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ONTARIO GEOLOGICAL SURVEY  
Open File Report 5379

GOLD DEVELOPMENT POTENTIAL  
IN  
EASTERN ONTARIO

by

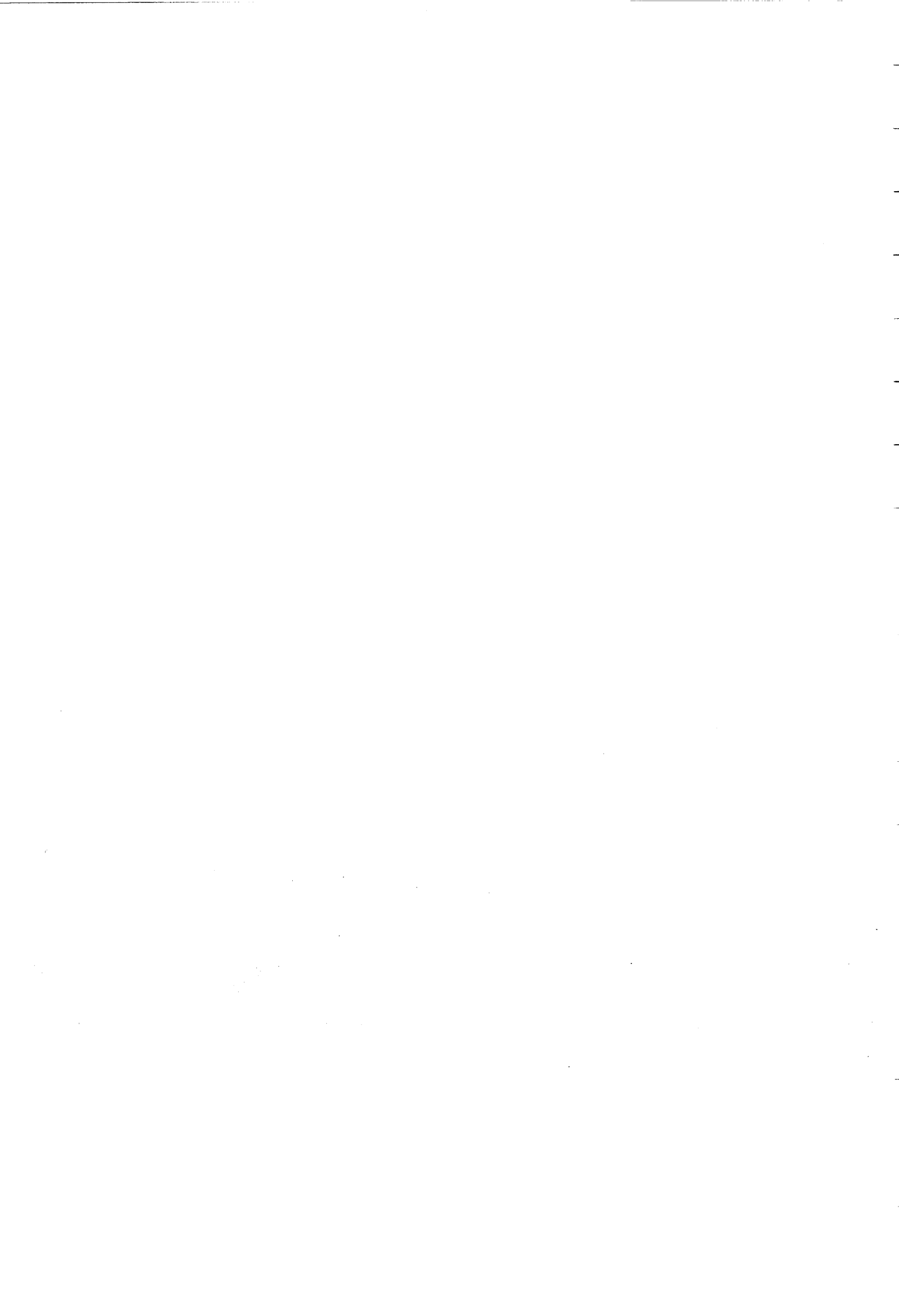
P. W. KINGSTON and V. C. PAPERTZIAN

1982

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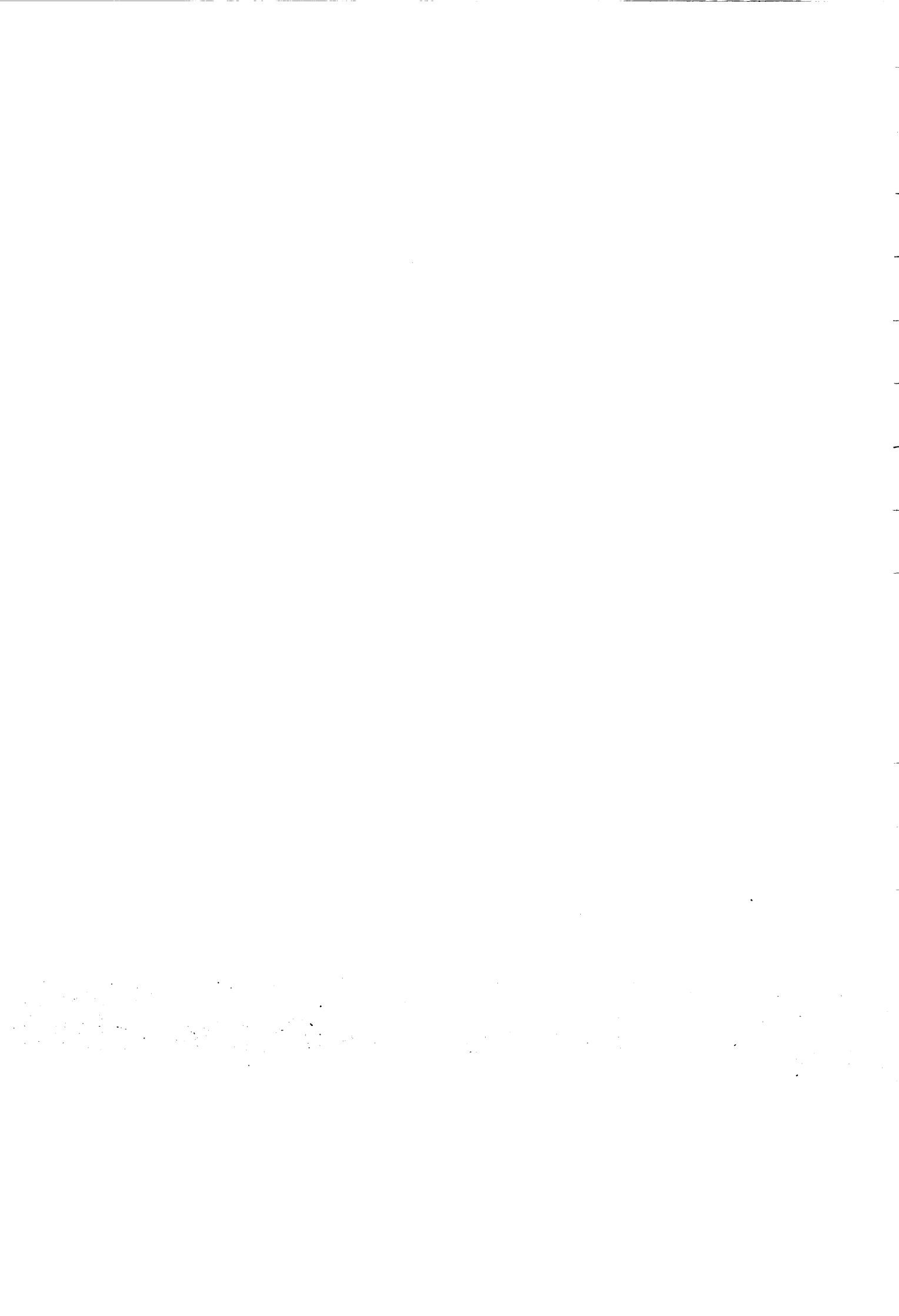
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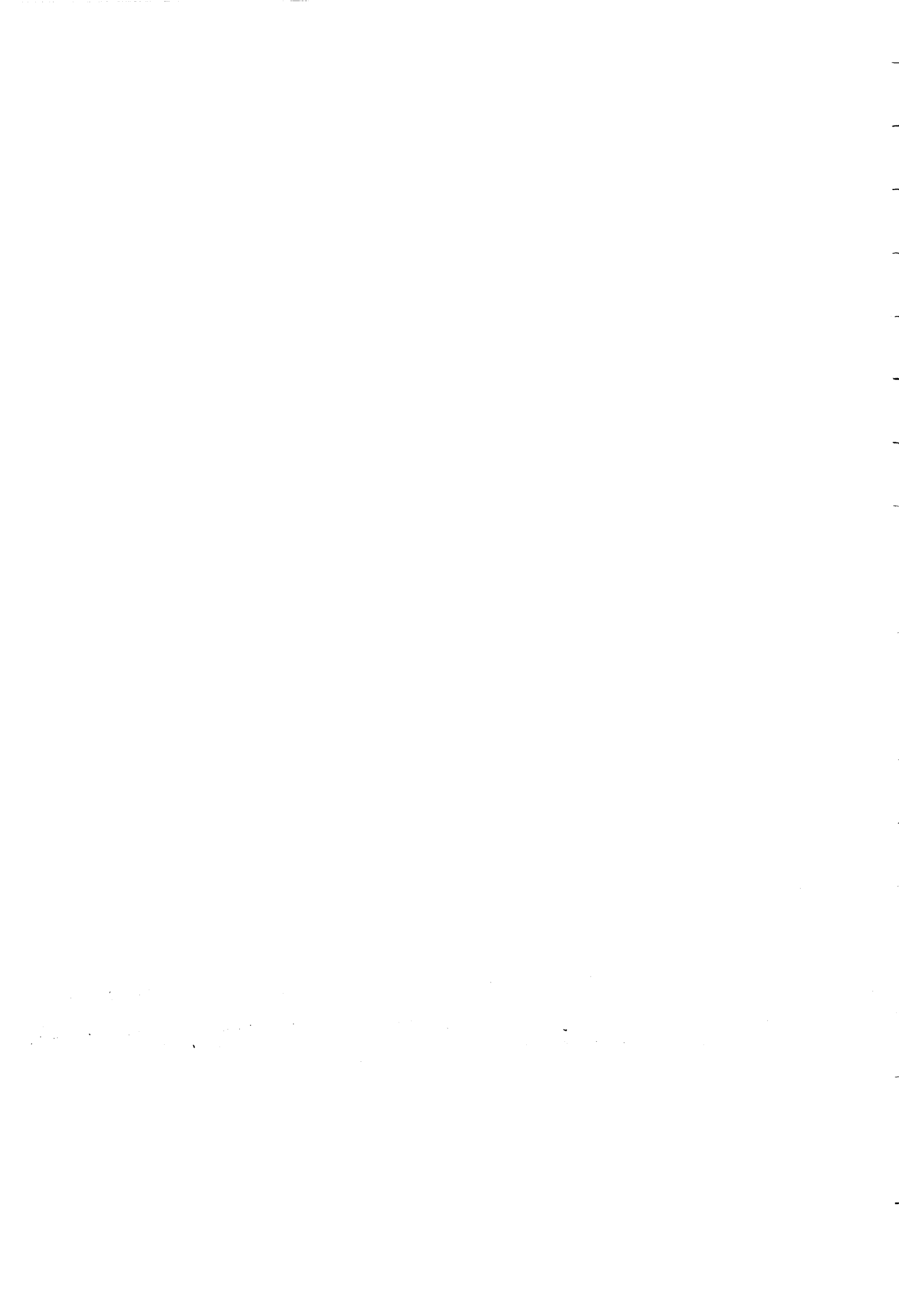


## FOREWORD

This report is based on a literature review completed in the spring of 1982. It encompasses 16 gold deposits in three counties: Hastings, Frontenac, and Lennox and Addington, all in Eastern Ontario. All these deposits are Precambrian in age and are located in the Grenville subprovince.

This review of Gold deposits in Eastern Ontario analyzes the likely scale and location of any developments and suggests which properties appear to hold the most promise.

E.G. Pye  
Director  
Ontario Geological Survey





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## Gold Development Potential in Eastern Ontario

by P.W. Kingston<sup>1</sup> and V.C. Papertzian<sup>2</sup>

### Introduction

Gold was first discovered in Ontario at the Richardson Mine near Eldorado in 1866. This find was followed over the next 30 years by the discovery of dozens of small prospects, as well as several larger deposits. The period of greatest activity and production lasted from 1895 to 1908 during which time 12 properties were in production. It was not until the mid 1930's that interest was revived, at which time Cominco Limited carried out extensive underground development at the Cordova and Addington mines, as well as detailed and surface exploration on several other properties in the area. All production again ceased in 1939 and it was not until the late 1970's that the great increase in the price of gold stimulated, once again, interest in these old properties.

In this report we attempt briefly to analyse the possible scale and location of any new developments and to suggest which properties appear to hold the most promise.

The accompanying pages and the table briefly summarize the pertinent geology, development history, production, reserves, and development possibilities for the most significant gold properties in Eastern Ontario.

For further data, the reader is referred to "Gold Deposits of Ontario, Part 2, M.D.C. 18" and also to the assessment files and records in the Resident Geologist's office in Tweed, and also the Assessment Files Research Office, Ontario Geological Survey, Toronto.

