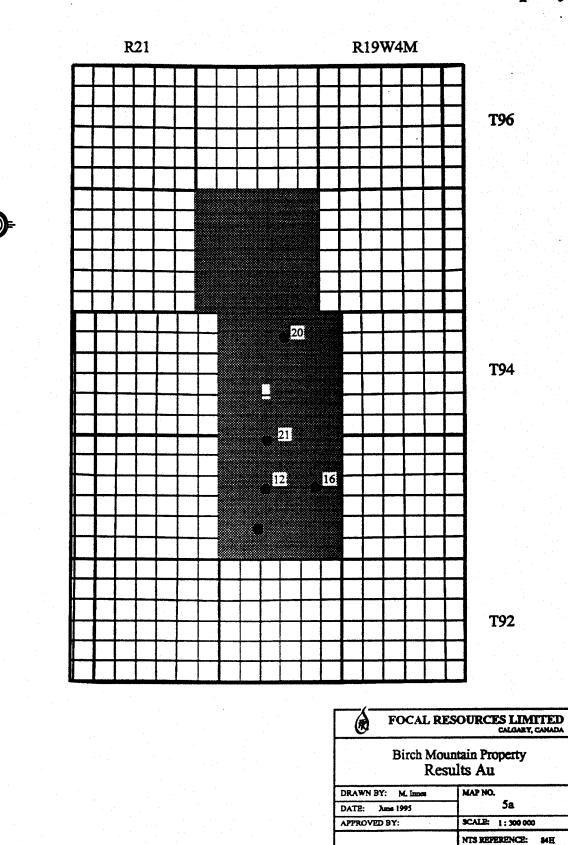
# Birch Mountain Property

NTS REPERENCE:

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# Birch Mountain Property



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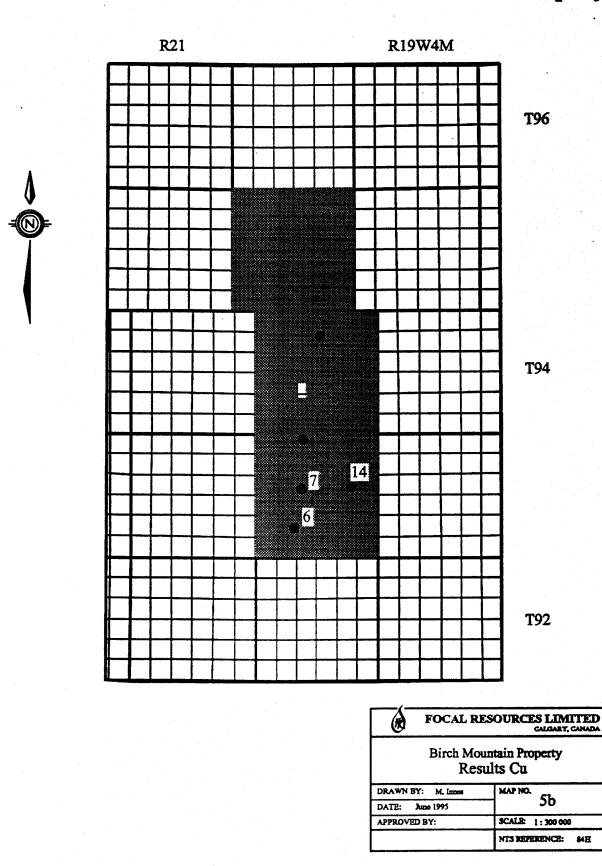
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# Birch Mountain Property

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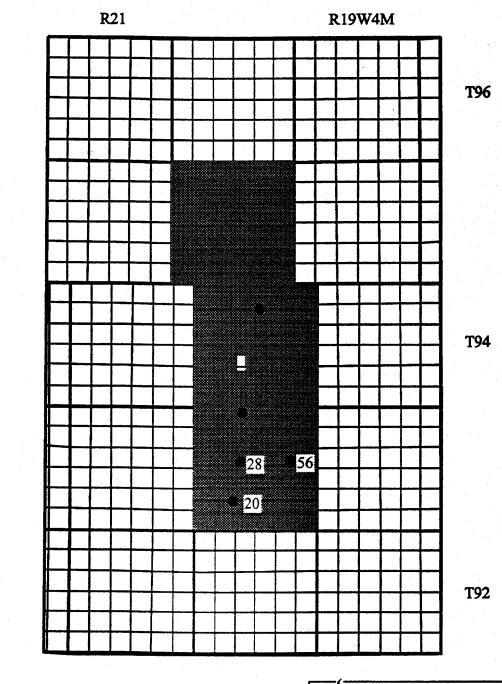
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# Birch Mountain Property

