

GM 48795

GEOLOGICAL REPORT ON THE LAC LA TREVE PROPERTY

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Énergie et Ressources
naturelles

Québec 



**GEOLOGICAL REPORT ON THE
LAC LA TREVE PROPERTY
DAINE TWP. - QUEBEC
N.T.S. 32-G-13
FOR BITECH ENERGY RESOURCES LIMITED**

**Ministère de l'Énergie et des Ressources
Service de la Géoinformation**

Date: 15 AOÛT 1989

No G.M. 48795



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June 13, 1988
Project Number: 87-151

JAMES WADE ENGINEERING LTD.

89165-027



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(i)
SUMMARY

During May of 1988 a geological reconnaissance and sampling program was carried out on the Bitech Energy Resources Limited Lac La Treve property to determine the platinum-palladium potential of a diabase-gabbro dyke crossing the claims. The main effort was directed toward sampling the base of the dyke, where copper-nickel mineralization may be indicative of accompanying platinum-palladium values. In addition, the metasediments which host the dyke were also explored, especially in close proximity to the dyke.

A total of 14 samples were taken of the dyke and 2 samples were taken of the metasediments. Metal values were low for the entire claim group. The best results were obtained from a sample of dyke material, which assayed 3350 ppm Cu, 2960 ppm Ni, 140 ppb Pt and 106 ppb Pd.

Since both base metal and PGM values were generally low, the chances of outlining an economic deposit of any kind are very poor. No further work is recommended on this claim group.



1.0 INTRODUCTION

A brief geological reconnaissance and rock sampling program was completed in May of 1988 on the Lac La Treve property held under an option agreement by Bitech Energy Resources Limited. The investigation concentrated on a diabase-gabbro dyke striking northeasterly across the claim group, in particular, reported sulphide occurrences along the base of the dyke which potentially contain associated platinum-palladium mineralization.

Previous work had been directed towards copper-nickel mineralization and it was considered unlikely that evaluation for platinum group metals had been carried out on a systematic basis.

1.1 Location

The claim group is situated in Daine Township, about 50 miles due west of Chibougamau in Northwestern Quebec as shown on Figure 1. The property lies on the shoreline of Lac La Treve and occupies an area east of Lac Gisele.

1.2 Access

The property is accessible year-round by road from Highway 113, the major route between Val d'Or and Chibougamau, along the Camp Broadback road of Hydro Quebec. From this road, a boat can be launched on Lac La Treve where the road crosses Branche Pichamobi at the eastern end of the lake.

1.3 Property

The Lac La Treve property consists of 16 unsurveyed mining claims totalling 259.1 hectares (640 acres) which were recorded on May 25, 1988. Approximately 75% of the claim block is covered by Lac La Treve as shown by Figure 2. Additional details on the claims are furnished by Table 1.



75°00'



LAKE MISTASSINI

LAC LA TRÊVE

50°00'

LAC LA TRÊVE CHIBOUGAMAU LAC CHIBOUGAMAU
CHAPAIS

WASWANIPI LAKE

DESMARAISVILLE

167

QUEBEC
ONTARIO



LAKE ABITIBI



GOUIN RESERVOIR

NORANDA/ROUYN

117

VAL D'OR

117

PARENT LAKE

DECELLES RESERVOIR

KEMPT LAKE

LAKE TIMISKAMING

25 0 25 50 75 100 125



KILOMETRES

CLIENT: BITECH ENERGY RESOURCES LIMITED

TITLE: LAC LA TRÊVE PROJECT - LOCATION MAP

SCALE:
As Shown

DR. BY.:
R. C.