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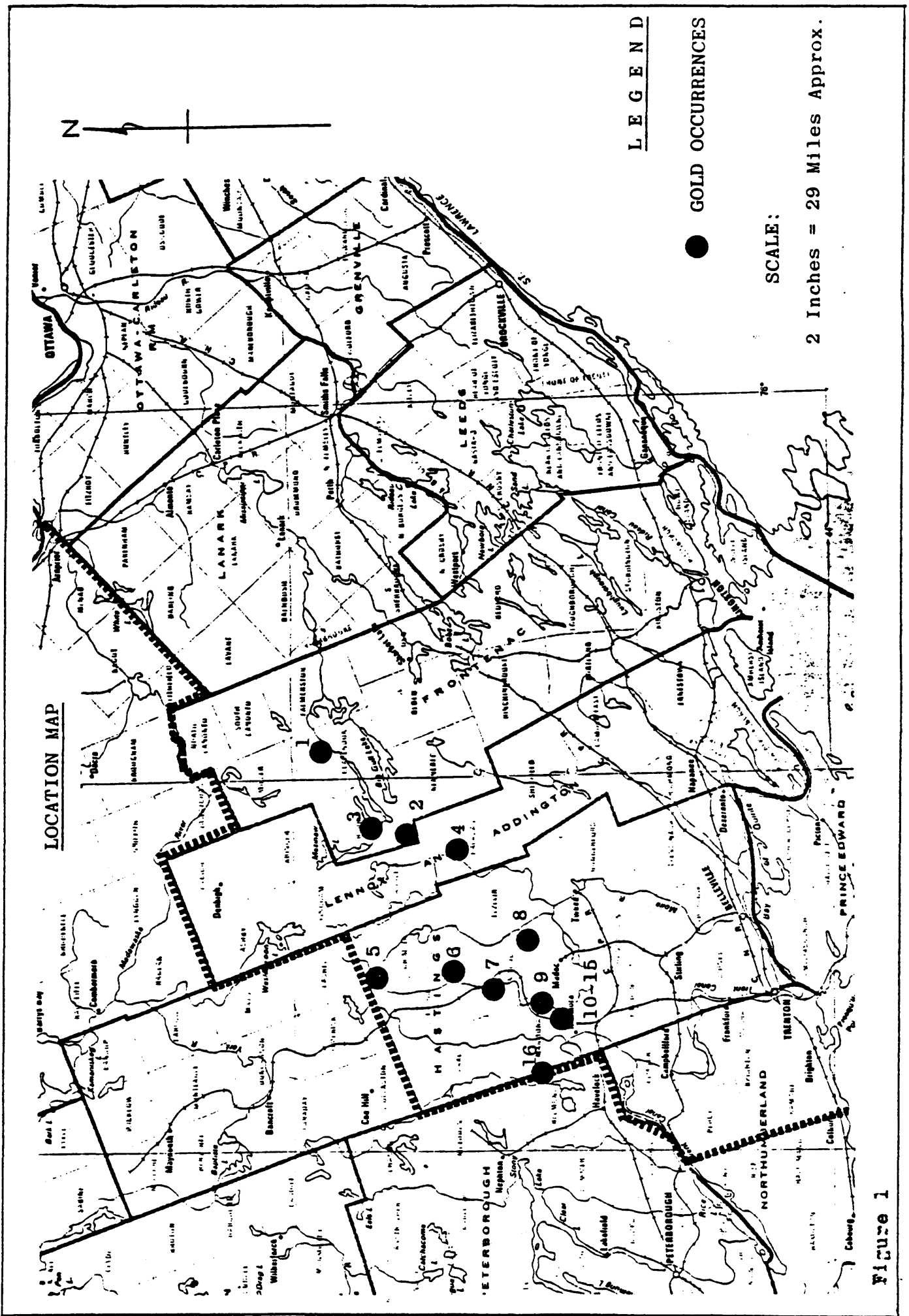


Table 1  
Summary of Production and Reserves - Southeastern Ontario Gold Mines

<u>Name of Mine</u>	<u>Ore Milled</u> (Short tons)	<u>Gold Recovered</u> (Az/Au)	<u>Waste Rock Dumps</u> (Short Tons), (Oz/Au)	<u>Tailings</u> (Short Tons)	<u>Reserves Proven &amp; Probable</u> (Short tons), (Oz Au/ton)	<u>Reserves Possible</u> (Short tons), (Oz Au/ton)	<u>References</u>
1. Boerth Prospect	?	13	500	-	-	-	
2. Ore Chimney Prospect	200 ?	0	11,000 @ 0.04	200 ?	11,000 @ 0.2	30,000 @ 0.1 (?)	Specific references for each deposit are listed on one page descriptions accompanying this report.
3. Star of the East	976	134	2,500	?	-	-	
4. Golden Fleece (Addington) 1500+ (?)		65 (?)	20,000-30,000	?	200,000 @ 0.13	200,000+@0.13 (?)	
5. Gilmour	550	172	5,000 (?)	?	-	-	
6. Craig Gold Mine	1850	248	10,000-15,000	?	-	-	
7. Bannockburn Prospect	?	3.5	500	nil	-	-	
8. Sophia Mine	1800	110	3,000	?	-	-	
9. Sovereign	1962	370	?	?	-	-	
10. Deloro Mine	39,143	10,360	?	30,000(+?)	-	-	
11. Gatling 5-acre Mine	6,114	2,353	2,000-3,000	?	-	-	
12. Pearce Mine	239	302	?	?	-	-	
13. Cook Mine	1,483	389	?	?	-	-	
14. Dean & Williams Mine	1,000	500	?	?	-	-	
15. Ackerman Mine	0	0	2,000	nil	-	-	
16. Cordova Mine	120,670	22,774	30,000(?)	30,000(+?)	?	100,000 @ 0.10	
<b>TOTAL (SHORT TONS)</b>	<b>177,487</b>	<b>39,794</b>	<b>100,000</b>	<b>60,000(+?)</b>	<b>211,000</b>	<b>330,000</b>	

Possible reserve figures estimated by the authors are based upon the literature search. These figures, for which the Ontario Geological Survey assumes no responsibility for accuracy, are speculative only.

## Analysis of Mine Development Potential

Of the 16 properties considered in this study, 4 appear to hold some promise of renewed underground mining based on our present knowledge. Both the Cordova and Deloro mines were large producers, by local standards, for many years. In addition, the Addington and Ore Chimney Mines were extensively developed underground but had no history of production.

A) The Cordova Mine has underground workings on 10 levels and the largest record of production of any mine in the area. Only scant data are available on the extent of undeveloped and/or un-mined ore zones. A cautious estimate of reserves by the authors based on plans and sections in Satterly (1943) is 100,000 tons grading 0.10 oz/ton Au. These reserves are divided among some 8-10 small ore shoots so that mining costs may prove to be high. Approximately half to two-thirds of the proven mineralized zones have been mined out by the previous operators. Rehabilitation of the extensive old workings to recover the many small remaining known ore shoots would be costly.

B) The Deloro Mine operated from 1870 until final closing in 1903. The operation consisted of several companies working at least 4 properties along a 3500 foot long zone of parallel quartz veins. Underground workings are extensive (4500 feet of shafts and drifts). Between 1904 and 1961 the site was used as a smelter and reduction plant, largely obliterating and burying the former mining operations. The present site is a wasteland of half-demolished buildings and slag heaps, and is a major source of arsenic pollution resulting from 50 years of arsenic trioxide production. The Ministry of Environment is operating an on-going and very costly site rehabilitation program and water-treatment plant and is directly involved in site clean-up and rehabilitation. It is probable that this

activity may preclude an effective exploration or development program for the foreseeable future.

C) The Addington Mine was discovered in 1881 and was then known as the Golden Fleece Mine. First major developments from 1915-1922 produced bullion valued at \$10,000. The property changed hands several times until Cominco Limited acquired it in 1935; this company carried out a very extensive development program, deepening the shaft to 525 feet and sinking a winze to the 775-foot level. Over 10,000 feet of lateral development on 7 levels blocked out 200,000 tons of ore grading about 0.13 oz Au/ton (Harding, 1944). Cominco closed the mine in 1939 and the property has remained unexplored until 1981 at which time E & B Explorations Inc. of Vancouver, B.C. acquired the operating rights. In the summer of 1981 E & B did 10,000 feet of drilling, largely exploring the northern parts of the vein system at depth.

In the authors' opinion it is reasonable to conclude that reserves are at least doubled as a result of this program. E & B Explorations Inc. are carrying out an additional drilling program in 1982.