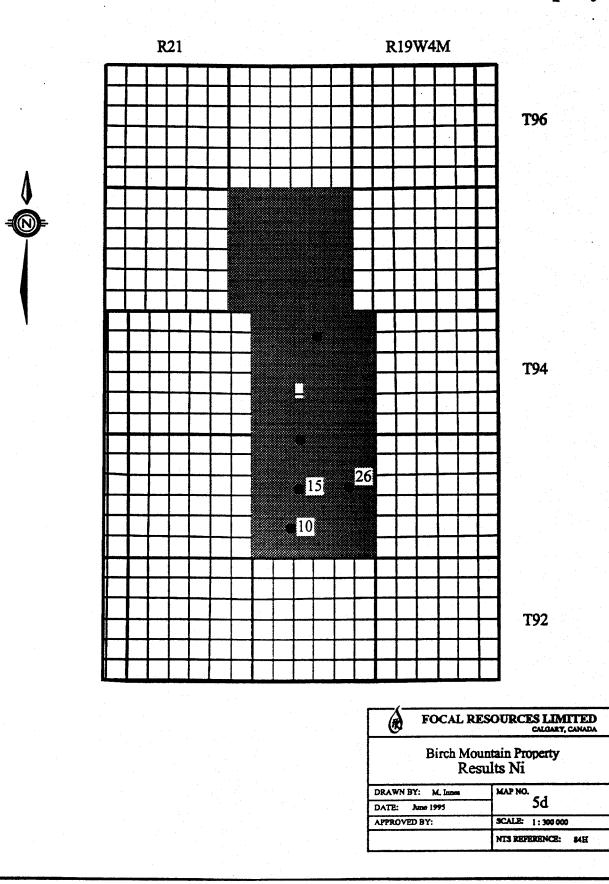


FOCAL RI	ESOURCES LIMITED			
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DRAWN BY: M. Innes	MAP NO.			
DATE: June 1995	- <b>5</b> c			
APPROVED BY:	SCALE: 1: 300 000			
	NTS REFERENCE: MH			

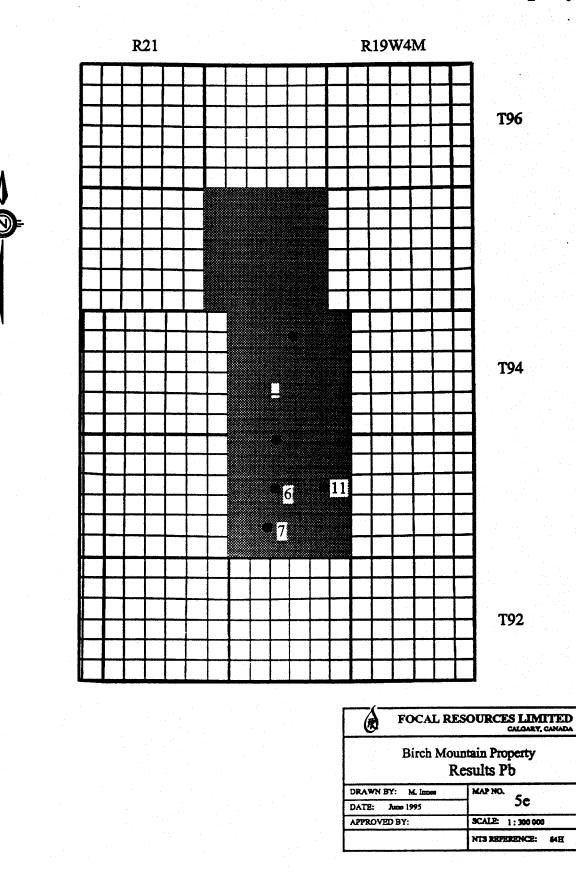
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# Birch Mountain Property



# Birch Mountain Property



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SUITE 640, 910 - 7TH AVENUE S.W. • CALGARY, ALBERTA T2P 3N8 • TELEPHONE (403) 261-9770 • FAX (403) 261-9772

#### November 6, 1995

Alberta Energy/Mineral Resources Division Resource Agreements 12th Floor, South Tower Petroleum Plaza 9915 - 108th Street Edmonton, Alberta T5K 2G8 ENERG

PROT.

#### Attention: Mr. Brian Hudson, Manager Mineral Agreements

Dear Sir:

Enclosed are two copies of the Birch Property Assessment Report for your files.

This report covers some 3 permits which were acquired by Focal in March 1994. Exploration expenditures are detailed in Table 3 in this report.

Focal wishes to retain for a further 2 years the Northern Lands, being Township 95, Range 20, W4M.

We anticipate that this report will meet your requirements, but should you need additional information, please do not hesitate to contact us.

#### FOCAL RESOURCES LIMITED

Chris C. Abbott President & C.E.O.



. C.L.O.