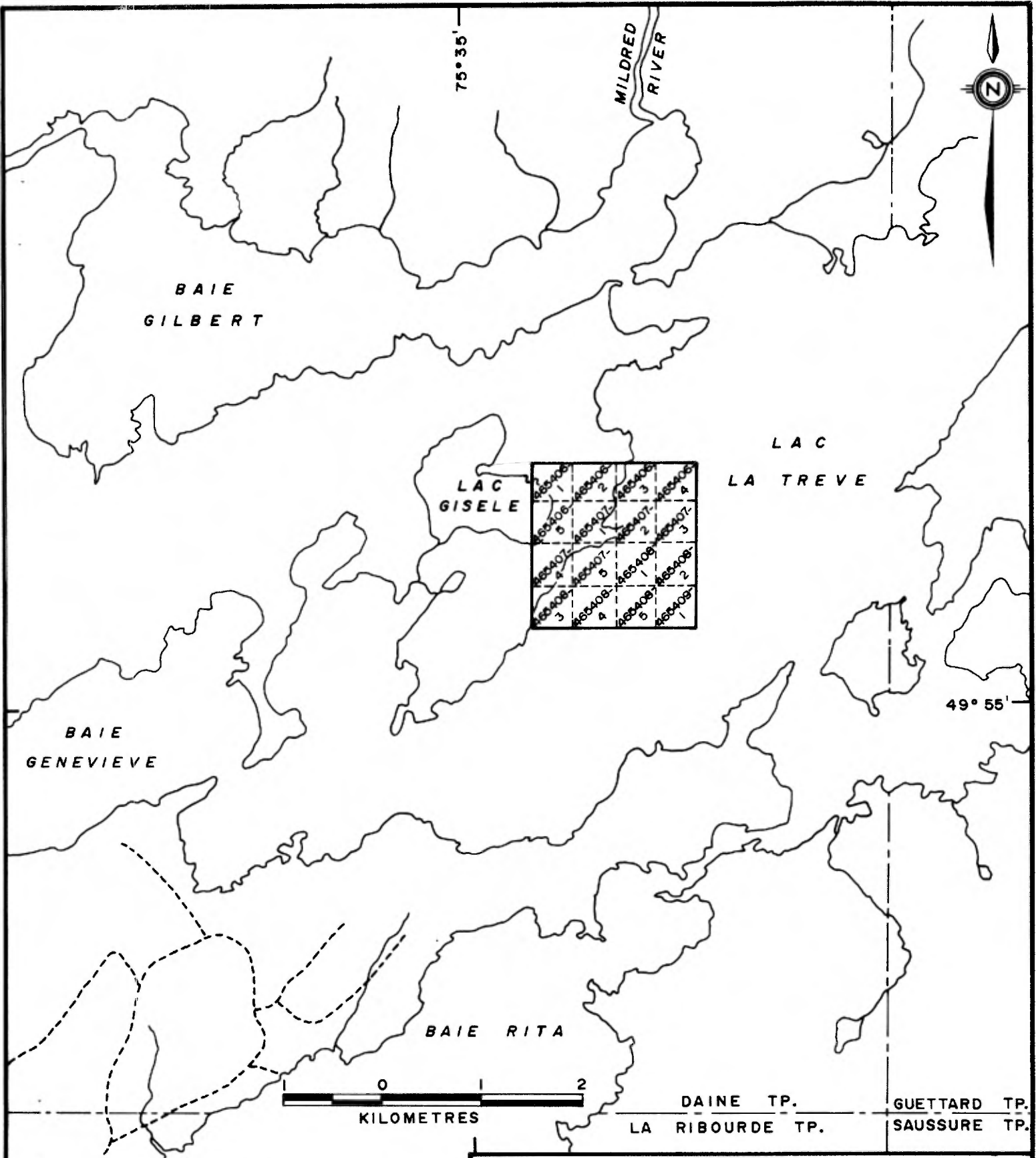
APPR.:

DATE:
JUNE 88

DWG. N°:
FIG. 1



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REFERENCE MAP - 32 G/13

CLIENT: BITECH ENERGY RESOURCES LIMITED

TITLE: LAC LA TREVE - CLAIM LOCATION

SCALE 1:50000	DR. BY: R.C.	APPR:	DATE: JUNE / 88	DWG. N°: FIG. 2
------------------	-----------------	-------	--------------------	--------------------

