



41009SE0003 63.5403 HUFFMAN

010

A Report of the Property of  
TONAPAH RESOURCES INC.  
Huffman  
Township,  
Porcupine Mining Division,  
Ontario

by

R.P. Bowen, P.Eng..

\*\*\*\*\*

R.P. BOWEN ENGINEERING INC.  
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20 June 1988

B-6881

OM 88-5-C-025



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## SUMMARY

Tonapah Resources Inc. has a 35 claim property in Huffman Township, Ontario.

The property covers the southeastern extension of a series of Archean metavolcanics and metasedimentary rocks that host the Jerome mine some 2.5 miles northwest of the Tonapah property.

The rocks underlying the property have been subjected to structural deformation and hydrothermal alteration and are known to contain slightly higher than background gold values in several locations as determined by previous work. This earlier work left several targets untested and was incomplete in assessment of the property's potential. The purpose of this work proposal is to more fully evaluate the potential of the Tonapah Resource Inc. property.

A three-phase exploration program is proposed consisting of linecutting, geology, geophysical and geochemical surveys over 11 recently staked claims and tying these surveys into earlier work by Tonapah between 1984 and 1988. The third and final <sup>PHASE</sup> ~~phase~~ would be to test any targets by diamond drilling. The budget is broken down as Phase I \$30,300.00, Phase II \$32,250.00 and Phase III \$261,000.00 for a total exploration budget of \$323,550.00.

## INTRODUCTION

This report was prepared at the request of the directors of Tonapah Resources Inc. and describes the geological potential of 35 staked mining claims located in the Swayze Greenstone Belt, Huffman Township, Porcupine Mining Division, Ontario.

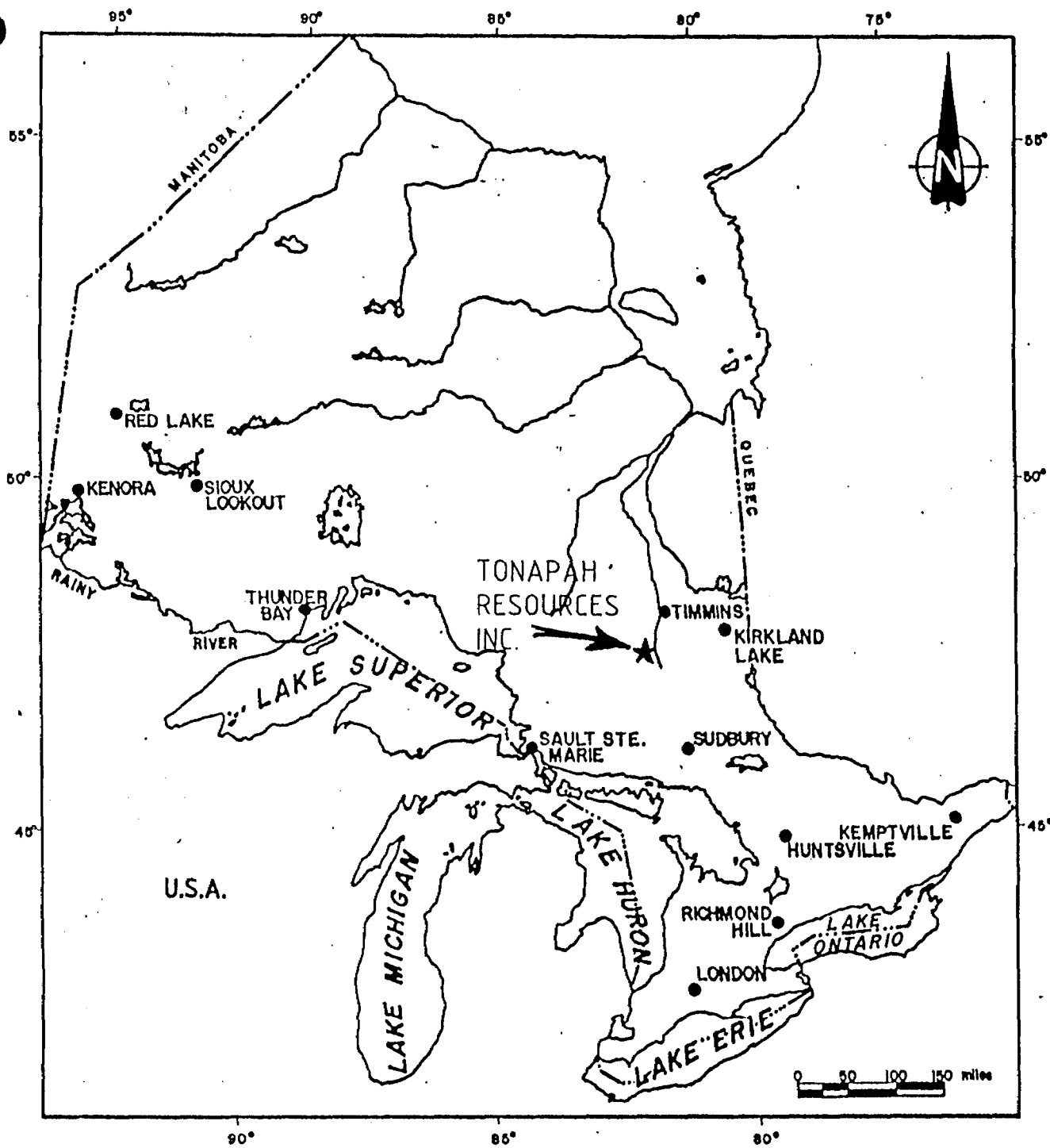
The property cover the eastward extension of a series of metavolcanic flows and metasedimentary rocks that host the Jerome Mine some 3 kilometers to the northwest.

Previous diamond drilling has intersected massive and disseminated sulfide mineralization on the property, though not in economic tonnage and grade, however, all geophysical anomalies have not been tested. In addition additional claims have been staked to the north and east of the original group covering more of the belt rocks.

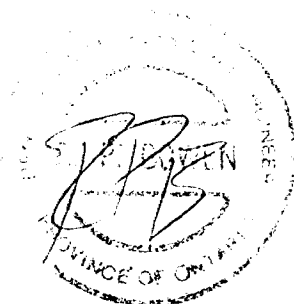
### Location, Access and Facilities

The property is located in southwestern Huffman Township, 105 kilometers southwest of Timmins, Ontario (see Figure 1). The property can reached by road from Timmins by travelling west on highway 101 then south on highway 144 to the Kormack turnoff then west to the Jerome Mine Road then north. About 3 kilometers south of the Jerome Mine there is a bush road leading directly to the property about 2.5 kilometers east. Helicopter and fixed wing air service is available from Timmins to Opeepeesway Lake and the north part of the property, i.e. claim 1013777.

An abandoned power transmission line to the Jerome Mine crosses the north part of the property.



PROVINCE OF ONTARIO



REVISIONS	R. P. BOWEN ENGINEERING INC.		
	for		
	TONAPAH RESOURCES INC.		
	Title		
	REGIONAL LOCATION MAP		
	Fig. 1		
	Date: June 1988	Scale: 1"=160ml.	N.T.S.: 410/9
	Drawn: RPB	Approved: RPB	File: B-6881

The property is within reasonable travel time to Timmins where equipment sales and service facilities and trained mining personnel are available. Sufficient aggregate and water resources are available on or near the property for construction and mining purposes. An esker crosses the easternmost claims on the property.

#### PROPERTY

The property consists of 35 staked mining claims as shown on Figure 2. All 35 claims lie within Huffman Township, Porcupine Mining Division, Ontario.

<u>Claim Number</u>	<u>No.</u>	<u>Expiry Date</u>
1013777-1013811 inclusive	35	4 August 1988

The claims are held by Tonapah Resources Inc.

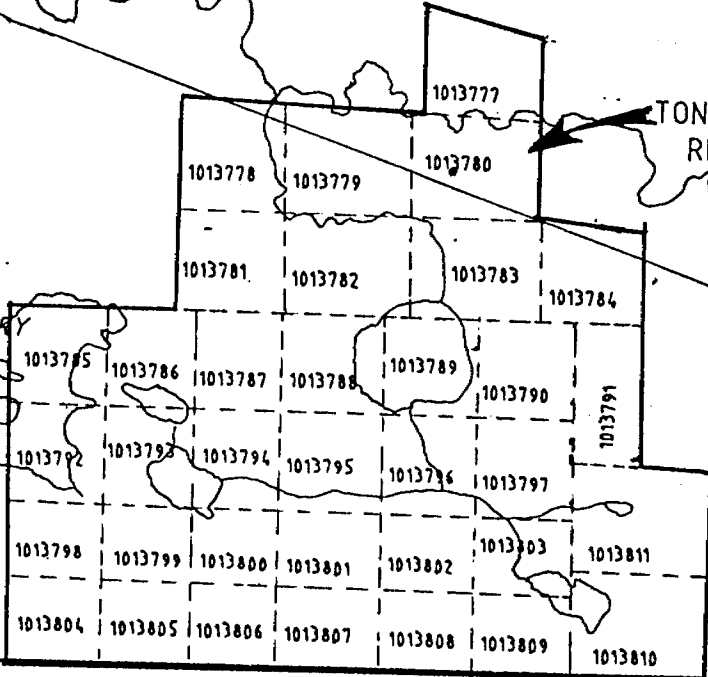
OSWAY TWP.  
HUFFMAN TWP.

OPEEPESWAY LAKE

TONAPAH RESOURCES INC.

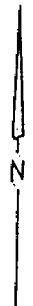
ABANDONED POWER LINE

BOUNDARY LAKE



HUFFMAN TWP.

ARBUTUS TWP.



From Claim Map G-3232

REVISIONS	R. P. BOWEN ENGINEERING INC.		
	for	TONAPAH RESOURCES INC.	
	Title	CLAIM MAP	
	Date: June 1988	Scale: 1"=1/2mi	N.T.S.: 410/9
	Drawn: RPB	Approved: RPB	File: B-6881

Fig. 2

## PREVIOUS WORK

Prospecting in the area has been off and on throughout this century with the culmination of activity in the late 1930's with the discovery of the Jerome Mine about 2.5 miles northwest of the Tonapah claims in 1938.

Prior to 1938 the Geological Survey of Canada and the Ontario Department of Mines had sent mapping crews into the area to examine and report on the numerous showings and prospects in the Swayze Area and reports were published covering these examinations, Emmons and Thompson (1929) and Laird (1935). A special report on the Jerome Mine was published in *Structural Geology of Canadian Ore Deposits*, Brown (1948).

W.W. Moorhouse did a definitive survey on Osway Township and the mineral deposits therein for the Ontario Department of Mines, Moorhouse (1949).

During the 1960's the various provincial and Canadian governments undertook large scale airborne magnetic surveys throughout Canada and produced contoured magnetic maps at a scale of 1 inch to 1 mile. Map 2261 G, OGS/GSC (1963) covers the claim area.

There was no further government sponsored work done in the area apart from various showing reports until the 1980's when the Ontario government sent field crews into the Swayze area to begin detailed mapping at 1 inch to one quarter mile scale, Siragusa (1980). This work was complemented with an airborne electromagnetic and total field magnetic survey conducted by the Ontario Geological Survey and published at a scale of 1:20,000,



OGS (1982).

Numerous companies have held ground covering various portions of the Tonapah ground over the past 40 years. A brief description of the work filed for assessment credit on blocks of ground that previously covered parts of the Tonapah ground will follow.

Bi-Ore Mines Ltd. (1947), T-2002

Bi-Ore controlled ground on the south boundary of Huffman and into Arbutus Township in the 1940's. They submitted a number of diamond drill logs for assessment credit without assays. The location of these holes may be seen on the geology map, Figure 4. The logs reported intersecting a contact between mafic metavolcanics to the north and metasedimentary rocks to the south. Subsequent mapping in this area reported only mafic metavolcanic rocks, however, the sedimentary rocks reported in diamond drilling may be interflow sediments derived from metavolcanic debris.

Blue Falcon Mines Ltd. and Consolidated Silver Butte (1985),

T-3020

This consortium conducted a large airborne geophysical survey over the southern one half of Huffman Township. There did not appear to be significant additions to the data obtained by the government survey conducted in the 1980's, OGS (1982).

