UPPER CANADA M

6-8 HUDSON BAY AVENUE, KIRKLAND LAKE, ONTARIO, CANADA

P.O. BOX 998, PHONE 705-567-9311, TELEX 027-76120

REPORT ON A GEOCHEMICAL SURVEY FOR UPPER CANADA MINES LIMITED

by

Paul Maingot - Mine Geologist
Upper Canada Mines Limited
December 20, 1971

Summary:

A rock mercury-trace, geochemical survey was carried out by Upper Canada Mines personnel on ground held by Upper Canada Mines Limited of Kirkland Lake, Ontario. The claims surveyed are located in Gauthier and McVittie Townships, extending east and west from the Upper Beaver Mines Limited property, a wholly-owned subsidiary of Upper Canada Mines Limited. The Upper Beaver Mine is a copper-gold producer that has shipped 436,000 tons of ore (to December 1, 1971) since being reopened in February 1965.

Initial reconnaissance rock sampling in the mine area showed higher than background mercury values, so it was decided to extend the geochemical survey to cover all recently acquired claims in the area.

Several anomalous indications were obtained in the comprehensive survey, some of which were followed up with detailed geological mapping.

Property and Location:

The survey covered: 30 of the 35 patented claims that make up the Upper Beaver Mines property; one group of 42 unpatented claims in Gauthier Township that are contiguous with the Upper Beaver property on its west boundary, and a group of 41 unpatented claims in McVittie Township that are contiguous with the Upper Beaver property on its east boundary.

The claim group in Gauthier Township may be reached via the Upper Beaver Mine from Dobie, or via the Esker Park road, north of Highway 66. The group in McVittie Township can be reached by the Fork Lake road, north of Highway 66, which follows

the east side of the Misema River.

For the purposes of assessment work credits, the Gauthier Township group is lumped as one claim group comprising the following 42 contiguous claims on which the survey was carried out and for which 20 days credit per claim is requested under the special provision.

L264379, 80, 81
L265426, 27, 28
L265430, 31
L265434, 35
L265725, 26, 27, 28, 29, 30, 31, 32, 33
L265737, 38, 39, 40
L265745, 46, 47, 48
L265753, 54, 55, 56, 57
L267200, 01, 02, 03, 04, 05, 06, 07, 08, 09

Two groups of contiguous claims in McVittie Township are formed from the original contiguous group of 41 claims for the purpose of assessment work credits.

One group of 13 contiguous claims extends along the south shore of Beaverhouse Lake from the east boundary of the Upper Beaver Mine property east to Spectacle Lake and comprises the following numbers:

L263838
L265875, 76, 78, 79, 82, 83, 84, 85, 86, 87
L267071, 72

The survey did not cover L265879 and 82 because of lack of favourable outcrop. A second group of 16 contiguous claims is located about 3/4 of a mile south of the above-mentioned group and extends east from the Gauthier-McVittie boundary over to Moosehead Lake. It is composed of the following:

L267057, 58, 59, 60, 63, 64, 66, 67
L316698, 99
L316700, 01, 02, 03, 04, 05

The survey did not cover claims L267057, 58, 59, 60 because of lack of outcrop.

Summary of Exploration Work:

An airborne electro-magnetic and magnetic survey was conducted over a 35 square mile area for Upper Canada Mines Limited. (cf. Airborne Geophysical Certificate issued to Upper Canada Mines Limited). The claims under discussion in this report were covered by this airborne survey. Ground e-m and magnetometer surveys were conducted over a portion of the northern McVittie claim group for Upper Beaver Mines Limited (cf. Harris-Brennan - Joy Option). Some trenching, and as far as can be ascertained from assessment files, seven holes totalling 689 feet were drilled by previous owners on claims L265875, 76, and 78 in this same area. Tom Taylor (claim L96901) drilled three holes on claim L265725 in Gauthier Township for a total footage of 754.5 feet.

Method of Conducting Survey:

East-west control lines were established by transit survey and tied into Upper Beaver Mine survey stations using previously established base lines and picket lines, and where available, old logging roads, and where necessary, by cutting new survey lines. From these control lines or base lines, pace and compass traverse lines were run at 400 foot intervals. These lines were blazed with red plastic ribbon and numbered for reference. Where available, previously cut picket line grids were used also.