LEGEND

- CART TRAIL
- TOWNSHIP BOUNDARY
- CLAIM BOUNDARY
- CLAIM BLOCK OUTLINE



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TABLE 1
CLAIM DETAILS

<u>Permit no.</u>	<u>Claims</u>	<u>Area</u>	<u>Staking Date</u>	<u>Recording Date</u>
465406	1 to 5	200	May 17, 1988	May 25, 1988
465407	1 to 5	200	May 18, 1988	May 25, 1988
465408	1 to 5	200	May 19, 1988	May 25, 1988
465409	<u>1</u>	<u>40</u>	May 20, 1988	Ma7 25, 1988
TOTAL	16 claims	640 acres		



1.4 Climate and Topography

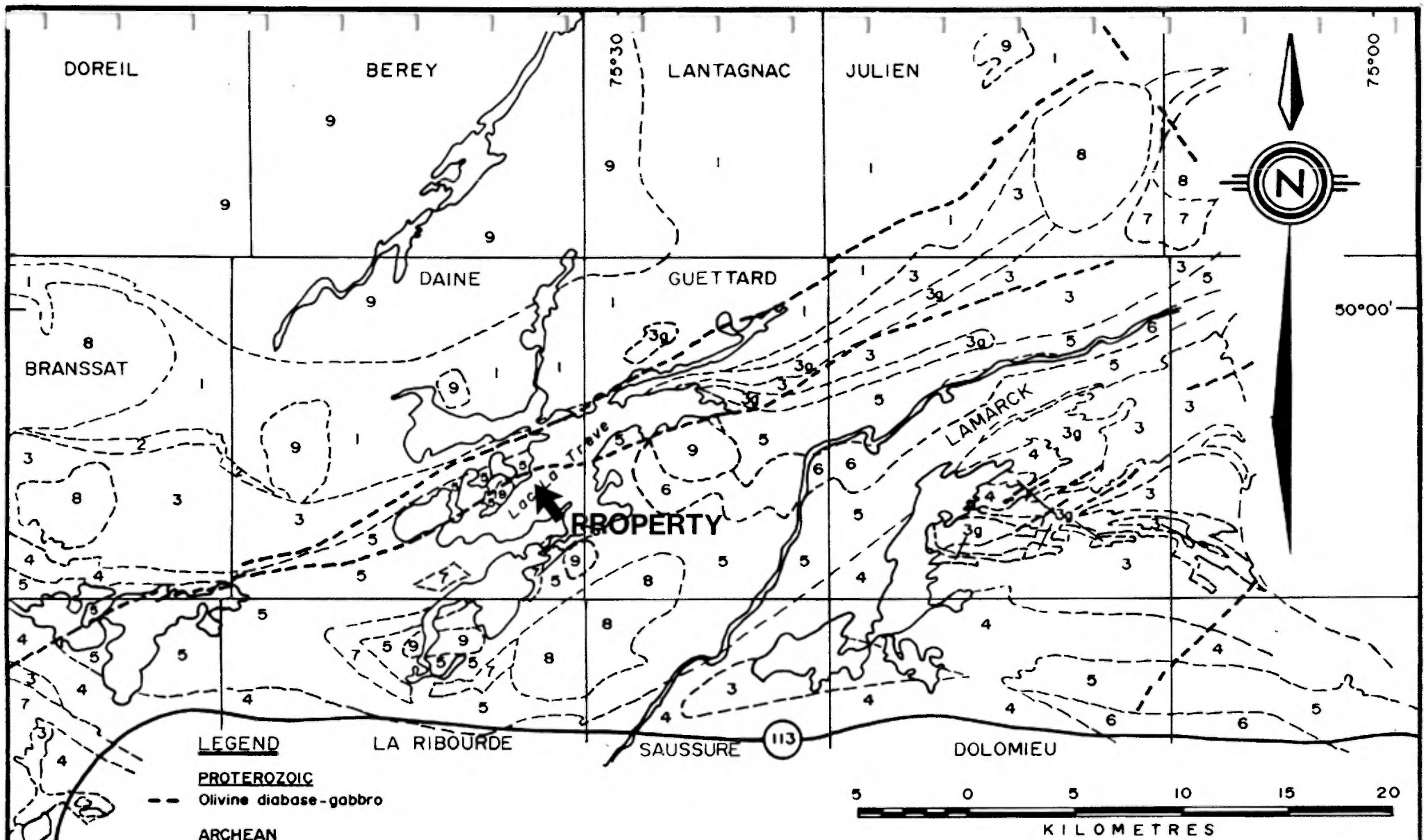
The climate is typical of the northern temperate zone with year round precipitation and temperatures ranging from +30°C to -40°C. Freeze-up usually takes place in mid November and lakes are ice free by late April, however, annual variations in temperatures and the size of the lake also influences these events.