Jess-Mac Gold Mines Ltd. (1949-1966), T2134

Jess-Mac conducted some prospecting in the 1940's and diamond drilling on property just east of the northernmost claim of the Tonapah group. J.E. Thompson as Assistant Provincial Geologist submitted a report on a visit he made to the property and the results of analyses on several pieces of core. Thompson (1949) reported the the main rock types were metasediments that varied from pebble conglomerates to wacke to arkose and that the units were locally intruded by syenite porphyry and quartz feldspar porphyry. The assays returned were disappointing with a 0.09 copper and 0.02 ounce/ton gold being the highest assays from his samples.

In 1966 Rio Tinto conducted ground electromagnetic and magnetic surveys over most of this ground, however, no follow-up was carried out.

Falconbridge Nickel Mines Ltd. (1971), T-2133

Falconbridge conducted a vertical loop electromagnetic, magnetic and frequency domain IP surveys over 51 claims in Huffman Township in 1971. Several diamond drill holes were drilled into an iron formation along the eastern boundary of the Tonapah property with trace gold values.

Kidd Resources (1983), T-3094

Kidd conducted a power stripping program on several claims in Osway and Huffman Townships just west of the Tonapah ground. The stripping uncovered sheared medium to coarse grained mafic metavolcanics.

Tonapah Resources Inc. (1984-88), T-2838

Tonapah originally staked what are now the southern and western 26 claims. The first work was linecutting at 400 foot line spacing followed by ground magnetometer and VLF electromagnetic surveys accompanied by geological mapping all in 1984. In 1986 a soil sampling program was done with analyses for gold and arsenic. While the gold anomalies were weak they did coincide with the EM conductors. In addition, an anomalous horizon, with up to 1,300 ppb gold was recorded in the northwestern part of the property (Figure 5) in the geochemical survey. This horizon lies between and along strike of, a gold and arsenopyrite occurrence approximately one kilometer west and the one discovered by Falconbridge in 1971 (Figure 3). This zone remains untested. Similarly, a 2,500 ppb gold assay was recorded in the Tonapah geochemical survey in the southwest corner of the property which lies along strike to the west of a gold-arsenopyrite-pyrite occurrence described by Moorhouse, (1949). In 1988 four diamond drill holes were drilled to test two targets which may be the same zone. The drilling intersected a series of mafic metavolcanic flows and metasediments that ranged from conglomerate to wacke with graphitic zones between the volcanics and sediments.

The main mineralization encountered was pyrite-pyrrhotite in the conglomeratic unit. The sulfides ranged from 5 to 30% and were accompanied by silicification and sericitization. Gold values ranged from 5 to 30 ppb. Several other holes were recommended but were not drilled.

## GENERAL GEOLOGY

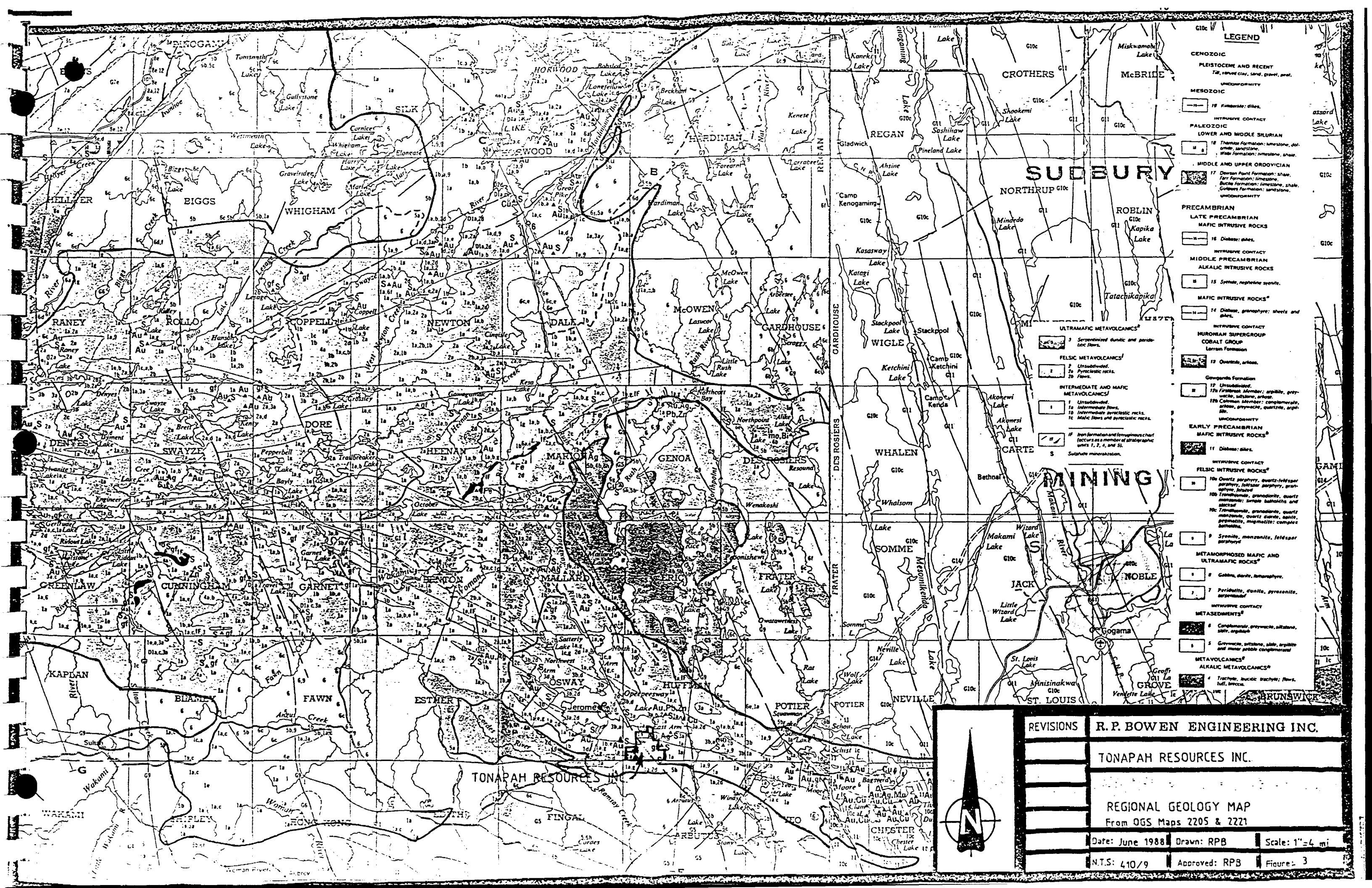
### Regional Geology

The area is underlain by Archean age metavolcanics and metasedimentary rocks that have been locally intruded by hypabyssal felsic porphyritic bodies of various shapes and sizes. The shapes are generally lenticular. The volcanic and sedimentary units, supracrustal rocks have been enveloped by felsic batholithic complexes and all rock units have been intruded by diabase dikes that range in age from Middle Archean to Proterozoic. Figure 3 shows the general shape and size of the Swayze Greenstone Belt. The Swayze is an offshoot of the famed Abitibi Greenstone Belt and is connected to that belt east of the Tonapah property and again some 40 miles to the north west of Timmins.

The supracrustal rocks have been subjected to regional alteration, deformation and metamorphism to lower to medium greenschist rank and near the contact with the batholithic rocks amphibolite rank is common. Deformation is most readily apparent in the conglomerates where pebbles and cobbles have been stretched and elongated on the order of 3 to 10 times.

The metavolcanics range from magnesium to calc-alkaline basalts with lesser intermediate to felsic tuffs and pyroclastics. Many of the mafic flows are pillowed indicating a subaqueous deposition.

Alteration of the metavolcanics takes the form of carbonate, chlorite, epidote, tremolite, clinozoisite and albite.



### LEGEND

**CENOZOIC**  
**PLEISTOCENE AND RECENT**  
 Td, unconsolidated sand, gravel, peat.

**MESOZOIC**  
 18 Kimbama: dikes.  
 Intrusive contact

**PALEOZOIC**  
**LOWER AND MIDDLE SILURIAN**  
 16 Tharaka Formation: limestone, dolomite, sandstone.  
 17 Wabi Formation: limestone, shale.

**MIDDLE AND UPPER ORDOVICIAN**  
 17 Dawson Point Formation: shale.  
 17a Fara Formation: limestone.  
 17b Baka Formation: limestone, shale.  
 17c Guleya Formation: sandstone.  
 UNCONFORMITY

**PRECAMBRIAN**  
**LATE PRECAMBRIAN**  
**MAFIC INTRUSIVE ROCKS**  
 16 Diba: dikes.  
 Intrusive contact

**MIDDLE PRECAMBRIAN**  
**ALKALIC INTRUSIVE ROCKS**  
 15 Syenite, nepheline syenite.

**MAFIC INTRUSIVE ROCKS\***  
 14 Diba: gneiss, pyroxene, sheets and dikes.  
 Intrusive contact

**MUROHIAN SUPERGROUP**  
**COBALT GROUP**  
 Lorrain Formation  
 13 Quartzite, arkose.

Gongorah Formation  
 12a Unsubdivided.  
 12b Fara Formation: arkose, quartzite, gneiss, schist, arkose.  
 12c Guleya Formation: conglomerate, arkose, gneiss, quartzite, arkose.

**UNCONFORMITY**  
**EARLY PRECAMBRIAN**  
**MAFIC INTRUSIVE ROCKS\***  
 11 Diba: dikes.

Intrusive contact  
**FELSIC INTRUSIVE ROCKS\***  
 10a Quartz porphyry, quartz-feldspar porphyry, felsic porphyry, granophyre, felsite.  
 10b Trondhjemite, granodiorite, quartz monzonite, simple batholiths and stocks.  
 10c Trondhjemite, granodiorite, quartz monzonite, quartz diorite, anorthite, perthite, megacrystic complex batholiths.

9 Syenite, monzonite, feldspar porphyry

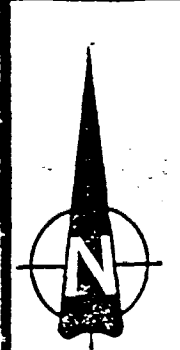
**METAMORPHOSED MAFIC AND ULTRAMAFIC ROCKS\***  
 8 Gabbro, diorite, anorthosite.  
 7 Peridotite, dunite, pyroxenite, amphibolite.

Intrusive contact  
**METASEDIMENTS\***  
 6 Conglomerate, gneiss, schist, siltstone, slate, argillite.

5 Gneiss, schist, slate, argillite and minor pelitic conglomerate

**METAVOLCANICS\***  
**ALKALIC METAVOLCANICS\***  
 4 Trachyte, basaltic trachyte, flow, tuff, breccia.

REVISIONS	R. P. BOWEN ENGINEERING INC.
	TONAPAH RESOURCES INC.
<b>REGIONAL GEOLOGY MAP</b>	
From OGS Maps 2205 & 2271	
Date: June 1988	Drawn: RPB
N.T.S: 410/9	Approved: RPB
Scale: 1" = 4 mi	Figure: 3



TONAPAH RESOURCES INC.

FINGAL

MINING

JACK

ST. LOUIS

BRUNSWICK

The clastic metasedimentary rocks are conglomerates to mudstones while the chemical metasedimentary rocks are oxide and sulfide affinity iron-rich rocks (iron formations). Age relationships were postulated by Laird (1935) and Moorhouse (1949), however, later authors do not so classify the age relationships, Siragusa (1980).