Proven and possible reserves can thus be estimated at approximately 400,000 tons grading about 0.13 oz Au/ton. The mineralized gold-bearing ore zone has a maximum width of 35 feet. The ore shoots range from 150 to 500 feet in length and are traceable vertically over several levels. The possibility of an economic mining operation is considered favourable because the underground workings are already developed, because the ore shoots have good width and fair continuity, and because there is at least a reasonable chance of developing additional reserves.

D) The Ore Chimney Mine (Bey Mine) was first developed between 1911 and 1926 by a shaft to 400 feet and a winze to 500 feet. About 2700 feet of lateral development on seven levels outlined a continuous narrow (1-5 feet) quartz vein carrying gold and mixed sulphides (The Bey Mines Limited, 1935). In 1932 the mine was dewatered and was resampled by Colin W. Campbell. The following is taken from his reports of December 31, 1932, and March 1, 1937 (Resident Geologist's Commodity files). The ore shoot is continuous from 100 feet below surface to the deepest workings (500 feet). Grade increases with depth, as does length and width. A deep drill hole in 1930 intersected 7 feet of vein (3.25 feet true width) assaying 0.16 oz Au/ton, 7.8 oz Ag/ton, 3.2% Pb, and 1.9% Zn. The ore shoot is narrow (3.5 feet) but high in grade (Average 0.37 oz/ton Au for the 500 foot level and the winze), however it will be necessary to outline considerably more ore than presently indicated before considering going into production. Exploration below the 500 foot level, and along the eastern extensions of the vein below the 150 foot level would appear to be the most promising locations. Taken with the waste rock pile on surface (11,000 tons @ 0.04 oz/ton Au estimated by the authors, May, 1980) this property deserves further exploration.

#### Analysis of Tailings Retreatment Potential

There are only two sites in Eastern Ontario with significant reserves of gold-bearing tailings: these are Deloro and Cordova minesites.

A) The Cordova Mine milled 120,670 tons of rock and the resulting tailings must be on the property, although the bulk of the tailings have not been located. Tailings from Cominco Limited's operations on this property in the 1930's (some 33,000 tons) have been identified in part and appear to contain recoverable quantities of gold.



(Lasir Mines Inc. operated a test batch leach plant on these tailings in 1981). Whether or not the bulk of the tailings are recoverable and can be profitably treated is unknown.

B) The Deloro Mine milled 39,143 tons of gold ore in the 1871-1903 period. The tailings are located in what is now a swampy depression just west of the old Deloro plant site. No data is available on the gold content of these tailings.

In addition to the above tailings from the early gold mines, the Deloro plant site also contains wastes from the treatment of African, Moroccan, and Canadian cobalt ore concentrates between 1940 and 1961. This processing yielded approximately 100,000 dry tons of ferric hydroxide mud tailings now contained in a 20-acre pond. Four analyses of these tailings by Deloro Stellite, Limited, November, 1970 (in Resident Geologist's Files, Tweed, Ontario) show the following range:

Ag	0.8	-	3.7 oz/ton
As	4.1	-	5.9%
Co	0.2	-	4.1%
Ni	0.05	-	0.4%
Cu	0.35	-	1.35%
Fe	8.5	-	12.9%
Pb	104		ppm
Zn	153		ppm
Au	trace		

Retreatment of these tailings in a local custom mill might well prove quite profitable, and at the same time help to ameliorate environmental damage caused by these tailings.

### Analysis of Waste Rock Milling Potential

The sixteen properties described in this report contain at least 100,000 tons of recoverable "waste" rock as estimated by the authors during field inspections of the properties. Most of this rock is true mine waste rock with low gold content (0.01 - 0.04 oz Au/ton, estimated by the authors, and based on Ontario Department of Mines Annual Reports, and on the reports and files in the Resident Geologist's office, Tweed, Ontario) but some of it is "mill rock" stockpiled by previous operators who either lacked a mill or who stockpiled the ore for other reasons. In some cases such as the Cordova mine some portions of the rock piles assay up to 0.25 oz Au/ton (LaSir Mines Inc., personal communication). It is doubtful if the whole 100,000 tons would average over 0.04 oz Au/ton but since most of the rock is easily accessible by truck on existing roads this may present an interesting option to any custom mill operator in the area. The tonnages of waste rock on the various properties are listed in Table 1.

TABLE 2

Probable and Possible Recoverable Gold (All Sources)\*

<u>Mine</u>	<u>Ounces Gold</u>
Addington	52,000
Cordova	12,000
Ore Chimney	5,200
Deloro	1,500 (?)
Craig	600 (?)
Gilmour	200 (?)
Sophia	120 (?)
Star of the East	100 (?)
Ackerman	80 (?)

\* These figures are very approximate and are compiled only to give some idea of the relative importance of the various properties. "All Sources" includes rock in place, rock dumps, and tailings. These figures are derived from the data given in Table 1, from files and records in the Resident Geologist's office, Tweed, Ontario, and from field inspections by the authors.

These figures, for which the Ontario Geological Survey assumes no responsibility for accuracy, are speculative only.

Summary

In summary the following known gold processing or development opportunities exist in Eastern Ontario:

Underground Ore In Situ

Proven and Probable	211,000 tons @ 0.13 oz/ton Au
Possible	(200,000 (+) tons @ 0.13 oz/ton Au (130,000 tons @ 0.1 oz/ton Au

Gold Tailings

Probable	60,000 tons grade unknown
Possible (not located)	100,000 tons grade unknown

Ferric Hydroxide Tailings (Deloro)

Proven tonnage (dry)	100,000 tons low Au, 0.8-3.7 oz/ton Ag, +Cu, Co, Ni, etc.
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Waste Rock

Proven tonnage	100,000 + tons @ 0.02-0.04 oz Au/ton
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This analysis does not address the problem of ownership or availability of these gold-bearing materials. In some cases establishing legal ownership may pose problems, while in others the economics of constructing access roads may nullify a resource.

In addition, environmental problems, already-completed rehabilitation projects, and on-going remedial pollution-control measures may also make certain reserves unavailable.

Total probable and possible recoverable gold from the various properties is listed in Table 2. Work to date suggests that at the Addington Gold Mine (Cominco/E & B Explorations Inc.) there may be in excess of 0.4 million tons @ 0.13 oz/ton Au in the proven and possible categories over a strike length of 3500 feet and to a depth of 700 feet. The ore zones have widths up to 20 feet and the ore appears to have no milling difficulties. A mill built on or near this property could readily treat ore and treatable waste rock from the Boerth, Ore Chimney, Star of the East, and other prospects in the area. This location would however mean a 40-mile truck haul from Cordova and a 32-mile haul from Deloro.

1.

NAME: BOERTH PROSPECT

LOCATION: Clarendon Township, concession 7, lot 28

ACCESS: The Boerth prospect can be reached by driving east for two miles from Fernleigh on highway #506. One then turns north and drives approximately half a mile to Swaggers Lake. One then traverses half mile east of the lake to the prospect.

DEVELOPMENT HISTORY: 1898-1900 "Hattie B" shaft, inclined 65°SW sunk to 120 feet with 53 feet of drifting at this level. "Uncle Sam Shaft" sunk to 35 feet; a ten stamp mill erected. 1952: 3 diamond drill holes to a depth of 547 feet. 1963-64: 47 diamond drill holes totalling 7,054 feet by Ganda Silver Mines Limited.