The subdued topography on the property is typical of glaciated terrain with maximum relief of 10-20 metres but a prominent hill rising 60 metres above the lake is located at the southwest boundary of the claim group.

2.0 GENERAL GEOLOGY

The geology of the region is comprised of Archean and Proterozoic rocks of the Superior province. The former are essentially an assemblage of volcanics, sediments and syn to post-tectonic mafic-felsic intrusions which collectively form linear zones of supracrustal rocks comprising the Abitibi greenstone belt. This belt which includes numerous parallel east-west trending segments extends from Timmins to Chibougamau and is highly prolific in terms of base and precious metal deposits.

The Lac La Treve area encompasses only a very small portion of the Abitibi belt and in general displays a stratigraphy similar to the Chibougamau camp but lacking its complexity. The Archean rocks at Lac La Treve attain a width of 25 miles and strike east-west toward Chibougamau where they thicken considerably. The area bounding the supracrustals to the north and south consists of granitic plutons which separate similar areas of greenstones of the Abitibi belt.



LEGEND

PROTEROZOIC

-- Olivine diabase-gabbro

ARCHEAN

Intrusives

- 9 Granite
- 8 Granodiorite
- 7 Mafic-ultramafic

- Opemisca Group
- 6 Haüy Fm. volcanics, sediments
- 5 Stella Fm. congl., greywacke
- Roy Group
- 4 Blondeau Fm. felsic volc., seds.
- 3,3g Gilman Fm. mafic lavas, gabbro
- 2 Waconichi Fm. felsic volcanics
- 1 Obatogomau Fm. mafic lavas, seds.

CLIENT: BITECH ENERGY RESOURCES LIMITED

TITLE: REGIONAL GEOLOGY - LAC LA TREVE

SCALE: 1:250,000	DR. BY: M. H.	APPR:	DATE: JUNE /88	DWG. N°: Fig. 3
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Note: Geology after A. Gobell and D. Racicot



The supracrustals in the vicinity of the property (Figure 3) have been regionally metamorphosed to the greenschist facies, and exhibit vertical to steep northerly dips. The oldest rocks, consisting of massive and fragmental volcanics and related sediments belong to the Roy Group, which is discordantly overlain by predominately sedimentary rocks of the Opemisca Group. A series of late stage mafic to felsic sills and stocks intrude both the Roy and Opemisca Groups and are also of Archean age.

The last event in the geological evolution of the area was the intrusion of a series of east-northeast striking diabase-gabbro dykes during the Proterozoic era. These narrow units cut across geologic contacts and can be traced by outcrop or by magnetics for considerable distances. A number of copper-nickel sulphide occurrences in the gabbro dyke were discovered in the 1950's at Lac La Treve, of which several were tested by diamond drilling.

3.0 EXPLORATION HISTORY

The earliest and most intensive period of exploration activity in the region occurred during the mid-1950's following the discovery of several copper-nickel showings on Lac La Treve by prospectors employed by New Jersey Zinc Exploration Co. This enabled New Jersey to acquire by staking a property approximately 11 miles long in Daine Twp., essentially along the strike of the diabase-gabbro dyke hosting the mineralization.