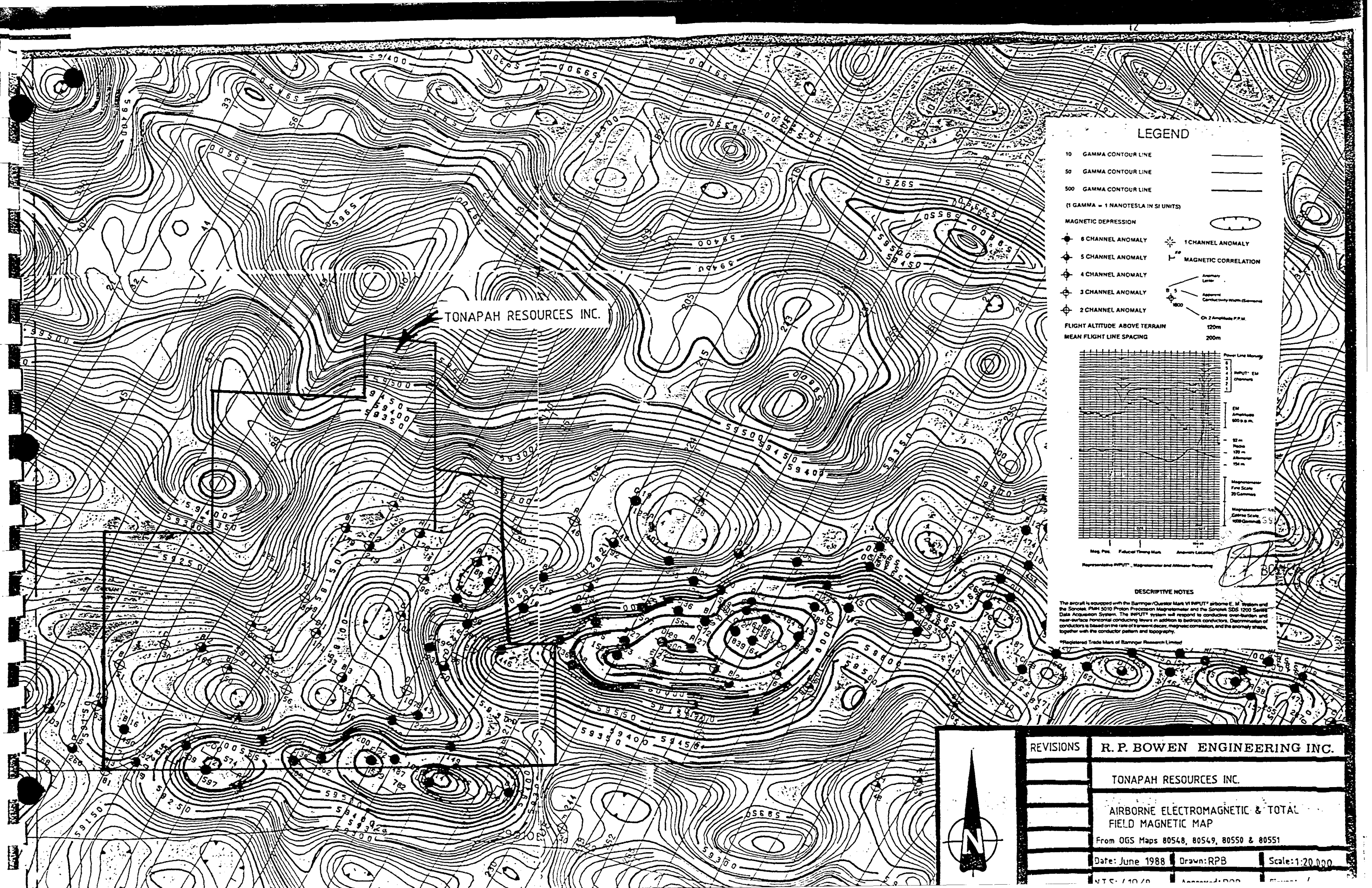
Felsic hypabyssal units have randomly intruded the supracrustals and have often caused considerable alteration and replacement of those rocks, called porphyritization by Moorhouse (1949) and occurs in both the metavolcanic and metasedimentary rocks. Blue quartz eyes, carbonate and quartz veins, sericitization, carbonatization, albitization, along with biotite and tourmaline are common signs of alteration.

Batholithic rocks are granitic to dioritic in composition, massive and pink in color. Where the batholith and the supracrustals are in contact or in close proximity there is often a gneissic or migmatitic zone characterized by lit-par-lit stringers of the batholithic material into the supracrustals.

The diabase dikes generally strike north to north-northwest although some do trend west to northwest. Both quartz and olivine diabase varieties are noted in the area, the olivine generally thought to be the younger, Pyke (1982).

The structure of the region is complex and nearly every rock type except for the diabase dikes shows some evidence of shearing or alteration. The dikes are almost certainly structurally controlled. The axis of a large synformal structure trends northwest generally through Opeepeesway Lake. There may be

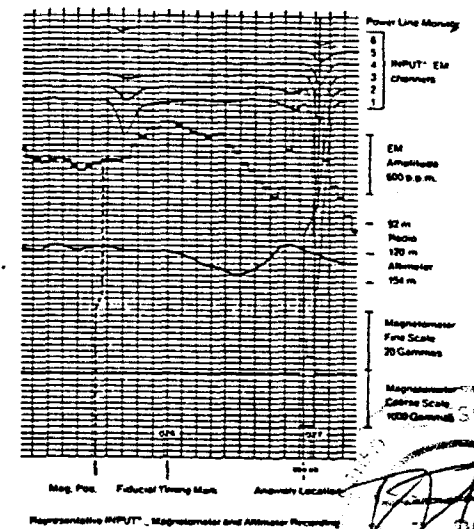




TONAPAH RESOURCES INC.

**LEGEND**

- 10 GAMMA CONTOUR LINE
- 50 GAMMA CONTOUR LINE
- 500 GAMMA CONTOUR LINE
- (1 GAMMA = 1 NANOTESLA IN SI UNITS)
- MAGNETIC DEPRESSION
- 8 CHANNEL ANOMALY
- 5 CHANNEL ANOMALY
- 4 CHANNEL ANOMALY
- 3 CHANNEL ANOMALY
- 2 CHANNEL ANOMALY
- 1 CHANNEL ANOMALY
- MAGNETIC CORRELATION
- Anomaly Letter
- Apparent Conductivity Worth (Gauss)
- Ch. 2 Amplitude P.P.M.
- FLIGHT ALTITUDE ABOVE TERRAIN 120m
- MEAN FLIGHT LINE SPACING 200m



**DESCRIPTIVE NOTES**

The aircraft is equipped with the Barringer/Quester Mark VI INPUT<sup>®</sup> airborne E. M. system and the Sonotek PMM 5010 Proton Precession Magnetometer and the Sonotek SDS 1200 Sawtooth Data Acquisition System. The INPUT<sup>®</sup> system will respond to conductive over-burden and near-surface horizontal conducting layers in addition to bedrock conductors. Discrimination of conductors is based on the rate of transient decay, magnetic correlation, and the anomaly shape, together with the conductor pattern and topography.

<sup>®</sup>Registered Trade Mark of Barringer Research Limited



REVISIONS	R. P. BOWEN ENGINEERING INC.
	TONAPAH RESOURCES INC.
	AIRBORNE ELECTROMAGNETIC & TOTAL FIELD MAGNETIC MAP
	From OGS Maps 80548, 80549, 80550 & 80551
Date: June 1988	Drawn: RPB
Scale: 1:20,000	

Several parasitic folds on either limb of this fold which accounts for the numerous top reversals noted throughout the area.

Faulting has complicated the geological picture. The larger faults are most easily traced by observing the trend of lakes and rivers and even the alignment of ponds and streams. Diabase dikes also intrude zones of weakness. The aeromagnetic maps, Figure 4, may be used to interpret fault traces by noting the long narrow magnetic "lows". The larger offsets of geologic units are often noted on opposite sides of lakes and rivers.

Shearing is noted in the form of kink bands and pronounced penetrative schistosity.

Glacial deposits mantle the area in the form of eskers and outwash deposits. More recent organic deposits have formed over the glacial material and local concentrations have accumulated in the lower areas as muskeg or peat.

Economically speaking, most of the prospecting, exploration and mining in the area has been for gold although early exploration for iron was quite extensive in some areas. Base metal showings are widespread, however, no economic base metal production has occurred to date.

#### Property Geology

The geology underlying the Tonapah property is a series of mafic metavolcanic flows in the south part of the property, Figure 5, while the north part of the property is underlain by metasedimentary rocks. Chemical metasedimentary iron rich oxide and lesser sulfide affinity units are conformable to the general





strike of the volcanic and sedimentary units. Perhaps of more importance are the sericitized pyrite-pyrrhotite zones, some of which have shown up as conductors. Some units containing lower sulfide concentrations would likely be highly chargeably units if surveyed with induced polarization methods. The author examined diamond drill core from Tonapah's drill program on the southern claims and noted that the rock had been subjected to shearing and sericite and sulfide alteration. A number of graphitic units also appear to have formed at the metavolcanic-metasedimentary interface as well as between flow units. These are often sulfidized as well. To date no economic values have been recovered from the work done on the property, however, there are still several conductors and trends that have yet to be tested. An iron formation parallels the southern boundary of the property and was extensively drilled by Bi-Ore Mines Ltd.

#### CONCLUSIONS AND RECOMMENDATIONS

Since the 1984 to 1988 work program was initiated additional claims contiguous to the north and east boundaries of the original group have been staked to bring the total claims to 35. This additional ground should have lines cut over it and ground magnetometer and VLF electromagnetic surveys performed over it and tied into the first surveys. All conductors and for about 400 feet on either side of their axes should be surveyed by IP/resistivity methods and soil sampling conducted assaying for not only gold and arsenic as was the case for the first survey but for copper, lead and zinc as well. This latter omission was

a draw-back to the original survey. The anomalous soil horizons, delineated by the past work and which lie along strike from documented occurrences, should be followed up by further detailed soil sampling and geophysical surveys. Once the results of these surveys have been analyzed and the previous diamond drilling has been taken into account the remaining targets should be tested by diamond drilling.

The exploration is recommended to be done in three phases beginning with linecutting, ground magnetometer, VLF EM and geological surveys budgeted at \$30,300.00. Phase II would be budgeted at \$32,250.00 and consist of soil sampling and IP/resistivity surveys over the conductors. Phase III would be diamond drilling to test any targets predicated from the results of Phases I and II and would be budgeted at \$261,000.00, for a total exploration budget of \$323,550.00.

## BUDGET

PHASE I

Linecutting 35 miles @ \$400.00/mile	\$14,000.00
Ground magnetometer survey 11 miles @ \$150.00/mile	1,650.00
VLF EM survey 11 miles @ \$150.00/mile	1,650.00
Geological mapping 10 days @ \$500.00/day	5,000.00
Transportation & subsistence	3,000.00
Supervision & consulting	2,500.00
Reports and filing	2,500.00
Total Phase I	<u>\$30,300.00</u>

PHASE II

IP/resistivity survey 10 days @ \$1,200.00/day	\$12,000.00
Soil sampling 10 days \$400.00/day	4,000.00
Sample preparation and analyses	10,000.00
Transportation & subsistence	2,500.00
Supervision & consulting	2,250.00
Reports and filing	2,500.00
Total Phase II	<u>\$32,250.00</u>

PHASE III

Diamond drilling 8,000 feet @ \$30.00/foot	\$240,000.00
Core logging & supervision	9,000.00
Core splitting sampling	3,000.00
Assaying	4,000.00
Transportation & subsistence	2,500.00
Reports and filing	2,500.00
Total Phase III	<u>\$261,000.00</u>

Grand Total	\$323,550.00
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Further diamond drilling is predicated on the results of Phase III diamond drilling.

Respectfully submitted,

  
R.P. Bowen, P.Eng.

## REFERENCES

- Emmons, R.C. and Thompson, E.  
1929: Preliminary Report on the Woman River and Ridout Map Areas, Sudbury District, Ontario. Geological Survey of Canada Memoir 157.
- Laird, H.C.  
1935: Geology of the Opeepeesway Lake Area. Ontario Department of Mines, Vol. XLIV, Pt. 7, pp 1-330.
- Moorhouse, W.W.  
1949: Geology of Osway Township. Ontario Department of Mines Vol. LVIII, Pt. 5, 27 p. with Map 1949-2, Scale 1" to 1,000'.
- OGS/GSC  
1963: Map 2261 G, Opeepeesway Lake, Sudbury District, Ontario Sheet 410/9, Scale 1" to 1 mile.
- OGS  
1982a: Airborne Electromagnetic and Total Intensity Magnetic Survey, Swayze Area, Satterly Lake Sheet, District of Sudbury; by Questor Surveys Limited for the Ontario Geological Survey, Map 80548 Geophysical/Geochemical Series, Scale 1:20,000. Survey and Compilation December 1980, to February 1981.
- 1982b: Rat Lake Sheet, Map 80549.
- 1982c: Cordes Lake Sheet, Map 80550.
- 1982d: Yeo Lake Sheet, Map 80551.
- Pyke, D.R.  
1982: Geology of the Timmins Area, District of Cochrane; Ontario Geological Survey Report 219, 141 p. Accompanied by Map 2455, Scale 1:50,000, 3 charts and 1 sheet microfiche.
- Siragusa, G.M.  
1980: Jerome Area (East), District of Sudbury; Ontario Geological Survey Preliminary Map P.2370, Geological Series, Scale: 1:15,840 or 1 inch to 1/4 mile. Geology 1979.