GEOLOGY: Paragneiss interbanded with crystalline limestone is cut by steeply-dipping quartz veins containing arsenopyrite and tremolite. The quartz veins cut diagonally across the paragneisses at an angle of 45 to 60°. The veins do not persist in the marble.

RESERVES (TONNAGE & GRADE): Thirteen channel samples of seven different veins up to 3 feet in width average 0.67 ounces of gold per ton. In 1900, 13 ounces of gold was produced from an unknown amount of ore. No ore reserves blocked out. Possible 500 tons waste rock.

COMMENT ON PROSPECTS: High-grade narrow quartz veins; no ore reserves known. Must be considered as a promising undeveloped prospect.

REFERENCES:

ODM, 1956, Vol. 65, Pt. 7, pp. 33, 34, 38, 39.

OBM, 1900, Vol. 9, pp. 93, 94.

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, pp. 33, 34.

2.

NAME: ORE CHIMNEY PROSPECT

LOCATION: Barrie Township, concession 1,  
lots 34 to 36

ACCESS: One mile west of highway #41 on a paved  
secondary road; (Harlowe road).

DEVELOPMENT HISTORY: 1912-1926 the Ore Chimney Mining  
Company sunk a 408 foot shaft. From the 400 foot  
level a winze was sunk to the 525 foot level. Approx-  
imately 2,500 foot of lateral development was done  
on six levels. A twenty stamp mill was installed.  
1932: Underground and surface diamond drilling by  
the Bey Mines Limited. 1950-1951: Surface work by  
Eastwebb Mines Limited. 1956-1957: 4,681 foot of  
diamond drilling (Cavalier Mining Corporation Lim-  
ited.)

GEOLOGY: Mafic metavolcanics, trending northeast and  
dipping vertically, contain, near the contact with  
conglomerate and quartzite, a gold quartz vein with  
associated pyrite, galena, sphalerite, and chalcopyrite  
mineralization.

CURRENT EXPLORATION ACTIVITY: (1975-1982): Summer of  
1980 the shaft was partially cleared of debris and  
an attempt was made at dewatering by a New York  
company: Cox International Mining Corporation.

RESERVES (TONNAGE & GRADE): Probable 11,000 tons grading  
about 0.2/ton Au and 5.6 oz/ton Ag in situ in under-  
ground workings. Possible additional 30,000 tons  
grading 0.1 oz/ton Au. Waste rock dump is estimated  
at 11,000 tons grading 0.04 oz/ton Au and 2.2 oz/ton  
Ag. No tailings.

COMMENT ON PROSPECTS: This property is a developed pros-  
pect, but the dimensions of the explored ore shoot are  
small. The rock dump might be economically processed  
at a nearby custom mill. The ore zone deserves ex-  
ploration at depth and to the east end of the vein;  
former operators intersected high grade mineralization  
in the vein in a deep hole at 605 feet below surface.  
The owner of the property at present is Clyde Gayle.

REFERENCES:

ODM, 1942, Vol. 51, Pt. 4, pp. 42-44.

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.33.

3.

NAME: STAR OF THE EAST MINE

LOCATION: Barrie Township, concessions 9, 10,  
lots 25; 24, 25, 26

ACCESS: Access is gained to the property by driving north on highway #41, past Cloyne, Ontario. The second road to the east is then travelled for approximately 2½ miles. The shaft is located just north of the road at this point.

DEVELOPMENT HISTORY: 1903-1907: Star of the East Gold Mining and Milling Company sank a shaft to 213 feet. Four levels were developed with drifting and cross cutting totalling about 250 and 325 feet respectively. A ten stamp mill was installed.

GEOLOGY: Two quartz veins are contained in dolomitic marble approximately 200 feet south of mafic volcanics. The quartz veins are approximately 120 feet apart. Pyrite chalcopyrite and sparse scheelite are also found with the gold.

RESERVES (TONNAGE & GRADE): Past production from 1905, 1907 was 134 ounces from 976 tons of ore. The recovered grade was 0.14 ounces per ton. No known reserves.

COMMENT ON PROSPECTS: Rock dump about 2500 tons, grade unknown. Does not appear promising.

REFERENCES:

ODM, 1942, Vol. 51, Pt. 4, pp. 44-47.

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.33.



4.

NAME: GOLDEN FLEECE (ADDINGTON MINE)  
LOCATION: Kaladar township, concession 6,  
lots 24 & 25, W $\frac{1}{2}$   
ACCESS: By road 2 miles east of Flinton

DEVELOPMENT HISTORY: Circa 1887-1913: Two shallow shafts sunk and a 10 stamp mill erected. 1915-1922: One of the original shafts continued to 60 feet. Shaft inclined 63°E and sunk to 100 feet. Drifting and cross-cutting totalled 350 and 402 feet respectively. 1932: Sampled by C. N. Thompson. 1935-1939: Inclined shaft continued to 535 feet with additional levels at 168, 254, 356 and 458 feet. Drifting and cross-cutting totalled 7,096 feet and 3,030 feet respectively. 8 diamond drill holes totalling 2,393 feet were drilled along with 68 under ground holes totalling 6,463 feet.

GEOLOGY: Along a contact between metavolcanics and meta-sediments, an auriferous ore zone strikes for more than 3,000 feet, dips approximately 70°E and has a maximum width of 35 feet. Arsenopyrite also occurs in the zone. Other minerals identified are ankerite, calcite, tremoline, pyrite, chalcopyrite, pyrrhotite, and scheelite.

CURRENT EXPLORATION ACTIVITY: (1975-1982): This property is now being drilled by E & B Explorations Inc. They have completed a 10,000 foot diamond drilling program (summer 1981).

RESERVES (TONNAGE & GRADE): In 1919 and 1922, 65 ounces of gold, 26 ounces of silver were produced. Reserves estimated by Cominco in 1936 at 200,000 grading 0.13 oz/ton Au. Drilling by E & B Explorations Inc. is "promising" and has no doubt doubled the reserves.

COMMENT ON PROSPECTS: This property has large reserves (probable 400,000 tons grading 0.13 oz/ton Au) and has mining widths of up to 20 feet. (Personal communication E & B Exploration Inc.) The owner is Cominco Limited while the operator is E & B Explorations Inc.

REFERENCES: OBM, 1902, Vol. II, p. 200.

OBM, 1907, Vol. 16, Pt. 1, p. 76.  
OBM, 1913, Vol. 22, Pt. 1, p. 135.  
OBM, 1919, Vol. 28, Pt. 1, p. 154, (Colbalt-Frontenac).  
ODM, 1939, Vol. 48, Pt. 1, p. 98, (Addington Mine).  
ODM, 1940, Vol. 49, Pt. 1, p. 103, (Addington Mine).  
ODM, 1942, Vol. 51, Pt. 4, pp. 70-72, (Addington Mine).  
OGS, 1979, Mineral Deposits Circular #18, Pt. 2, pp. 37, 38.

5.

NAME: GILMOUR MINE

LOCATION: Grimsthorpe Township,  
concession 19, lot 30, S½

ACCESS: Approximately 5 miles east of Gilmour,  
no good road to property.

DEVELOPMENT HISTORY: Circa 1909: No. 1 shaft, 75 feet deep, 210 feet of drifting, 5 stamp mill in operation. 1909-1935: No. 4 shaft, inclined 60°NW, 260 feet deep; 1,075 feet of drifting on 3 levels. 1935: 100 ton mill erected. 1936-1940: Shafts dewatered and allowed to refill. 1,200 feet of diamond drilling work completed.