Shortly thereafter, Empire Oil and Minerals Inc. and Anglo American Mines Limited staked claims to the west and east of New Jersey's property, and discovered sulphide mineralization in a similar geologic setting. Generally, the sulphides consisted of blebs and semi-massive concentrations of pyrrhotite and pentlandite, often wholly or partially rimmed by chalcopyrite, near the southern or basal portion of the north dipping diabase-gabbro dyke.



Preliminary evaluation of the showings included trenching and sampling followed by linecutting and geophysical surveys, with diamond drilling reported on the properties of New Jersey Zinc and Empire Oil Minerals on Lac La Treve.

A total of 6 drill holes amounting to 3005 feet were completed by New Jersey Zinc in 1957, on and near a boot-shaped peninsula at the entrance to Baie Genevieve. The best intersection averaged 0.33% nickel, 0.22% copper and 0.07% Co across 15 feet in diamond drill in hole 3, however, the logs suggest analysis for platinum and palladium were not carried out. On the adjoining Empire Oil and Minerals property southwest of Baie Genevieve, the drilling totalled 4,273 feet in 9 holes with best values of 0.46% Ni, 0.41% Cu and 0.06% Co over a 5 foot interval. Again, no record of platinum or palladium assays appear with the data.

Apparently, the results did not justify further work, and the area remained relatively dormant until these prospects were acquired by Phelps Dodge (1969) and Talisman Mines (1970), but no record of their activity is available in government files.

The other regional diabase-related sulphide occurrences are located northeastward in the neighbouring Guettard, Lamarck and Julien Townships, as shown on government regional geological compilation maps. Aside from assay results of grab samples, there are no survey reports describing any work or the extent of the mineralization.

The most recent activity prior to Bitech's interest in the area, was by Falconbridge Copper on their 29 claim property in Guettard Township. Ground EM and magnetometer surveys were completed in 1981 and 1982 and the sulphides in the diabase-gabbro dyke were apparently found to contain anomalous amounts of platinum-palladium.

In addition, during the summer of 1987, the Ministere de l'Energie et des Ressources conducted a reconnaissance sampling program to evaluate the PGE potential of the Abitibi greenstone belt in the Chibougamau area. No samples were taken on the claim group, although the strike extension of the dyke was sampled, both to the east and west. Only preliminary results have been released to date (Sharma et al, 1988).



4.0 PROPERTY GEOLOGY

The property consists dominantly of Archean age metasedimentary rocks of the Superior Province. These rocks discordantly overlie the Roy Group volcanics, which are exposed just to the north of the claim group. The other major rock unit on the property is a Proterozoic age diabase-gabbro dyke, which is the main focus of the present investigation. The geology of the property is shown in Figure 4.

The Archean metasedimentary rocks are part of the Opemisca Group. They strike 070° , and dip moderately to steeply to the northwest. The strata consist of pebble and boulder conglomerate, plus fine to medium grained sediments. The latter include poorly-bedded greywacke and arkose, which locally contain disseminated iron oxides and some chert and feldspar (Gilbert, 1949; Gobeil, 1980).

The metasediments are exposed intermittently along the shoreline of Lac La Treve, south of the trend of the dyke. Very locally, minor pyrite was visible within the matrix of the conglomerates and one sample was taken of this unit. In addition, a series of thin, parallel quartz veins were sampled within the metasediments in one locality.

A Proterozoic fine to coarse grained diabase-gabbro dyke is the youngest rock unit exposed on the property. Crosscutting relationships can be observed just to the west of the property where slices of an Archean age granite are caught up within the dyke.

On average, the dyke strikes 065° , and dips 40° - 70° NW. It is conformable to the attitude of the host rocks it intrudes, as seen regionally at several Cu-Ni showings present along the strike length of the dyke. These showings are distributed unevenly over 29 kilometres of the dykes' strike length. There are at least 8 occurrences of pyrrhotite-pentlandite-chalcopyrite mineralization, with more minor pyrite, at various locations along the southern contact of the intrusion. Sulphide mineralization occurs as massive blebs, streaks and disseminations, and occasionally as massive pockets up to 8 ft. in diameter, over width of generally less than 15 feet.