Other Maps

Claim Map, Huffman Township, Ontario G-3232, Scale 1"=1/2 mile.

Geological Compilation Series, Ontario Geological Survey, Scale 1"=4 miles.

Map 2205, Timmins-Kirkland Lake Sheet

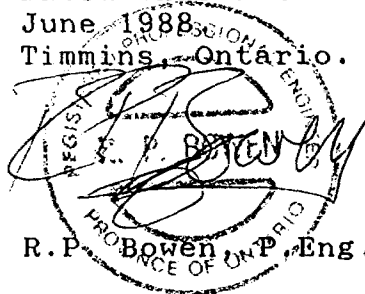
Map 2221, Chapleau-Foleyet Sheet

## CERTIFICATION

I, R.P. Bowen, P. Eng., of 142 Eric Crescent, Porcupine, Province of Ontario, certify as follows concerning my report on the Huffman Township, Ontario property of Tonapah Resources Inc. and dated 20 June 1988.

- 1) I am a member in good standing of:
  - a) The Association of Professional Engineers of the Province of Ontario
  - b) The Canadian Institute of Mining and Metallurgy
  - c) The Society of Mining Engineers of the A.I.M.E.
  - d) The American Society of Photogrammetry and Remote Sensing
  
- 2) I am a graduate of Michigan Technological University, Houghton, Michigan with a B.S. degree in Geological Engineering in 1970 and a B.S. degree in Engineering Administration obtained in 1971.
  
- 3) I am a graduate of Mc Gill University, Montreal, Quebec with a Graduate Diploma in Geological Sciences obtained in 1972 and a M.Sc. (Applied) in Minerals Exploration obtained in 1973.
  
- 4) I have been practicing my profession in Canada and the United States for the past 19 years.
  
- 5) I have no direct interest in the properties, leases or securities of Tonapah Resources Inc. nor do I expect to receive any.
  
- 6) The attached report is the product of:
  - a) Data listed in the references.
  - b) Assessment work files - Timmins Resident Geologist's Office and the Toronto Assessment Records Office.
  - c) Discussions with colleagues who have worked in the area.
  - d) My personal acquaintance with the Swayze Greenstone Belt and other properties in the area some of which I have worked on for other companies.
  - e) A personal visit to the property 15 June 1988.

Dated this 20th day of  
June 1988  
Timmins, Ontario.

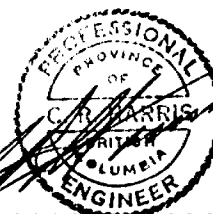




41009SE0003 63.5403 HUFFMAN

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RESULT SUMMARY  
1988 DRILL PROGRAM  
HUFFMAN TP. CLAIMS  
  
for  
  
TONOPAH RESOURCES INC.



.....  
C. R. Harris, P.Eng.  
July 15, 1988

OM 88-5-C-025



#63.5403

OM 88-5-C-025

THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS, SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES):

Drill Holes # 88-1 to # 88-4, logs ⇒ Comparable logs filed under HUFFMAN were comparable, however assay results appeared on the OMEP logs and not on those submitted for Assessment, TP. DDR # 25, Report of work # W 8806.231  
Therefore the logs were not culled from this report (63.5403)



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020C

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3. Drill Hole Sections
4. Drill Hole Sections

APPENDIX	I	Drill Hole Logs
	II	Assay Certificates
	III	COST DOCUMENTATION

## INTRODUCTION

During the period March 18 to June 30, 1988, Tonopah Resources Inc. completed a diamond drill program on their claims in Huffman Township, Ontario. The purpose of the program was to test geophysical conductors located during earlier surveys.

This summary has been prepared for OMEP and assessment requirements and is based upon field notes, sketches and drill logs of the supervising crew. This summary is also intended as a follow-up or appendage to the Geological Report by R. P. Bowen, P.Eng. dated 20 June, 1988.

## DESCRIPTION OF WORK

The claim area is shown on Figure 1 and the area of work on Figure 2. Four " B " core diamond drill holes were put down as follows:

Hole	Co-ords	Ang.	Dip	Length
1	26+40 E 6+30 N	170°	-45°	376 feet
2	36+00 E 3+75 N	210°	-45°	306 "
3	" "	150°	-45°	326 "
4	44+00 E 0+60 S	360°	-45°	486 "
				<u>1,494 feet</u>

The drilling was done by Frontier Diamond Drilling of Timmins, Ontario under the supervision of Mr. Orville Hicks of Timmins.

During the program, R. P. Bowen, P.Eng. visited the property and has reported separately on his geological observations.

DRILL RESULTS

Although some sulphides were observed in all holes, economic mineralization was not encountered.

Drill hole locations are shown on Figure 2, sections on Figures 3 & 4 and drill logs as Appendix I. Assay certificates are included as Appendix II.

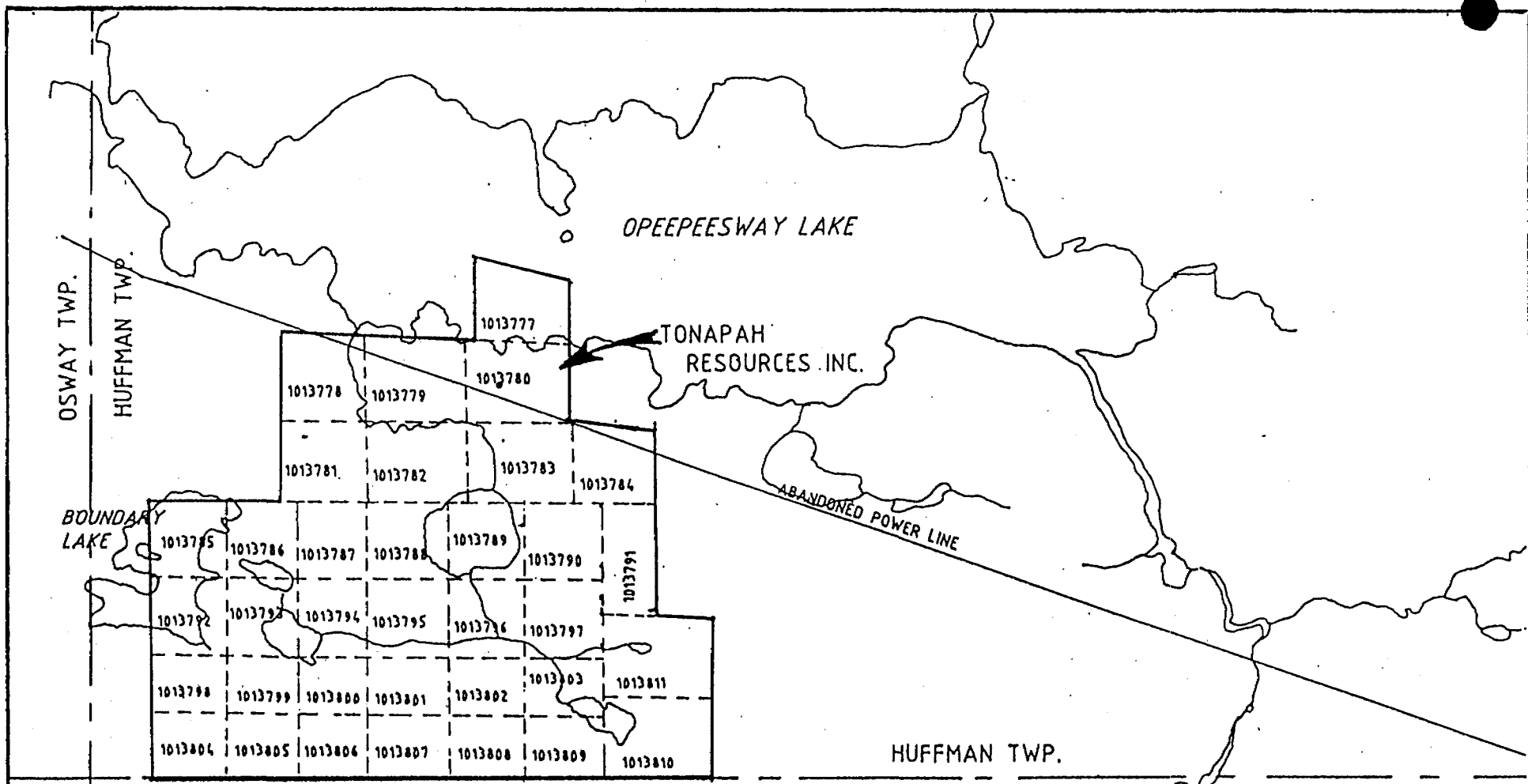
The drill core is stored at Timmins, Ontario, in the care of Mr. Orville Hicks.

COST STATEMENT

The following lists all costs directly attributable to the 1988 drill program:

Diamond Drilling	1500' @ 36.00 .....	\$ 54,000.00
Project. Supv.	Helicopter Road Recce .....	843.80
(Mr. O. Hicks)	Spotting Holes .....	50.00
	Truck Rental .....	1,323.00
	Meals & Misc. Supplies .....	169.08
	Core Boxes .....	657.40
	Supervision, Core Logging, 16 da. ...	4,040.00
	Engineering Report (R. P. Bowen) ...	3,000.00
	Assaying .....	1,299.00
Assay, misc .....		75.00
Core Boxes .....		657.40
Report Preparation, C. R. Harris, P.Eng. ....		400.00
	TOTAL .....	\$ 66,514.68

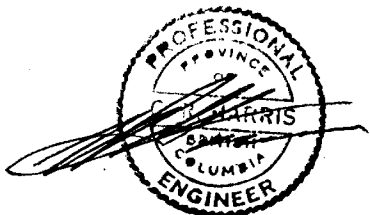
Copies of invoices and cancelled cheques are attached as Appendix III.



HUFFMAN TWP.

ARBUTUS TWP.