GEOLOGY: Mafic volcanics are cut by veins with strikes ranging from N60°E to N70°W and almost vertical dips. Some of the mafic volcanics are carbonatized.

CURRENT EXPLORATION ACTIVITY: (1975-1982): Sampling, road construction (?) in 1981.

RESERVES (TONNAGE & GRADE): From 1909-1910, 172 ounces of gold were produced from 550 tons of ore grading at 0.31 ounces per ton. No known reserves. Waste rock probably 5000 tons of unknown grade. Access difficult.

COMMENT ON PROSPECTS: Very little known about this property. Possible waste rock suitable for custom milling.

REFERENCES:

- OBM, 1909, Vol. 18, Pt. 1, p. 133.
- ODM, 1936, Vol. 45, Pt. 1, pp. 109, 110.
- ODM, 1939, Vol. 48, Pt. 1, pp. 89, 90, (Cataraqui Gold Mines Limited).
- ODM, 1942, Vol. 51, Pt. 4, pp. 48, 49, (Cataraqui Gold Mines Limited).
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p. 34.

6.

NAME: CRAIG MINE

LOCATION: Tudor Township,  
concession 3, lots S $\frac{1}{2}$ , 4 and 5

ACCESS: Approximately 5 miles northeast of Bannockburn station. Access can be gained to the property by following highway #62 north to Bannockburn. The first turn off, after Bannockburn, to the north-east is taken and is travelled for 2 $\frac{1}{2}$  miles until reaching a "T" in the road. Then turn east, or right for a further  $\frac{1}{2}$  mile until reaching a "Y" in the road. Turn south or right and follow the road for 2 miles to another "Y". Then turn east, or right and travel 1 mile before arriving at the abandoned mine site. As of October 1981, the last 3 miles could only be travelled by motorcycle or all terrain vehicle.

DEVELOPMENT HISTORY: 1896: A 100 foot shaft sunk.  
1902-1907: 2 shafts sunk, one at 165 feet and another at 210 feet. 1934-1936: Shafts deepened to 200 and 245 feet and work done on 3 levels.

GEOLOGY: Massive mafic lava is cut by discontinuous quartz veins striking northwest. Vein material is exposed over 1,000 feet and ranges in width from a few inches to 6 feet.

CURRENT EXPLORATION ACTIVITY: (1975-1982): A group of individuals from Belleville, Ontario has recently (summer 1981) sampled all of the tailings piles around the mine site.

RESERVES (TONNAGE & GRADE): In 1905 and 1906, 248 ounces of gold were milled from 1,850 tons of ore. The recovered grade was 0.13 ounces of gold per ton. Reserves unknown; waste rock estimated at 10,000-15,000 tons of unknown grade.

COMMENT ON PROSPECTS: Geological potential unknown; waste rock may have milling potential; fair road.

REFERENCES:

- OBM, 1898, Vol. 7, p. 92.
- GSC, 1936, Memoir 192, p. 116.
- ODM, 1943, Vol. 52, Pt. 3, pp. 32 and 33.
- ODM, 1969, GR 67, pp. 63-65.
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p. 37.

7.

NAME: BANNOCKBURN PROSPECT

LOCATION: Madoc Township, concession 5, lot 28

ACCESS: This property can be reached by travelling to Bannockburn on highway #62. Before reaching the north end of the village, turn west on a gravel road and continue for approximately  $\frac{1}{4}$  of a mile to the property.

DEVELOPMENT HISTORY: 1894: 4 shafts sunk to a depth of 26, 30, 30 and 45 feet. 17 feet of drifting done from 1 of the shafts. Ten stamp mill in operation. 1897: The shaft on which the drifting had been done was deepened to 35 feet. A new 35 foot shaft was put down by Bannockburn Gold Mining Company Limited.

GEOLOGY: A vein cuts the contact between a felsic intrusion and a schistose metasediment. The vein strikes N78°E, dips vertically, and is up to 3 feet wide. The vein has been stripped for a length of 700 feet. A grab sample of vein material assayed at 0.17 ounces of gold per ton. The vein is up to 3 feet wide and in places consists of 3 or more parallel veins.

CURRENT EXPLORATION ACTIVITY: (1975-1982): A. D. Houston has done extensive trenching, geophysical surveys and diamond drilling. Has diamond drilled 1500 feet of core. At least \$ 100,000. spent on exploration in 1981; ongoing program planned.

RESERVES (TONNAGE & GRADE): In 1895 approximately 3.5 ounces of gold was produced from an unknown amount of ore. No known reserves, waste rock less than 500 tons of unknown grade.

COMMENT ON PROSPECTS: None of the core has been assayed at the time of writing. Therefore, it is difficult to assess this property at the moment; it must be considered as a prospect with no known reserves and no significant production history. The present owner of the property is A. D. Houston.

REFERENCES:

- OBM, 1895, Vol. 5, pp. 264, 265.
- ODM, 1943, Vol. 52, Pt. 3, p. 32.
- ODM, 1968, GR 73, p. 21.
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.34.

8.

NAME: SOPHIA MINE

LOCATION: Madoc Township, concession 10, lots 14 & 15

ACCESS: The old mine site can be reached by travelling approximately 0.9 mile west from Queensborough along county road #20. Traverse due north through the bush for 3/8 of a mile to the old mine workings.

DEVELOPMENT HISTORY: 1897-1900: 3 shafts, 60, 105, 60 feet deep, have lateral development totalling 98 feet. A ten stamp mill was installed 1901-1935: Shafts 1 and 3 continued to 100 feet. 1936-1941: No. 1 shaft deepened to 156 feet, 400 feet of lateral development done; 2,950 feet of diamond drilling completed; and a 15 ton mill installed.

GEOLOGY: Hornblende and chloritic schists are cut by two veins. The "Free-Milling Vein" strikes northwest and is up to 5 feet wide, composed of massive quartz. The "Mispickel Vein" strikes north and is a narrow arsenopyrite vein containing some gold.

RESERVES (TONNAGE & GRADE): Between 1900 and 1941, 110 ounces of gold and 7 ounces of silver were produced from 1800 tons of mill rock. The grade of gold produced was 0.06 oz. per ton. Probable 3,000 tons of waste rock of unknown grade. Reserves are unknown.

COMMENT ON PROSPECTS: Must be considered as a developed prospect with unknown reserves. The waste rock might be trucked to a custom mill if grade is sufficiently high. The owner of the Sophia Mine is Earl Sager of Madoc, Ontario.

REFERENCES:

- OBM, 1898, Vol. 7, Pt. 1, pp. 92, 93.
- OBM, 1899, Vol. 8, Pt. 1, p. 41.
- OBM, 1901, Vol.10, p. 117.
- OBM, 1913, Vol.22, Pt. 2, pp.111,112.
- ODM, 1937, Vol. 46, Pt. 1, p. 186, (Old Diamond Gold Mines Limited).
- ODM, 1940, Pt. 1, p. 173, (Mayboro Milling Co. Ltd.).
- ODM, 1942, Vol. 51, Pt. 1, pp. 160, 161, (Mayboro Milling Co. Ltd.).
- ODM, 1968, GR. 73, p. 21.
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, pp.34,35.

9.