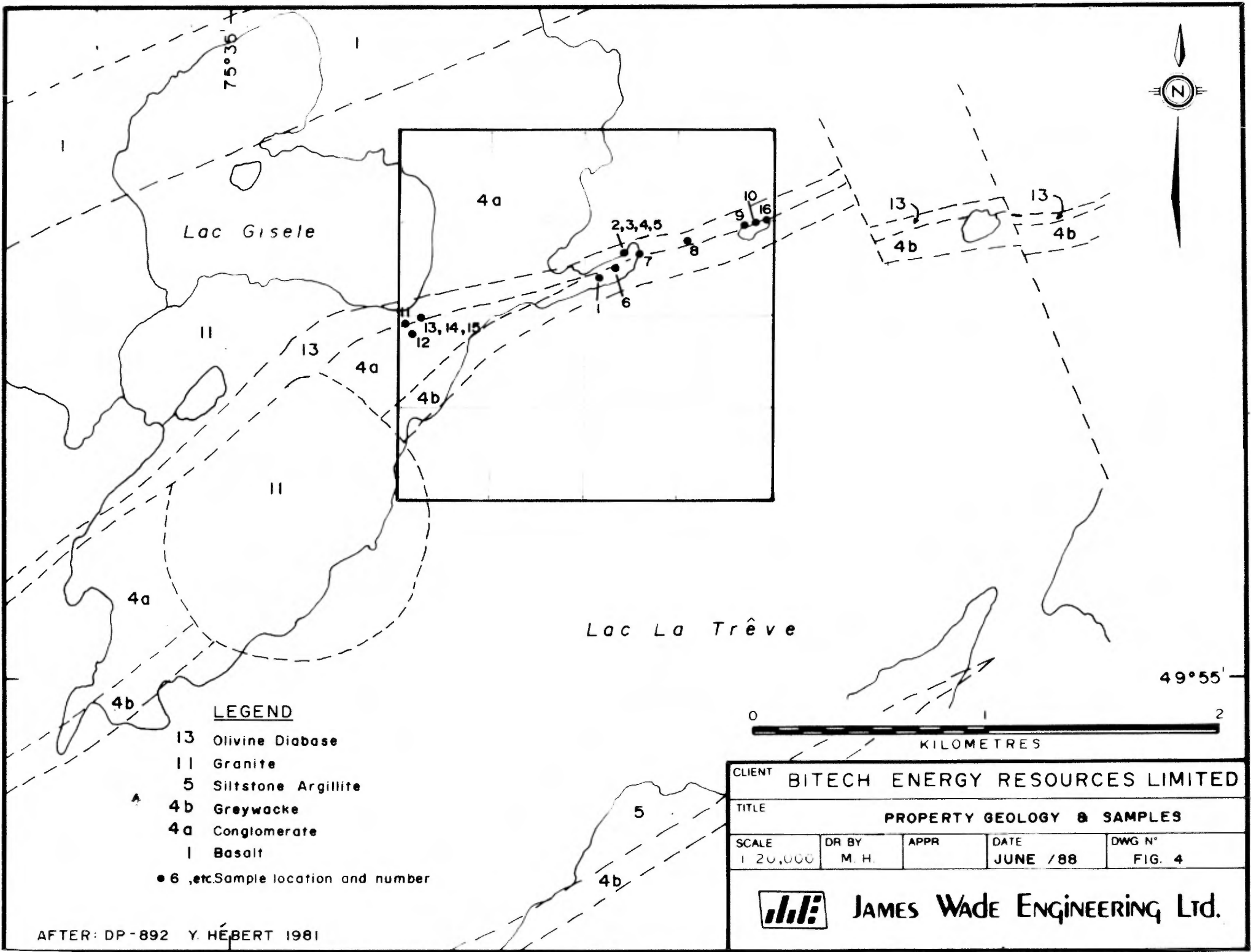


On the property, the dyke is poorly exposed along the western claim group boundary. It is also exposed along a peninsula in the middle of the claim group, and on the north side of several islands near the eastern claim group boundary.