From Claim Map G-3232



**TONAPAH RESOURCES**  
**CLAIM MAP**

Fig 1

FIGURE 2

20E

24E

28E

32E

36E

40E

44E

P 1013793

P1013794

P1013795

P1013801

DDH 1

DDH 2,3

DDH 4

A

B

B1

Base Line

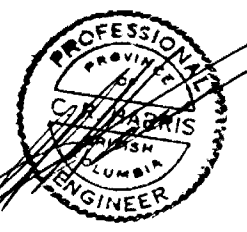
**Legend**

- --- Drill Hole
- --- Claim Post
- --- Creek
- Axis of Conductivity

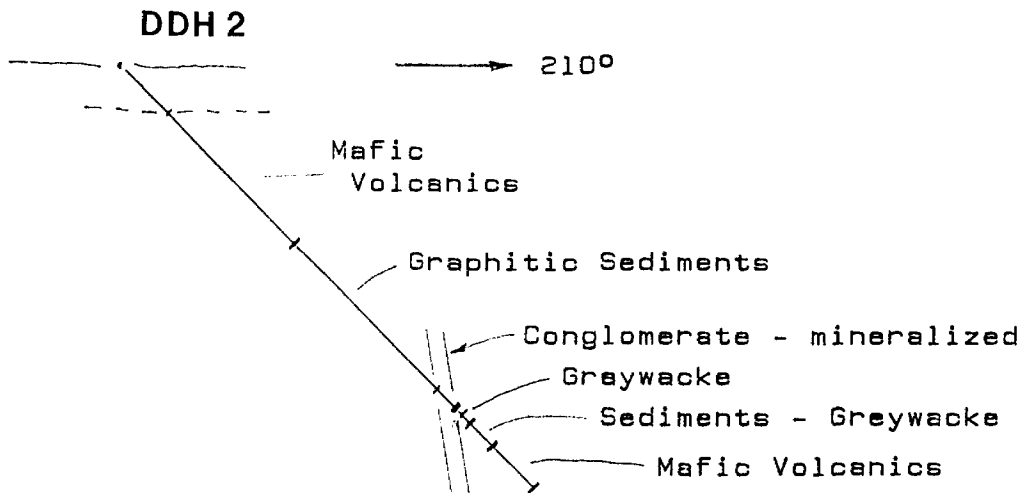
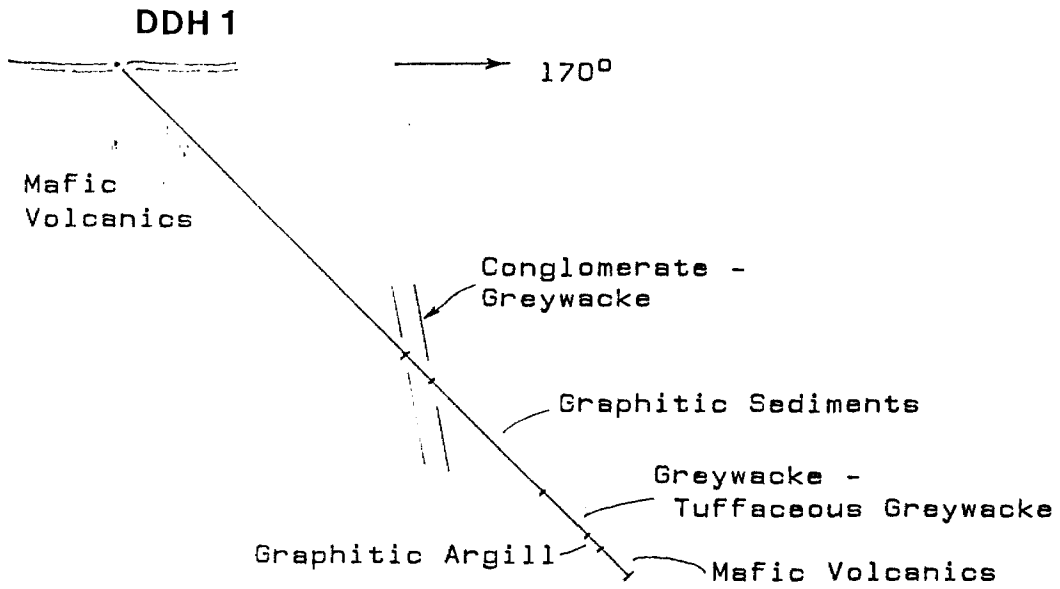


1" = 200 ft.

**TONOPAH RESOURCES INC.**  
**HUFFMAN TP. CLAIMS**  
**1988 DRILLING**

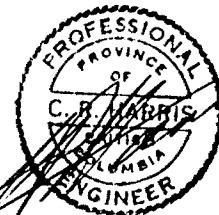


C.R.H. July 1988

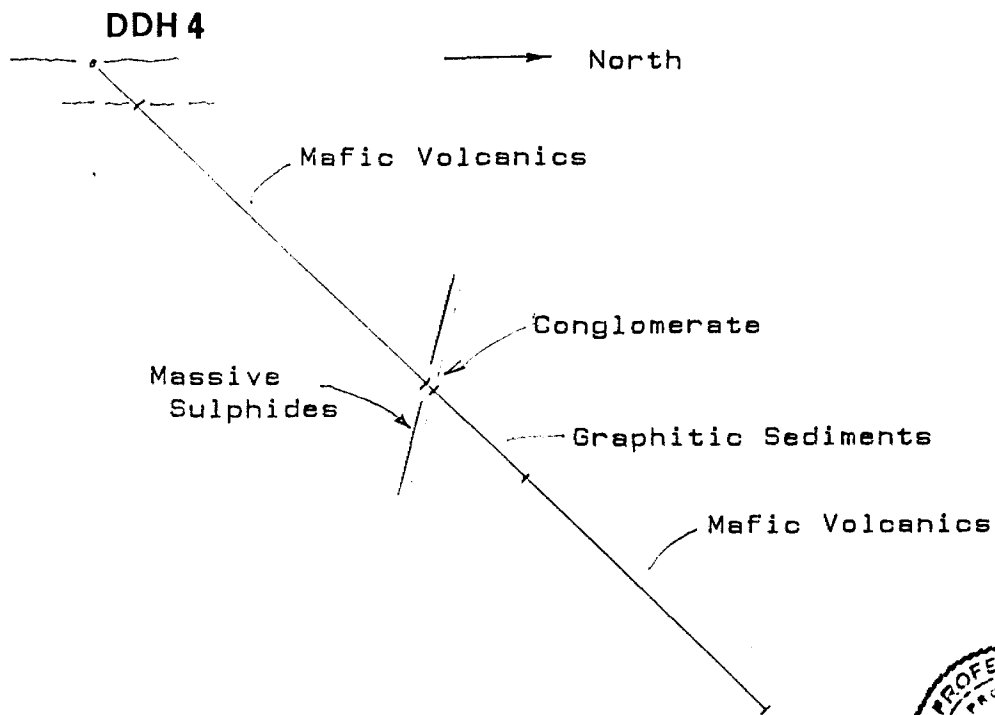
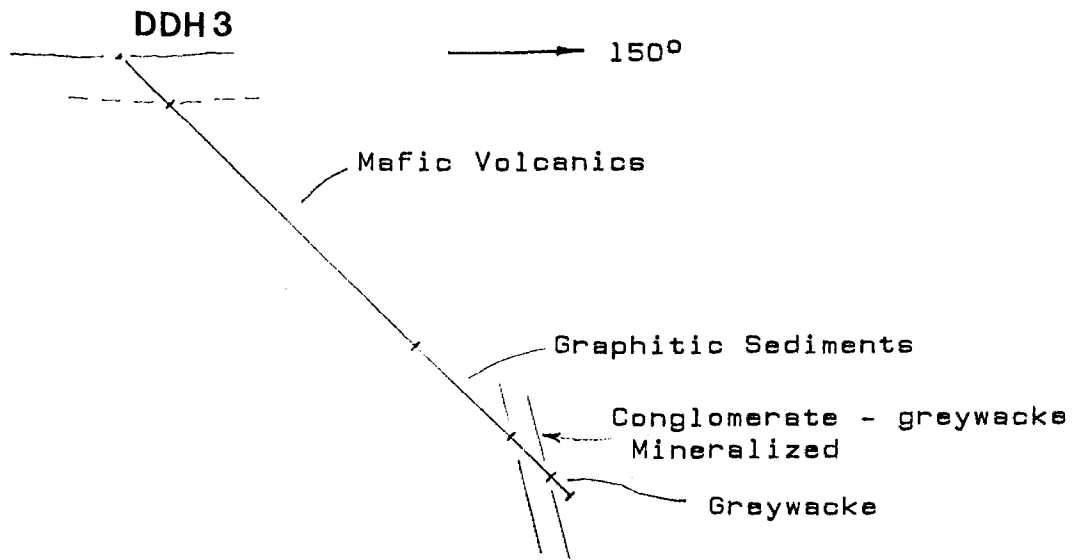


SCALE

1 inch = 100 feet

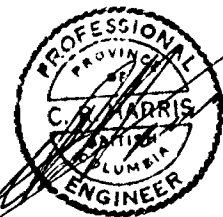


**1988 DRILLING  
SECTIONS**



SCALE

1 inch = 100 feet



**1988 DRILLING  
SECTIONS**



## DIAMOND DRILL RECORD

PROP. .... TONAPAH RESOURCES                      TOWNSHIP.... HUFFMAN TOWNSHIP                      HOLE #.... BB-1  
 CLAIM NUMBER....                      DIP.... -45 DEG                      COLLAR CO-ORDINATES.... L 26+40E; 6+30n                      TOTAL LENGTH.... 376 feet  
 ORIENTATION ....                      AZI.... 170 DEG                      DRILL COMPANY....                      SHEET #.... 1  
 LOGGED BY.... R. NORMAN                      CORE SIZE.... BB                      CORE LOCATION... SCOTT HAULAGE, TIMMINS START...                      FIN...

FOOTAGE		DESCRIPTION	SAMPLE			ASSAY			
from	to		no.	from	to	length	Au pph	Cu ppm	Zn ppm
0	5	Casing-Overburden							
5	6	Granite Boulder							
6	1212	Mafic Flows:							
		Fine to medium grained basalt; green to light green.							
		Weak to moderately chloritic locally (mostly in bands).							
		Fairly abundant quartz-calcite bands occur throughout parallel to foliation 30 deg to 40 deg to L.C.A. Also fractured and healed by calcitic material locally.							
		Broken core in places from 5' to 30' with rusty oxidation and minor vuggy quartz veins-no mineralization.							
		Several quartz-calcite veins, 1 to 2 inches thick, occur t.o. 45 deg to 55 deg to L.C.A. No mineralization.							
		49.5 to 52.0: Strongly sheared and healed by quartz-calcite bands 30 deg to 35 deg to L.C.A.; Some sericite; rare minute specks of pyrite; Well banded.	20055	49.5	52.0	12.5	10		61
		39.0 to 40: Mafic buff-green dike; fine grained with minute black ferro-mag. phenocrysts.							
		Contacts at 50 deg to L.C.A. Similar dikelet at 41.0, 2 inches thick.							
		52 to 59: Mafic dike-diabasic; fine grained, black; fine grained contacts; vesicular-like with round calcitic amygdules (?).							
		Weakly calcitic locally; Non-magnetic.							
		78.0 to 80.0: Coarse grained mafic flow; grey; calcitic, sheared 78.0 to 78.8.							
		80.0 to 83.2: Black, fine to medium grained diabase; magnetic; contacts 30 deg to 40 deg to L.C.A.							
		95.5 to 98: A few narrow quartz-calcite veins. One 6-inch vein 97.5 to 98.0. No mineralization.	20056	95.5	98.0	12.5	20		64
		124.0 to 130.0: Occasional shears with quartz-calcite in-filling- no mineralization.							
		134 to 143: Moderate to strongly sheared and fractured with quartz-calcite in-filling; foliation and fracturing sub-parallel to L.C.A. No mineralization. Rusty oxidation at 142.5 in quartz-veined zone (6 inches of broken core). Very minor fine specks of pyrite.	20057	142	143	11.0	30		98
		148.5 to 150.5: Quartz vein; white with greenish patches; 1% blebs of pyrrhotite							
							PREVIOUSLY SPLIT:		
		NOTE: Beyond 120 feet foliation and banding increase 45 deg to 55 deg L.C.A.							
		Out-contact of volcanics with sediments 30 deg to L.C.A.							