NAME: SOVEREIGN MINE

LOCATION: Marmora Township, concession 11,  
lots 16 and 17

ACCESS: From Malone, Ontario, one drives half a mile south on the Deloro Road, then turn east on a gravel road and follow this for one-quarter mile to the old mine workings.

DEVELOPMENT HISTORY: 1866-1878: work done by unrecorded operators. Circa 1878: Pits and shallow shafts were developed. 1890-1892: "The Mackenzie" or "A Shaft" was sunk to 65 feet. A ten stamp mill was constructed. Circa 1903: Reworking of old pits and openings by the Sovereign Gold Mining and Development Corporation of Ontario Limited.

GEOLOGY: Calcareous metasediments are intruded by felsic rocks. The latter are cut by north-striking veins of irregular width, one of which dips 75°W and was traced for a distance of 1,400 feet.

RESERVES (TONNAGE & GRADE):

Year	Gold (ounces)	Ore milled (tons)	Recovered Grade (ounce of Au per ton)
1891-1892	328	1,700	0.19
1900	42	262	0.16
Total	370	1,962	0.19

Reserves and quantity of waste rock are unknown; the property is extensively overgrown.

COMMENT ON PROSPECTS: Insufficient data available to assess the development possibilities of this property. The waste rock might prove of value if it is not too scattered in the now-wooded area around the old workings.

REFERENCES:

ODM, 1936, Vol. 45, Pt. 2, p. 13.

DEMR Ottawa, Mineral Development Sector Files, Powell.

GSC, 1927, Economic Geology Series #4, pp. 105,106,  
(Cameron-Feigle Group).

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.37.

10.

NAME: DELORO MINE

LOCATION: Marmora Township, concessions 6, 8, 9,  
lot 10; 9; W $\frac{1}{2}$ , 10 & NE $\frac{1}{4}$ , 8

ACCESS: The Deloro Mine site can be reached by  
travelling east of the Village of Deloro for 1/8 of a  
mile on a gravel road.

DEVELOPMENT HISTORY: 1871-1896: 3 shafts sunk, Gatling  
#1 was sunk to 154 feet with 494 feet of drifting;  
The Tuttle #2 shaft was sunk to 70 feet with 172 feet  
of drifting; The Timber shaft was sunk to 70 feet.  
(1896-1903): Gatling shaft continued to 347 feet, and  
2 new levels were established. Tuttle shaft deepened  
to 127 feet. Timber shaft deepened to 100 feet. Total  
drifting was 1,600 feet and cross cutting 780 feet.  
Eight other shafts were sunk to a depth of 517 feet and  
219 feet of drifting was done. A 20 stamp mill and  
works for an arsenic recovery plant was constructed.

GEOLOGY: Mafic rocks cut by felsic dykes, enclose quartz  
veins which are 100 to 1,000 feet long, 1 to 5 feet  
wide, dip 20° to 55° west and contain up to 10%  
arsenopyrite. The most extensively worked were the  
Gatling and the Tuttle veins. Gold is mostly associ-  
ated with the arsenopyrite.

RESERVES (TONNAGE & GRADE): 10,360 ounces of gold was  
produced from 39,143 tons of ore between 1897 and 1902.  
The average grade was 0.26 oz. per ton. Reserves un-  
known; waste piles cannot be identified because of  
subsequent smelter operation; tailings are buried under  
a swamp (volume and grade unknown).

COMMENT ON PROSPECTS: At the moment, the Ministry of  
Environment have operating control of the property, and  
no exploration has taken place because of this.  
Erickson Construction Company Limited is effectively  
dormant and the extent of environmental remedial  
activities to clean up arsenic pollution may effectively  
preclude gold exploration.

In addition, this property has a ferric hydroxide  
tailings pond containing 100,000 dry tons containing  
trace Au, 0.8-3.7 oz/ton Ag, and large amounts of  
Co, Ni, and Cu. This material certainly appears to  
have good potential for retreatment. (Reid Crowther  
and Partners Limited, A Remedial Clean Up Program  
for the Deloro Site, A Consultant's Report for the  
Ontario Ministry of Environment, November 1980).  
The present owner is Erickson Construction Company  
Limited of Ottawa, Ontario.

10. (continued)

REFERENCES:

- GSC, 1927, Economic Geology Series #4, pp. 101-103.
- OBM, 1892, Vol. 2, p. 238.
- OBM, 1898, Vol. 7, pp. 90-92.
- OBM, 1899, Vol. 8, Pt. 1, pp. 39, 40.
- OBM, 1900, Vol. 9, pp. 90, 91.
- OBM, 1901, Vol. 10, pp. 52, 115.
- OBM, 1904, Vol. 13, Pt. 1, p. 18.
- ODM, 1936, Vol. 45, Pt. 1, p. 13.
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.35,36.



11.

NAME: GATLING FIVE ACRE MINE

LOCATION: Marmora Township, concession 9, lot 10

ACCESS: The old mine site can be reached by travelling east of the Village of Deloro for 1/8 of a mile on a gravel road. By walking approximately 2,000 feet north of the laboratory one arrives at the site of the Gatling Five Acre shaft.

DEVELOPMENT HISTORY: 1899-1903: A shaft was sunk to greater than 200 feet with 3 levels. Drifting and cross cutting, amounting to 466 and 20 feet respectively were done on the continuation of the Air Vein. A ten stamp mill was installed.

GEOLOGY: Felsic and Mafic intrusions. The two veins on the property are auriferous, carry arsenopyrite and are continuations of the Gatling and Air Veins at the Deloro Mine.

RESERVES (TONNAGE & GRADE): In 1900, 1902, and 1903, 2,353 ounces of gold were recovered from 6,114 tons of ore. The average grade recovered was 0.38 oz. per ton. Reserves unknown. Waste rock of some 2,000-3,000 tons of unknown grade is on the property.

COMMENT ON PROSPECTS: Part of the Deloro Mine. The present owner is Erickson Construction Company Limited from Ottawa, Ontario.

REFERENCES:

- GSC, 1927, Economic Geology Series #4, p. 103 (Atlas or Five Acres).
- OBM, 1900, Vol. 9, pp. 91, 92 (The Atlas Arsenic Company, Limited).
- OBM, 1903, Vol. 12, p. 110 (The Atlas Arsenic Company, Limited).
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.36.

12.

NAME: PEARCE MINE

LOCATION: Marmora Township,  
concession 8, lot #1, 8

ACCESS: The shaft area can be reached by traveling east of the Village of Deloro for 1/8 of a mile on a gravel road. By walking approximately 1/4 of a mile southeast of the Deloro Mill, one reaches the site of the Pearce shaft.

DEVELOPMENT HISTORY: Circa 1893: Shaft sunk to 90 feet with 1 level at 42 feet. Circa 1901: Possibly a new shaft was sunk to a depth of 165 feet. 2 levels were established and 240 feet of drifting was done. Circa 1904: Some work done by the Cleveland Mining Company Limited. Circa 1907: Shaft deepened to 173 feet and 40 feet of drifting done. 1936: 70 feet of shaft sinking and 86 feet of lateral development by Centaur Mining Company Limited.

GEOLOGY: A felsic intrusion encloses a 1 to 8 foot wide quartz vein which dips 25° - 40° southwest and contains gold and arsenopyrite.

RESERVES (TONNAGE & GRADE): 1893 and 1908: 302 ounces of gold and 60 ounces of silver were milled from 239 tons of ore. The average grade was 1.26 ounces of gold per ton. Reserves unknown; waste rock volume unknown.