The diabase-gabbro dyke is dark greenish-grey in colour, varies from fine to coarse grained and is composed of varying proportions of pyroxene, plagioclase and locally, minor quartz. In some places, the dyke is olivine-bearing, with up to 20% olivine. No distinct stratigraphic position can be discerned for the olivine-bearing phase. A light grey, fine-grained chilled margin is also locally present. Within the dyke, sulphides consist of segregations and disseminations of pyrrhotite-pentlandite, which is often wholly or partially rimmed by chalcopyrite. Within the chilled margin, fine disseminations of pyrite may also be seen.

Regionally, most of the Cu-Ni showings along the strike length of the dyke occur along the southern edge of the intrusion (Latulippe, 1956), although Cunningham (1952) reports some Cu-Ni values obtained just below the upper contact, in an area south of Baie Genevieve. The mineralization appears to be present due to magmatic segregation, with some hydrothermal action superimposed. The sulphides originated with the magma of the dyke, and as the intrusion cooled, the sulphides crystallized out first, and sank to the southern, or basal contact. In some instances, a chilled margin prevented the mineralization from sinking to the contact itself. Where the chilled margin is thin or absent, the sulphides can be seen to extend into the wallrocks. Some hydrothermal action may also have carried sulphides into the footwall rocks, where they form a replacement-type mineralization in the conglomerates (Latulippe, 1956).

The best mineralization on the claim group, was seen on the peninsula in the middle of the claim group. Here, a series of samples taken over approximately 10 feet along the base of the dyke, contained several percent combined pyrrhotite-pentlandite-chalcopyrite. West of this area, the dyke is not exposed. To the east, the dyke is present along the north side of several islands, near the contact with footwall metasediments. A number of samples were taken, but no sulphides were seen.



AFTER: DP-892 Y. HÉBERT 1981



5.0 CONCLUSIONS AND RECOMMENDATIONS

A total of 16 rock samples were collected on the property, most of which were from the gabbro-dabase dyke crossing the claims. The assay results of the samples were generally low in copper, nickel, gold, platinum and palladium with exception of 4 samples collected from a sulphide occurrence. The highest values at this locality were .33% copper, .29% nickel, 100 ppb gold, 140 ppb platinum and 106 ppb palladium in a single sample.

The sampling program indicated no significant PGM are present on the property with only slight enrichment in the nickeliferous sulphides. Therefore, no significant amount of mineralization with economic potential is apparent on the property.

6.0 RECOMMENDATIONS

No further work is warranted based on the sampling results.

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CERTIFICATE OF QUALIFICATIONS

I, Paul G. Anderson, of Box 241, Brights Grove, Ontario do hereby certify that:

1. I am a graduate of the University of Western Ontario, with a B.Sc. degree in geology, and of Queen's University, with an M.Sc. degree in geology.
2. I am an associate of James Wade Engineering Ltd. and have been employed in the Canadian mining industry since graduation.
3. I am personally familiar with the Lac La Treve property, having conducted the exploration program in late May and early June of 1988.
4. This report is based on an examination of all data present in the Province of Quebec assessment files, as well as new data gained during the recent property examination.
5. I have no direct or indirect interest, nor do I expect to receive any interest, direct or indirect, in Bitech Energy Resources Limited.