DIAMOND DRILL RECORD										
PROPERTY....		TOWNSHIP....				HOLE #....88-1				
CLAIM NUMBER....		DIP....		COLLAR CO-ORDINATES....		TOTAL LENGTH....				
ORIENTATION....		AZI....		DRILL COMPANY....		SHEET #....2				
LOGGED BY....		CORE SIZE....		CORE LOCATION....		START...		FIN...		
FOOTAGE	DESCRIPTION	SAMPLE				ASSAY				
		from	to	no.	from	to	length	Au ppb	Cu ppm	Zn ppm
212	232.2	Conglomerate-Greywacke								
		212 to 221.5: Dark grey greywacke; weakly graphitic; grades to a fine pebble conglomerate downhole (increasing grain-size downhole-tops to south?). Fragments of quartz and feldspar and felsic cherty clasts up to 2 cm; fragments flattened and stretched.		20058	212	216	4.0	5	16	60
		NOTE: Core angles in Hole 88-4 indicate a south dipping sequence-thus grading here suggest tops also south.		20059	216	221.5	5.5	10	24	66
		221.5 to 232.5: Matrix-supported conglomerate with buff-green clasts up to 2 inches thick and longer than core width. Clasts are in a dark-grey greywacke to pebbly quartz-feldspar matrix; sericitic locally; Beyond 229.6, clasts become pale olive green in colour with more siliceous bands.		20060	221.5	226.0	4.5	5	38	58
		Abundant calcitic wisps, stringers and thin layers locally t.o. this conglomerate greywacke unit, but only moderate siliceous.		20061	226.0	229.6	3.6	5	70	85
		Weakly mineralized with hairline wisps and bands locally (0.5%). Foliation 40 deg to L.C.A.		20062	229.6	233.0	3.5	10	90	165
232.2	312.8	Graphitic Sediments: Black, well banded and layered slaty, argillite and mudstone; black and grey layers.		20065	233	237	4.0	5		280
		2% to 5% thin (up to 8 mm) bands, stringers and blebs, of primary pyrite to 252 and mineralization decreases beyond 252 and becomes less grey and less graphitic.		20066	237	242	5.0	30		310
		Calcitic bands, stringers and veinlets locally. Light grey-green calcitic greywacke bands with 1% blebs of pyrite 247.2 to 248.7.		20063	248.0	249.5	1.5	5		120
		274 to 279: Sheared, folded and brecciated with quartz-calcite bands and minor pyrite locally.		20064	274.0	279.0	5.0	10		230
		306 to 321.8: tuffaceous greywacke; dark grey to grey; thinly bedded and cleaved with minute bluish-grey quartz grains. 1 to 2% thin pyrite bands and wisps.		20067	306.5	309.5	3.0	15		100
		Foliation, banding and mineralization 45 deg to L.C.A.		20068	309.5	312.8	3.3	20		120
		Fault breccia and gouge 242.0 to 242.5								
312.8	346.0	Intermediate Tuffaceous Greywacke and Greywacke: Grey to grey-green fine to medium grained.								
		Well sheared and banded with yellow-green sericitic bands locally; quartz-calcite bands throughout.		20069	312.8	318.5	5.7	20		49
		316 to 326.5: Chloritic with siliceous bands and quartz-calcite veins -minor pyrite; Cut by a black, fine-grained, magnetic diabase dike, from 318.5 to 323.5, with white calcitic amygdules(?).		20070	323.5	326.5	3.0	15		64
		330.5 to 334.0: Light grey; quartz-eye tuffaceous greywacke with bluish quartz-eyes augened by a sericitic matrix; siliceous bands common.		20071	326.5	330.5	4.0	15		55
		Occasional speck of pyrite. Similar section 341.0 to 341.7.		20072	330.5	334.0	3.5	10		53
		Generally, rare quartz veins and no significant mineralization.								
		Shearing, foliation and banding 40 to 45 deg L.C.A.								

DIAMOND DRILL RECDRD

PROPERTY.... TOWNSHIP.... HOLE #...88-1  
 CLAIM NUMBER.... DIP.... COLLAR CO-ORDINATES.... TOTAL LENGTH....  
 ORIENTATION .... AZI.... DRILL COMPANY.... SHEET #...3  
 LOGGED BY.... CORE SIZE.... CORE LOCATION.... START... FIN...

FOOTAGE		DESCRIPTION	SAMPLE			ASSAY			
from	to		no.	from	to	length	Au ppb	Cu ppm	Zn ppm
346.0	355.5	Graphitic Argillite: Black, fine grained; well layered and banded 40-45 deg to L.C.A. Occasional grey section of greywacke. Occasional thin pyritic band. Dut-contact 40 deg to L.C.A.							
355.5	376.0	Mafic Flows: Fine to medium grained basalt, light green; darker green in chloritic sections; light to medium green bands. Strongly foliated and sheared 35 to 45 deg to L.C.A. Abundant quartz-calcite bands.							
		372.2 to 376.0: Chloritic, sheared with abundant quartz-calcite bands 1% fine blebs and wisps of pyrrhotite 375 to 376 with needles of black hornblend.	20073	273.7	376.0	2.3	20	74	73
		END OF HOLE.							

## DIAMOND DRILL RECORD

PROPERTY....TONAPAH TOWNSHIP....HUFFMAN HOLE #....88-2  
 CL NUMBER.... DIP....-45 DEG COLLAR CO-ORDINATES....L 36+00E;3+75N TOTAL LENGTH....306 FEET  
 ORIENTATION .... AZI....210 DEG DRILL COMPANY.... SHEET #....1  
 LOGGED BY....R. NORMAN CORE SIZE....BQ CORE LOCATION....SCOTT HAULAGE-WAREHOUSE, TIMMINS  
 START.... FINISH....

FOOTAGE		DESCRIPTION	SAMPLE			ASSAY			
from	to		no.	from	to	length	Au ppb	Cu ppm	Zn ppm
0	36.0	Casing-Overburden							
36.0	128.6	Mafic Volcanics							
		Fine to medium grained basalts; light green; darker green, chloritic in places (eg. 36 to 53); colour probably due to epidotisation. Moderate to strong pervasive calcite alteration locally; abundant quartz-calcite stringers, bands and veinlets throughout; fractured locally and healed by calcitic material. Several narrow (2 to 3 inches) quartz-calcite veins 45 to 50 deg. to L.C.A. Well foliated in some sections-45 to 50 deg. to L.C.A.							
		45.5 to 46.5: sheared and brecciated with thin quartz veins and sparse disseminated pyrite; shearing 5 to 10 deg to L.C.A. No significant mineralization or veining.	20040	45.0	46.5	1.5	20		61
128.6	235.0	Graphitic Sediments:							
		Black to black grey argillitic mudstone. Well layered and banded 40 deg to 45 deg to L.C.A. Foliation ranges from 20 to 40 deg beyond 146. Bands on primary sulphides common throughout. Badly broken core in places throughout. Occasional calcitic veinlets. Bands of primary pyrite common throughout.							
		126.6 to 132.0: Calcitic; 2 to 5% thin bands of primary pyrite; trace chalcocopyrite; some stringer sulphides.	20041	127.0	132.0	5.0	5		82
		162 to 168: Brecciated and healed by white calcitic material; a few bleb of pyrite.	20042	166.0	168.0	2.0	5		20
		194.5 to 196.0: Brecciated zone with 1 to 2% disseminated and stringers of pyrite (trace chalcocopyrite).	20043	194.5	196.0	1.5	30		380
		145 to 146: Folded and crenulated;	20044	229.0	235.0	6.0	5		150
235	249.5	Conglomerate (Mineralized Zone):							
		Yellow-green to cream; flattened and stretch siliceous and cherty clasts. Clasts supported in a grey-green, quartz-feldspar greywacke matrix, strongly to moderately siliceous and sericitic. Zone becomes grey in colour from 242 to 246.							
		Mineralization:							
		10 to 20% disseminated to massive pyrite in bands to 239.3 with lesser pyrrhotite.	20045	235.0	238.0	3.0	30	86	110
		From 239.3 to 249.5 pyrrhotite predominates over pyrite with 5 to 10% total sulphides as bands; strongly magnetic	20046	238.0	241.0	3.0	10	40	71
			20047	241.0	243.0	2.0	20	34	45
			20048	243.0	248.0	5.0	5	40	50
			20049	248.0	249.5	1.5	10	40	52
249.5	253.6	Greywacke:							
		Medium grained; dark grey-green; granular; minute fragments. Strong pervasive calcite throughout; chloritic	20050	249.5	253.6	4.1	10		90

DIAMOND DRILL RECORD

PROPERTY....		TOWNSHIP....		HOLE #....88-2
CLAU...MBER....	DIP....	COLLAR CO-ORDINATES....		TOTAL LENGTH....
ORIENTATION ....	AZI....	DRILL COMPANY....		SHEET #.... 2
LOGGED BY....		CORE SIZE....	CORE LOCATION....	START... FIN...

FOOTAGE	DESCRIPTION	SAMPLE			ASSAY		
		no.	from	to	length	Au ppb	Cu ppm
from to							
249.5 to 253.6	Greywacke (cont'd)  No significant mineralization or veining.						
253.6:259.8	<b>Conglomerate-Greywacke:</b> Large buff volcanic clasts flattened in a grey quartz-feldspar greywacke matrix. Fairly abundant calcitic veinlets and stringers.	20051	253.6	259.8	6.2	20	73
257.5 to 259.8	fine to medium grained greywacke. Foliation 40 deg to L.C.A. Minor sulphides-sparse. Moderately sericitic locally.						
259.8:277.6	<b>Greywacke and Argillitic Graphitic Sediments:</b> Black and grey layers; graphitic locally. Generally well layered and banded 35 deg to 40 deg to L.C.A.						
259.8 to 263.5	Graphitic sediments and argillite with 3 to 5% pyrite-pyrrhotite in bands.	20052	259.8	263.5	3.7	20	160
		20053	263.5	267.0	3.5	10	24
		20054	267.0	269.5	2.5	10	350
263.5 to 267.0	fine grained, grey-greywacke with 5 to 10% pyrrhotite as thin bands 35 deg to 40 deg to L.C.A.						
277.6:306.0	<b>Mafic Flows:</b> Fine grained; medium green; dark green and chloritic locally. Generally strongly sheared and cut by 25 deg 25% quartz-calcite bands. Foliation and shearing 40 deg to 45 deg to L.C.A. Light, cream-coloured crystal needles at 296.5 to 297.5 in sheared, calcitic and chloritic section. 304 to 306: light green and strong pervasive calcite. No significant mineralization or veining.						
	END OF HOLE.						

## DIAMOND DRILL RECORD

PROPERTY...TONAPAH RESOURCES TOWNSHIP...HUFFMAN HOLE #....88-3  
 CL...UMBER... DIP...-45 DEG COLLAR CO-ORDINATES....L 36+00E; 3+75N TOTAL LENGTH...326 FEET  
 ORIENTATION .... AZI...150 DEG DRILL COMPANY.... SHEET #....1  
 LOGGED BY...R. NORMAN CORE SIZE....BQ CORE LOCATION...SCOTT HAULAGE,TIMMINS START... FIN...

FOOTAGE		DESCRIPTION	SAMPLE			ASSAY		
from	to		no.	from	to	length	Au ppb	Cu ppm
0	35.0	Casing Overburden						
35.0	213.5	Mafic Volcanics:						
		Fine to medium grained basalt; light green. Strongly calcitic with calcitic stringers and veinlets; calcite also healing fractured zones; pervasive calcite locally. Chloritic in bands and fractures in places; Quartz-calcite veins occasionally throughout up to 2 inches thick and 40 deg. to L.C.A. Strongly foliated with calcite bands and buff-colour alteration (ankerite?) from 77.7 to 79.9, with a few specks of pyrite. Occasional bands with biotite (e.g. 97 to 98). Occasional light coloured bands with associated quartz-calcite veining; may mark individual flow margins. Foliation and banding 15 deg. to 25 deg. to L.C.A. generally. 136.8 to 137.8: Quartz-calcite vein with a few blebs on pyrite-pyrrhotite and slivers of wall rock. Abundant bands of calcite in well foliated volcanics from 209.2 to 213.5. Last one foot is reworked and well banded with 1X blebs of pyrite. Out-contact 15 deg. to L.C.A.	20023	176.7	179.7	3.0	20	
213.5	281.5	Graphitic Sediments:						
		Black to black-grey; bands of quartz-calcite throughout as well as stringers and wisps healing fractures; pervasive calcite locally. 233.5 to 235.0: 2 quartz veins up to 5 inches thick with trace pyrite Badly broken and missing core 256 to 267. 228.0 to 235.0: occasional thin (1 to 2 mm) primary pyrite-pyrrhotite bands; some secondary sulphides (pyrite and trace chalcopyrite) fills fractures locally. 236.8 to 239.5: strongly brecciated zone; frequent blebs of pyrite. 276.8 to 281.5: 3 to 5% bands of primary pyrite (trace chalcopyrite) Out-contacts 15 to 20 deg. to L.C.A.	20026 20025	227.5 233.5	233.5 236.0	6.0 2.5	25 30	47
281.5	326	Conglomerate-Greywacke (Mineralized Zone):						
		Conglomerate from 281.5 to 310.5 with large clasts (up to 10 cm) in a quartz-feldspar greywacke matrix. Light apple-green in colour generally but from 291.0 to 301.0 it consists of buff coloured clasts in a grey, siliceous matrix; blue quartz-grains locally; weakly sericitic. Beyond 310.5 to 326: fine grained, well banded and foliated buff- coloured greywacke (ankerite?) weakly sericitic. Strongly siliceous throughout; calcitic veinlets and stringers also throughout.	20027 20028	236.8 276.8	239.5 281.5	2.7 4.7	25 20	50

DIAMOND DRILL RECORD

PROPERTY.... TOWNSHIP.... HOLE #....88-3  
 CLAY NUMBER.... DIP.... COLLAR CO-ORDINATES.... TOTAL LENGTH....  
 ORIENTATION .... AZI.... DRILL COMPANY.... SHEET #....2  
 LOGGED BY.... CORE SIZE.... CORE LOCATION.... START... FIN...