COMMENT ON PROSPECTS: Part of the Deloro Mine. The present owner is Erickson Construction Company Limited from Ottawa, Ontario.

REFERENCES:

- GSC, 1927, Economic Geology Series #4, p. 103, (Pearce or Severn).
- GSC, 1936, Memoir 192, pp. 118, 119, (Pearce or Severn Mines).
- OBM, 1893, Vol. 3, p. 53, (The Pearce Mine).
- ODM, 1937, Vol. 46, Pt. 1, p. 111, (Centaur Mining Company Limited).
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, pp. 36, 37.

13.

NAME: COOK MINE

LOCATION: Marmora Township, concessions 9 & 10,  
lots 7 to 9, and 10 to 12

ACCESS: The shaft area can be reached by travel-  
ling east of the Village of Deloro for 1/8 of a mile  
on a gravel road. By walking approximately 1/4 of a  
mile east of the Deloro Mine one should reach the  
shaft area of the Cook Mine.

DEVELOPMENT HISTORY: 1901-1902: Shaft no. 1 inclined  
25°S and sunk to 179 feet with 2 levels and 55 feet  
of drifting completed. Shaft no. 4 was sunk 120 feet  
with 2 levels. An old stamp mill at another mine  
close by was renovated.

GEOLOGY: Dioritic masses contain quartz-carbonate veins  
ranging from 1 to 6 feet in width. Arsenopyrite,  
pyrite and chalcopyrite are found along with the gold.

RESERVES (TONNAGE & GRADE): 389 ounces of gold were  
produced from 1,483 tons of ore from 1901, 1902 and  
1904. The recovered grade was 0.26 ounces of gold  
per ton. Reserves are unknown.

COMMENT ON PROSPECTS: Geological potential unknown. The  
owner of the property is Erickson Construction Company  
Limited from Ottawa, Ontario.

REFERENCES:

OBM, 1902, Vol. 11, pp. 102, 103, 234.

OBM, 1903, Vol. 12, pp. 110, 111.

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p. 35.

14.

NAME: DEAN & WILLIAMS MINE

LOCATION: Marmora Township, concession 9, lot 7

ACCESS: The shaft can be reached by travelling east of the Village of Deloro for 1/8 of a mile on a gravel road. By walking approximately 4,000 feet south of this point, the shaft can be reached.

DEVELOPMENT HISTORY: 1870: Pitting and a 160 foot shaft put down. A 10 stamp mill was erected.

GEOLOGY: Felsic rocks contain quartz lenses which strike N25°W and dip 45°E. Associated Minerals are pyrite, chalcopyrite, and arsenopyrite.

RESERVES (TONNAGE & GRADE): In 1870, 500 ounces of gold were produced from 1,000 tons of ore. The average grade was 0.5 ounces of gold per ton. Reserves unknown.

COMMENT ON PROSPECTS: Insufficient data; unlikely to have any waste rock or tailings available. The present owner of the property is Erickson Construction Company Limited from Ottawa, Ontario.

REFERENCES:

- GSC, 1927, Economic Geology Series #4, p. 104.
- GSC, 1936, Memoir 192, p. 116, (Cook Mine).
- OBM, 1902, Vol. 11, p. 103, (Cook Property).
- ODM, 1936, Vol. 45, Pt. 1, p. 13 (Cook Mine).
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p. 35.

15.

NAME: ACKERMAN MINE

LOCATION: Marmora Township, concession 8,  
lots 6 to 8

ACCESS: Approximately 2 miles east of the  
Village of Marmora, adjacent to highway #7.

DEVELOPMENT HISTORY: Circa 1938: Ackerman Gold Mines  
Limited sank a 270 foot shaft at a 45° incline. 600  
feet of drifting was done at the 170 foot level.  
Circa 1951: 3,200 feet of diamond drilling was  
completed.

GEOLOGY: Quartz veins in metasediments and meta-  
volcanics at the contact with the Deloro Granite.

CURRENT EXPLORATION ACTIVITY: (1975-1982): Shaft  
bulldozed full of waste rock and waste rock piles  
levelled.

RESERVES (TONNAGE & GRADE): Surface sampling of 1 vein  
yielded 0.32 oz. Au/ton over a length of 150 feet  
and a width of 5.6 feet. Reserves and grade unknown;  
waste rock estimated at 2,000 tons.

COMMENT ON PROSPECTS: Favourable geology but must be  
regarded as a prospect. Waste rock might prove  
economically interesting; good access.

REFERENCES:

Canadian Mines Handbook, 1951, p. 211.

ODM, 1939, Vol. 48, Pt. 1, p. 72.

OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.44.

16.

NAME: CORDOVA MINE

LOCATION: Belmont Township, concession 1,  
lot E $\frac{1}{2}$ , 20

ACCESS: The Cordova Mine can be reached by travelling northwest on the Cordova Mine road from Marmora. The mine site is adjacent to the townsite of Cordova Mines.

DEVELOPMENT HISTORY: 1891-1892: Three shallow shafts were put in. 1898-1902: The 3 original shafts were deepened and 5 additional shallow shafts were sunk, 80 to 100 feet deep. A ten stamp mill was put in operation. Circa 1912: No. 3 shaft deepened and a 30 stamp mill was put in operation. 1935-1939: Cominco deepened No. 3 shaft to 1,050 feet. 13 underground diamond drill holes totalled 6,850 feet. A 125 ton mill was erected. 1965: Diamond drilling and sampling of tailings dump.

GEOLOGY: Shear zones, approximately 6 feet wide occur near the western margin of a mafic intrusion. The enclosed ore bodies have an average dip of approximately 65°S. Native gold is not visible and is probably confined to pyrite. Some pyrrhotite occurs. To the west and north, marble, paragneiss, conglomerate and altered volcanic rocks are exposed. Secondary minerals include carbonate, chlorite, serpentine, sericite, quartz and apatite. Many of the ore bodies close to the No. 1 shaft occur at or near the intersection of 2 shear zones. They also occur where there is contortion and variation in the shearing within the shear zones.

CURRENT EXPLORATION ACTIVITY: (1975-1982): LaSir Gold Incorporated has been conducting in situ leach experiments 1979-81. Company plans underground exploration 1982.

RESERVES (TONNAGE & GRADE):

Year	Gold (Oz)	Silver (Oz)	Ore Milled (Tons)	Recovered Grade
1892-1893 )				
1898-1903 )				
1912-1915, 1917 )	22,774	687	120,670	0.19 (oz) Au
1939-1940 )				per ton

Reserves unknown but LaSir estimates 100,000 tons grade unknown.

16. (continued)

COMMENT ON PROSPECTS: Waste rock estimated at 30,000 tons of low grade material; location of tailings is unknown. Possible tonnage of broken mill rock in stopes. The present owner of the property is LaSir Gold Incorporated from Vancouver, B.C.

REFERENCES:

- Canadian Mines Handbook, 1965, p. 244 (Orvana Mines Limited).
- OBM, 1891, Vol. 1, p. 224 (Belmont Mine).
- OBM, 1903, Vol. 12, pp. 111, 112 (Belmont Mine).
- ODM, 1940, Vol. 49, Pt. 1, p. 104.
- ODM, 1943, Vol. 52, Pt. 2, pp. 36-40.
- OGS, 1979, Mineral Deposits Circular #18, Pt. 2, p.38.