Willowdale, Ontario
June 13, 1988

Paul G. Anderson, B.Sc., M.Sc.
Geologist



APPENDIX I

SAMPLE DESCRIPTIONS

- 47372
No. 1 Metasediments. Sample of minor quartz veins, 3-4 cm wide and discontinuous along strike. Quartz is greyish-white, and is bordered by potassic feldspar and epidote.
- 47373
No. 2 Diabase-gabbro dyke. Dark greenish-grey and fairly coarse grained. Contains fine-grained sulphides, 1-2% po-pent and 1% cpy. Surface outcrops are rusty where the sulphides are seen.
- 47374
No. 3 Diabase-gabbro dyke. As above, but with 5-10% po-pent and 2-5% cpy, all disseminated.
- 47375
No. 4 Diabase-gabbro dyke. As above, with 2-5% po-pent and 1% cpy.
- 47376
No. 5 Diabase-gabbro dyke. As above, with 1-2% po-pent and <1% cpy, both as very fine-grained disseminations.
- 47377
No. 6 Diabase-gabbro dyke. Very coarse-grained, with 20-25% potassic feldspar and 1% fine sulphides.
- 47378
No. 7 Diabase-gabbro dyke. Coarse-grained, as above, but lacking sulphides.
- 47379
No. 8 Diabase-gabbro dyke. Dark greenish-grey and fine-grained. From an area of the map marked as sediments, south of the main exposure of the dyke.
- 47380
No. 9 Diabase-gabbro dyke. Coarse-grained, with 1-2% fine grained po-pent-*cpy* .
- 47381
No. 10 Diabase-gabbro dyke. Coarse-grained. No visible sulphides, but rock is rusty along fracture planes.



47382
No. 11

Diabase-gabbro dyke. Dark grey and medium-grained, with <1% fine sulphides (py?). Possibly part of chilled contact.

47383
No. 12

Metasediments. A poorly exposed conglomerate, with streched pebbles of tan-coloured (?) seds, in a dark grey matrix of quartz and feldspar. Contains 1% fine-grained pyrite disseminated in the matrix.

47384
No. 13

Diabase-gabbro dyke. Dark greenish-grey and coarse-grained. Sample taken within 10 ft of basal contact.

47385
No. 14

Diabase-gabbro dyke. As above, and medium-grained.

47386
No. 15

Diabase-gabbro dyke. Medium-grained, with <1% fine-grained po-pent.

47387
No. 16

Diabase-gabbro dyke. Medium-grained, and lacking sulphides.



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A8816620

Comments: ATTN: PAUL G. ANDERSON CC: FAX TORONTO CC: FAX CHIBOUGAMAU

CERTIFICATE A8816620

WADE, JAMES ENGINEERING LTD.

PROJECT : 151

P. O. # :

Samples submitted to our lab in Rouyn, PQ.

This report was printed on 14-JUN-88.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205		Rock Geochem: Crush, split, ring

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
975		Au ppb: ICP-fluorescence package	FA-ICP-AFS	2	10000
977		Pd ppb: ICP-fluorescence package	FA-ICP-AFS	2	10000
976		Pt ppb: ICP-fluorescence package	FA-ICP-AFS	5	10000
2		Cu ppm: HNO ₃ -aqua regia digest	AAS	1	10000
8		Ni ppm: HNO ₃ -aqua regia digest	AAS-BKGD CORR	1	10000



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Project: 151

Comments: ATTN: PAUL G. ANDERSON CC: FAX TORONTO CC: FAX CHIBOUGAMAU

**Page No.: 1
 Tot. Pages: 2
 Date: 14-JUN-88
 Invoice #: I-8816620
 P.O. #:

CERTIFICATE OF ANALYSIS A8816620

SAMPLE DESCRIPTION	PREP CODE	Au ppb AFS	Pd ppb AFS	Pt ppb AFS	Cu ppm	Ni ppm	Au ppb FA+AA				
47372	205	--			16	18	< 5				
47383	205	--			43	48	< 5				
47373	205	--	100	106	140	3350	2960				
47374	205	--	22	22	35	830	870				
47375	205	--	22	28	40	920	1000				
47376	205	--	4	4	10	126	385				
47377	205	--	< 2	< 2	5	5	51				
47378	205	--	8	10	10	284	740				
47379	205	--	< 4	< 2	10	65	148				
47380	205	--	< 2	< 2	5	36	64				
47381	205	--	4	< 2	5	40	128				
47382	205	--	4	< 4	10	58	63				
47384	205	--	< 2	< 2	5	58	200				
47385	205	--	< 2	< 2	10	60	113				
47386	205	--	< 2	< 2	5	52	135				
47387	205	--	< 2	< 2	5	50	119				

CERTIFICATION :