FOOTAGE		DESCRIPTION	SAMPLE			ASSAY		
from	to		no.	from	to	length	Au ppb	Cu ppm
	281.5 to 326:	Continued;						
		Mineralization:						
		Mineralization consists of 5 to 10% disseminated to massive bands and stringers of sulphides-predominantly pyrite to 286 than pyrrhotite predominates to 310.5. Trace chalcopyrite locally.	20029	281.5	283.0	1.5	20	50
			20030	283.0	286.0	3.0	15	58
			20031	286.0	291.0	5.0	15	32
		Mineralization essentially ends beyond 310.5 in the fine grained, buff greywacke. One section 315 to 316 of 5% pyrite-pyrrhotite in stringers.	20032	291.0	296.0	5.0	10	40
			20033	296.0	301.0	5.0	10	60
			20034	301.0	304.0	3.0	20	42
	304 to 306.8:	White bull-quartz vein with greyish patches-no mineralization; a few specks of sericite.	20035	304.0	306.8	2.8	20	
		(NOTE: 306.8 to 309.2-Previously Split)						
			20036	309.2	314.3	5.1	15	
			20037	314.3	319.1	4.8	20	
			20038	319.1	323.7	4.6	10	
			20039	323.7	326.0	2.3	5	
		END OF HOLE.						

## DIAMOND DRILL RECORD

PROPERTY...TONAPAH RESOURCES TOWNSHIP...HUFFMAN HOLE #...88-4  
 CLAMBER... DIP...-45 DEG COLLAR CO-ORDINATES...L 44+00E; 0+60S TOTAL LENGTH...486 FEET  
 ORIENTATION... AZI...360 DEG DRILL COMPANY... SHEET #...1  
 LOGGED BY...R. NORMAN CORE SIZE...BQ CORE LOCATION...SCOTT HAULAGE,TIMMINS START... FIN...

FOOTAGE	DESCRIPTION	SAMPLE			ASSAY			
		no.	from	to	length	Au ppb	Cu ppm	
0	31.0	Casing-Overburden						
31.0	239.9	Mafic Flows:						
		Fine to medium grained basalt; medium to light green; dark green and moderately to strongly chloritic from 31.0 to 36.0. Light green due to epidotisation-(epidote along fractures locally) Abundant weakly to strongly calcitic-siliceous bands, veinlets and stringers throughout. Pervasive calcite locally. Several minor unmineralized quartz-calcite veins occur throughout. 40% quartz-carbonate veining with light cream patches 91.8 to 93.0-significant mineralization.						
	124	20003	124.0	126.8	2.0	50		
		20004	126.8	129.5	2.7	30		
	156.5	156.5 to 158.5: fine grained, dark-green, chloritic-well foliated. Minor rusty oxidation along fractures as 173.5. Tuffaceous (vague cherty banding at 199.8)						
	223	20005	227.5	230.5	3.0	20		
		20006	230.5	232.3	1.8	15		
	232.2	20007	232.3	237.1	4.8	5		
		20008	237.1	239.9	2.8	30	70	
		A few blebs of pyrite at 239.6. Fine grained foliated and locally veined zones may mark individual flow margins. NOTE: that foliation and banding ranges from 60 deg. to L.C.A. at the beginning of hole to 85 deg. to 90 deg. at 160 feet.						
		Mineralizations:						
	34.0	20001	31.0	34.0	3.0	5		
		20002	34.0	36.0	2.0	<5		
		to 70 deg. to L.C.A.						
239.9	240.5	Massive Sulphides:						
		20009	239.9	240.9	1.0	20	140	
		Massive pyrite-pyrrhotite (80% sulphides) with grey, sugary matrix; strongly magnetic; trace chalcopryite.						
240.5	247.0	Conglomerate:						
		20010	240.9	244.5	3.6	10	54	
		20011	244.5	247.0	2.5	20	66	
		Matrix-supported, large buff-coloured volcanic clasts; flattened in a coarse grained quartz-feldspar greywacke matrix that is dark grey in colour. Minor sparse sulphides; 1/2 inch band of pyrite at 247.						



## DIAMOND DRILL RECORD

PROPERTY....		TOWNSHIP....		HOLE #....88-4
CLAY NUMBER....	DIP....	COLLAR CO-ORDINATES....		TOTAL LENGTH....
ORIENTATION ....	AZI....	DRILL COMPANY....		SHEET #....2
LOGGED BY....		CORE SIZE....	CORE LOCATION....	START... FIN...

FOOTAGE	DESCRIPTION	SAMPLE			ASSAY	
		no.	from	to		length
from to					AK PP6	
247.0   310.8	Graphitic Sediments: Dark-grey to black; argillitic locally; well banded and layered 80 deg. to L.C.A. Strongly graphitic; strongly magnetic with disseminated to massive primary pyrite-pyrrhotite in thin bands locally; up to 5% sulphides in places. Coarse grained greywacke 252.7 to 260.1 with quartz and feldspar to 256. Fine grained silty argillite from 256 to 260.1. Abundant calcitic bands, stringers and veinlets beyond 290. Fault gouge and breccia 296 to 300. Out-contact 60-65 deg. to L.C.A.	20012 20013 20014     20015	247 271.0 292.0     308.0	252.7 274.0 294.0     310.8	5.7 3.0 2.0     2.8	5 5 5     15
310.8   486.0	Mafic Volcanics: As 31.0 to 239.9: Fine to medium grained basalt; light green (grey-green locally). Abundant calcitic-siliceous bands and anastomosing hairline stringers throughout; fracture zones locally throughout are healed by siliceous-calcitic material. Fairly abundant white quartz-calcite veins throughout (1 to 2 inches thick) at 55 deg. to 85 deg. to L.C.A. Occasional vein with rare specks of pyrite and chalcopryrite (e.g. at 370.3). Largest quartz-calcite vein occurs at 448.5 to 449.0 with a few specks of pyrite-pyrrhotite. Strongly calcitic in patches. Other minor veins between 449.0 to 451.2. Dark green, chloritic bands locally, particularly beyond 375.	20017     20018 20019 20020 20021 20022	367.8     406.0 423.0 448.5 470.4 475.3	370.3     408.5 466.5 451.2 475.3 480.1	2.5     2.5 3.5 2.7 4.9 4.8	5     10 5 10 10 10
	END OF HOLE.					

**TSL LABORATORIES**

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2  
TIMMINS, ONTARIO

P4N 7C3

TEL: (705) 268-4441 FAX: (705) 268-4420

**CERTIFICATE OF ANALYSIS**

SAMPLE(S) FROM Tonapah Resources Ltd.

REPORT No.

W1854

Vancouver, B.C.

SAMPLE(S) OF core

INVOICE #: 868

P.O.:

Orville Hicks  
Huffman

	Au ppb	Au ozpt	Ag ppm	As ppm	Cu ppm
20001	5		<.2		
20002	<5		.2		
20003	50		.4		
20004	30		.4		
20005	20		.4		
20006	15		.6		
20007	5		.2		
20008	30		.2	40	70
20009	20		.4	6	140
20010	10		.2	25	54
20011	20		.4	35	66
20012	5		.4		
20013	5		.4		
20014	5		.6		
20015	15		.4		
20016	20		.4		
20017	5		.2		
20018	10		.2		
20019	5		.2		
20020	10		.6		

*Hole #4*

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Page 1 of 4

Apr 22/88

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For enquiries on this report, please contact Customer Service Department.  
Samples, Pulps and Rejects discarded two months from the date of this report.

# TSL LABORATORIES

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2  
TIMMINS, ONTARIO  
P4N 7C3

TEL: (705) 268-4441 FAX: (705) 268-4420

## CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM **Tonapah Resoures Ltd.**

REPORT No.

W1854

Vancouver, B.C.

SAMPLE(S) OF **core**

INVOICE #: 868  
P.O.:

Orville Hicks  
Huffman

	Au ppb	Au ozpt	Ag ppm	As ppm	Cu ppm
20021	10		.2		
20022	10		.2		
20023	20		<.2		
20024	15		.2		
20025	30		.8		
20026	25		1.0	105	47
20027	25		1.6		
20028	20		<.2	14	50
20029	20		<.2	100	50
20030	15		.8	69	58
20031	15		.2	3	32
20032	10		.2	8	40
20033	10		<.2	7	60
20034	20		.2	2	42
20035	20		.2		
20036	15		.2		
20037	20		.2		
20038	10		<.2		
20039	5		.4		
20040	20		.2		

*Hole #3* (bracketed next to samples 20026-20030)

*Hole #2* (next to sample 20040)

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Apr 22/88

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Samples, Pulps and Rejects discarded two months from the date of this report.

**TSL LABORATORIES**

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2  
TIMMINS, ONTARIO  
P4N 7C3  
TEL: (705) 268-4441 FAX: (705) 268-4420**CERTIFICATE OF ANALYSIS**

SAMPLE(S) FROM Tonapah Resources Ltd.

Vancouver, B. C.

REPORT No.  
W1854INVOICE #: 868  
P. O.:

SAMPLE(S) OF Core

Orville Hicks  
Huffman

	Au ppb	Au ozpt	Ag ppm	As ppm	Cu ppm
20041	5		6.0		
20042	5		1.6		
20043	30		8.0		
20044	5		.2		
20045	30		1.8	97	36
20046	10		.2	11	40
20047	20		.2	10	34
20048	5		<.2	5	40
20049	10		5.8	5	40
20050	10		.4		
20051	20		.8		
20052	20		3.2		
20053	10		.2	57	24
20054	10		.2		
20055	10		3.8		
20056	20		5.6		
20057	30		2.6		
20058	5		0.6	3	16
20059	10		4.0	3	24
20060	5		4.6	16	38

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Apr 22/88

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**TSL LABORATORIES**

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2

TIMMINS, ONTARIO

P4N 7C3

TEL: (705) 268-4441 FAX: (705) 268-4420

**CERTIFICATE OF ANALYSIS**SAMPLE(S) FROM **Tonapah Resoures Ltd.**

REPORT No.

W1854

Vancouver, B.C.

INVOICE #: 868

P.O.:

SAMPLE(S) OF **core****Orville Hicks  
Huffman**

	Au ppb	Au ozpt	Ag ppm	As ppm	Cu ppm
20061	5		.2	27	70
20062	10		<.2	62	90
20063	5		.2		
20064	10		.2		
20065	5		.4		
20066	30		.2		
20067	15		.2		
20068	20		5.6		
20069	20		3.6		
20070	15		1.0		
20071	15		.2		
20072	10		.2		
20073	20		.2	11	74

*HOLK #1*

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**TSL LABORATORIES**

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2

TIMMINS, ONTARIO

P4N 7C3

TEL: (705) 268-4441 FAX: (705) 268-4420

**CERTIFICATE OF ANALYSIS**

SAMPLE(S) FROM Tonapah Resources Ltd.

Vancouver, B.C.

REPORT No.

W1856

SAMPLE(S) OF Pulps

INVOICE #: 871

P.O.:

Orville Hicks  
Huffman

	Zn ppm	Hg ppm
20040	61	
20041	82	
20042	20	
20043	380	
20044	150	
20045	110	
20046	71	
20047	45	
20048	50	
20049	52	
20050	90	
20051	73	
20052	160	
20053	110	
20054	350	
20055	61	
20056	64	
20057	48	
20058	60	
20059	66	

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Samples, Pulps and Rejects discarded two months from the date of this report.

**TSL LABORATORIES**

DIV. BURGNER TECHNICAL ENTERPRISES LIMITED

2031 RIVERSIDE DRIVE, UNIT 2

TIMMINS, ONTARIO

P4N 7C3

TEL: (705) 268-4441 FAX: (705) 268-4420

**CERTIFICATE OF ANALYSIS**

SAMPLE(S) FROM Tonapah Resources Ltd.

Vancouver, B.C.

REPORT No.

W1856

SAMPLE(S) OF  
PulpsINVOICE #: 871  
P.O.:Orville Hicks  
Huffman

	Zn ppm	Hg ppm
20060	58	
20061	85	
20062	165	
20063	120	
20064	230	
20065	280	
20066	310	
20067	100	
20068	120	
20069	49	
20070	64	
20071	55	
20072	53	
20073	73	

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For enquiries on this report, please contact Customer Service Department.  
 Samples, Pulps and Rejects discarded two months from the date of this report.

APPENDIX III

COSTS.



ALL-TERRAIN TRACK RE: Frontier Diamond  
SALES & SERVICE LTD. Drilling Ltd.

R.R. #2  
Airport Road  
TIMMINS, ONTARIO P4N 7C3  
(705) ~~264-2011~~ 268-3888 or 268-4831

# INVOICE

No 3053

INVOICE DATE	SALESPERSON
March 28, 1988	
SHIP TO	

TO Tonapah Resources Incorporated  
Suite 1258  
409 Granville Street, Vancouver, B.C.  
V6C 1T 2  
Terms: Net 30 days. 2% interest (24% annually)  
charged on accounts over 30 days.

YOUR ORDER NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS	
QUANTITY	DESCRIPTION		UNIT PRICE	TOTAL	
HOLE#1	376 feet diamond drill core				
HOLE# 2	306 feet diamond drill core				
HOLE# 3	326 feet diamond drill core				
HOLE# 4	486 feet diamond drill core				
	6 feet as per contract				
	1500 feet	@ \$36.00			54,000 00

*Paid Telstar Chk 850  
851*

ORIGINAL

Thank You



June 16, 1988

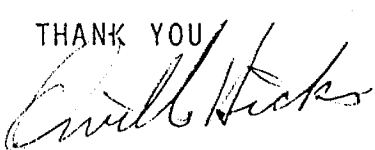
Tonapah Resources Inc  
Suite 1258 - 409 Granville Street  
Vancouver, British Columbia  
V6C 1T2

Re: Statement - Expenses Huffman Township Property

---

Property Inspection - Road Location - Helicopter	\$ 843.80 ✓
Spotting Diamond Drill Hole Locations skidoo rental	50.00
Truck rental - 12 days            2940 km @ .45¢/km	1,323.00
Meals and Supplies	169.08
Core boxes	657.40 ✓
10 man days @ \$250.00/day	2,500.00
6 man days @ \$150.00/day	900.00
Logging Core and typing logs	640.00
Report on Property	3,000.00
Assaying	<u>1,299.80</u>
TOTAL AMOUNT NOW DUE	\$11,383.08
Advance received	<u>6,000.00</u>
BALANCE DUE	<u><u>5,383.08</u></u>

THANK YOU

  
Orville Hicks

/ch

c.c. Ken M. Kary  
Telstar Resources Ltd

*Paid - Telstar - eks 852  
970*



**MARLIN HELICOPTER INC.**  
 BOX 5, CLAIRMONT, ALBERTA T0H 0W0  
 TELEPHONE: (403) 567-2334

**INVOICE**

001163

FLIGHT REPORT NO. \_\_\_\_\_  
 INVOICE DATE March 25/88  
 JOB NO. \_\_\_\_\_  
 LOCATION Kamiskotia Lake  
 P.O. NO. \_\_\_\_\_  
 REQUISITION NO. \_\_\_\_\_  
 ORDERED BY \_\_\_\_\_  
 TERMS Net 30 days

724162 Ontario Ltd.  
 Box 1830  
 Timmins, Ontario  
 P4N 7W9

DAILY FLIGHT REPORT NO.	PILOT	A/C REGISTRATION	A/C TYPE	
	J. Levesque	C-GXNM	Bell 206B	
	FLIGHT DATE	HOURS	RATE	AMOUNT
301	March 4/88	.9	475.00	\$ 427.50
304	March 12/88	1.5	475.00	<u>712.50</u>
				1140.00
	Fuel supplied by Marlin			<u>178.80</u>
				<u>\$1318.80</u>
			475	<u>475.00</u>
				<u>843.80</u>

*Portion of bill to Tomopak = \$ 843.80*

**PLEASE PAY TOTAL ►**

TECHNICALSERVICE LABORATORIES  
 2031 RIVERSIDE DRIVE, UNIT 2  
 TIMMINS, ONTARIO  
 P4N 7B0

PLEASE RETURN THIS STUB  
 WITH YOUR REMITTANCE  
 TSL LABORATORIES

Account Number T010 Statement Date 04/30/88

Account Number T010 Statement Date 04/30/88

APAC RESOURCES LTD.  
 MAX BRIDEN  
 GRANDVILLE ST-STE409  
 COUVER, B.C. V6S 1T2

Terms NET

TONAPAN RESOURCES LTD.

VOICE	TYPE	CHEQUE NO.	CHARGES	CREDITS	AMOUNT DUE
	IN		1213.00		1213.00
<p>APPRECATE YOUR PATRONAGE.</p>					

INVOICE	AMOUNT DUE
868	1213.00
<p>TOTAL AMOUNT DUE 1213.00</p>	

CURRENT	OVER 30 DAYS	OVER 60 DAYS	OVER 90 DAYS	NEW FINANCE CHARGE	NEW BALANCE
1213.00	.00	.00	.00	.00	1213.00

TOTAL AMOUNT DUE	1213.00
CHECK ITEMS BEING PAID	

avoid additional finance charges, pay by closing date of 05/31/88

*46.40 on 1st bill*

AMOUNT REMITTED \_\_\_\_\_



ALL-TERRAIN TRACK RE: Frontier Diamond  
 SALES & SERVICE LTD. Drilling Ltd.

R.R. #2  
 Airport Road  
 TIMMINS, ONTARIO P4N 7C3  
 (705) ~~264-2011~~ 268-3888 or 268-4831

# INVOICE

No 3054

INVOICE DATE March 28, 1988	SALESPERSON
SHIP TO	

TO Tonapah Resources Incorporated  
Suite 1258, 409 Granville Street  
Vancouver, B.C. V6C 1T2

Terms: Net 30 days. 2% Interest (24% annually)  
 charged on accounts over 30 days.

YOUR ORDER NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS	QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
					76	Core boxes @	8 65	657 40
						Total amount		657 40

*Mail Febstar Ch # 386*

ORIGINAL

*Thank You*

TELSTAR RESOURCES LTD.

#400 - 635 - 8TH AVENUE S.W.

CALGARY, ALBERTA T2P 3M3

NO 886

April 22 19 88

PAY SIX HUNDRED and FIFTY-SEVEN ----- 40 DOLLARS \$ 657.40  
PER 100

All-Terrain Track Sales & Services Ltd.  
R.R. No. 2, Airport Road  
Timmins, Ontario  
P4N 7C3

TELSTAR RESOURCES LTD.

CANADIAN IMPERIAL BANK OF COMMERCE  
628 - 8TH AVENUE S.W.  
CALGARY, ALBERTA

PER

NOT NEGOTIABLE

⑆000886⑆ ⑆00019⑆010⑆ 93⑆07214⑆

TELSTAR RESOURCES LTD.

DATE	DESCRIPTION	AMOUNT
	<p>Re: Invoice 3054 March 28, 1988 to Tonopah Resources</p> <p><i>A/R P&amp;I CHARGED G&amp;D 1/2/88</i></p>	

TELSTAR RESOURCES LTD.  
 #409 - 635 - 8TH AVENUE S.W.  
 CALGARY, ALBERTA T2P 3M3

N2 904

May 16 19 88

PAY SEVENTY-FIVE 00 DOLLARS \$ 75.00

Amwell Consultants Ltd.  
 1258 - 409 Granville Street  
 Vancouver, B.C.  
 V6C 1T2

TELSTAR RESOURCES LTD.

CANADIAN IMPERIAL BANK OF COMMERCE  
 628 - 8TH AVENUE S.W.  
 CALGARY, ALBERTA

NOT NEGOTIABLE

PER

⑆000904⑆ ⑆00019⑆010⑆ 93⑆07214⑆

TELSTAR RESOURCES LTD.



**Chemex Labs Ltd.**  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 212 BROOKS BANK AVE NORTH VANCOUVER  
 BRITISH COLUMBIA CANADA V7J-2C1

To: AMWELL CONSULTANTS LTD.

1258 - 409 GRANVILLE ST.  
 VANCOUVER, BC  
 V6C 1T2

VOICE NUMBER 18813630 \*

APR - 8

DATE	DESCRIPTION	AMOUNT
	Re: Invoice 18813630	

5176.

CUSTOM CHEQUES OF CANADA / VERIFIED

SAMPLES ANALYZED	UNIT PRICE	AMOUNT
5	11.00	55.00
5	4.00	20.00
Total Cost \$		75.00
TOTAL PAYABLE \$		75.00

S/B PLE I  
 OUNDRY Gold

5176



TELSTAR RESOURCES LTD.  
#400 - 635 - 8TH AVENUE S.W.  
CALGARY, ALBERTA T2P 3M3

NO 852

March 21 1988

PAY TO THE ORDER OF SIX THOUSAND -----00 DOLLARS \$ 6,000.00  
100

Orville Hicks

5174

TELSTAR RESOURCES LTD.

CANADIAN IMPERIAL BANK OF COMMERCE

TELSTAR RESOURCES LTD.  
#400 - 635 - 8TH AVENUE S.W.  
CALGARY, ALBERTA T2P 3M3

NO 851

March 21 1988

PAY TO THE ORDER OF TWENTY-SEVEN THOUSAND -----00 DOLLARS \$ 27,000.00  
100

Frontier Diamond Drilling Ltd.  
Airport Road  
Timmins, Ontario  
P4N 7C3

5176

TELSTAR RESOURCES LTD.

TELSTAR RESOURCES LTD.  
#400 - 635 - 8TH AVENUE S.W.  
CALGARY, ALBERTA T2P 3M3

NO 850

March 21 1988

PAY TO THE ORDER OF TWENTY-SEVEN THOUSAND -----00 DOLLARS \$ 27,000.00  
100

Frontier Diamond Drilling Ltd.  
Airport Road  
Timmins, Ontario  
P4N 7C3

5174

TELSTAR RESOURCES LTD.

CANADIAN IMPERIAL BANK OF COMMERCE  
635 - 8TH AVENUE S.W.  
CALGARY, ALBERTA

NOT NEGOTIABLE

⑈000850⑈ ⑆00019⑆010⑆ 93⑆07214⑆

TELSTAR RESOURCES LTD.

DATE	DESCRIPTION	AMOUNT
	SWITZE AREA, ONTARIO GOLD CLAIMS	

TELSTAR RESOURCES LTD.

#400 - 035 - 8TH AVENUE S.W.

CALGARY, ALBERTA T2P 3M3

No 970

July 4 19 88

PAY TO THE ORDER OF

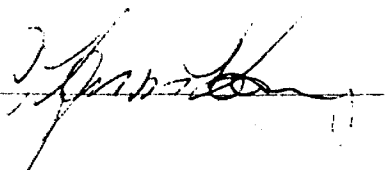
FIVE THOUSAND THREE HUNDRED and EIGHTY-THREE <sup>08</sup>/<sub>100</sub> DOLLARS \$ 5383.08

724162 Ontario Ltd.

TELSTAR RESOURCES LTD.

CANADIAN IMPERIAL BANK OF COMMERCE  
628 - 8TH AVENUE S.W.  
CALGARY, ALBERTA

PER



⑈000970⑈ ⑈00019⑈010⑈ 93⑈07214⑈

⑆ CUSTOM CHEQUES OF CANADA / VOUCHER

TELSTAR RESOURCES LTD.

DETACH AND RETAIN THIS STATEMENT  
THE ATTACHED CHEQUE IS IN PAYMENT OF ITEMS DESCRIBED BELOW

DATE	DESCRIPTION	AMOUNT
	Re: Orville Hicks Statement dated June 16, 1988	

C.R. Harris, P.Eng.,  
2709 Wembley Drive  
North Vancouver, B.C.  
V7J 3B7

July 15, 1988

Tonopah Resources Inc.,  
1258 - 409 Granville Street,  
Vancouver, B. C.

STATEMENT to July 15, 1988

Professional Fees

Review of Huffman Twp. drill program, results and preparation of OMEP Report. ....	\$ 400.00
---	-----------

*Paid Aug 5/88*  
*[Signature]*  
*Thanks.*