Notes and sketches were made of all traverses. Position and outline of rock outcrops were noted. The position of each rock sample taken was marked by red plastic ribbon which was numbered as was the sealed sample bag, and its position marked on the sketch. The intervening ground between traverse lines was covered by having one man run the pace and compass traverse and a second man scour the bush for outcrop. In this way, most outcrop was thoroughly checked and sampled.

Chemical Analyses:

These were carried out by members of Upper Canada's assay laboratory staff using a J.W. Lemaire Mercury Sniffer, model S-1, purchased for this survey.

Sample Collecting, Preparation and Analysis Procedure:

The following method was prepared by Dr. R. G. Roberts of the Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, consulting geologist to Upper Canada Mines Limited.

SAMPLE COLLECTING

1. "Small" hand specimens are used for analysis. The hand specimen should show some degree of foliation (shearing, fracture cleavage, closely spaced fractures). Hand specimens that are completely massive should not be used.

2. The samples must be uncontaminated by organic material (lichen, etc.) and not contain sulphides.

3. Label the sample; mark the location of the sample on an air photograph or map and enter a brief description of rock type in a notebook.

4. Take at least one sample at every outcrop. Take at least one sample every 100 feet over well exposed areas. The objective is to take a large number of small samples.

PREPARATION OF INSTRUMENTS

1. Remove the end plate at the bottom of the instrument by removing the screw, and insert battery and assemble.

2. Prepare the instrument by following the procedure on the instruction plate. The needle is sometimes slow to swing to zero after the control nob has been turned to the zero set position. This is because the UV lamp is slow to ignite and may be an indication that the 6-volt battery is weak. Gently tapping the side of the case or turning the zero adjust nob will help to start the lamp.

3. With the meter zeroed, the instrument is ready for use. The needle drifts gradually upward as the instrument is used, due to battery drain.

SAMPLE PREPARATION

1. Knock off a piece of the hand specimen (about one half inch cube).

   Choose the foliated part of the sample.

2. Crush in a metal mortar and pestle using as few blows as possible.

3. Sieve on the 40 mesh screen and retain the minus 40 fraction.

4. Fill the 1.0 gram scoop with the minus 40 material, transfer to a sample bulb and attach the stem.

PROCEDURE:

Samples may be analysed for mercury, a) with the use of the pump, or b) without the use of the pump.

1. Insert the stem from the sample bulb into the inlet to the pump.

2. Hold the bottom of the sample bulb at the top of the flame of an alcohol lamp. (Some care should be taken to ensure that the wick of the lamp is maintained

at about a quarter of an inch.) Heat in this way for 60 seconds, and at the same time start withdrawing the piston to the pump very slowly and regularly. Continue withdrawing the piston so that it is fully withdrawn at the end of the 60 second period.

3. With the pump handle fully withdrawn, remove the sample bulb and insert the stem of the pump into the inlet of the mercury detector. The pump is then emptied into the instrument with a single smooth stroke. The needle of the meter will move upwards to a maximum reading. This maximum reading is recorded as micrograms per liter of volume.

4. When the sample bulb and stem are removed from the pump, the sample should be tested for the presence of sulphides by sniffing the outlet of the stem for SO_2. If SO_2 is detected, the reading must be abandoned.

Method B):

Samples may be run without the pump if they do not give off smoke when heated. Rock samples used in this survey fall into this category. Sensitivity is increased by not using the pump (i.e. higher meter readings are recorded) but, because a constant volume is not introduced into the instrument, accuracy is diminished.

1. The sample bulb, with stem attached, is heated in the same way as in method (a) but the pump is not attached and a finger is placed over the outlet to the stem.

2. After heating for 60 seconds, the stem is inserted into the instrument and the small fan draws in the vapour from the bulb. The needle will rise at a slower rate than it does when using the pump, but generally the maximum recording is higher. The maximum reading is recorded.

3. Take the stem out of the instrument and smell for any SO_2 as in method (a).

Geological Data:

The position of the Upper Beaver Mine relative to the acid pyroclastic-basic volcanic contact on the north limb of the Spectacle Lake anticline led to the decision to protect, by staking, the continuation of this contact to the west in Gauthier Township and to the east around the nose of the fold in McVittie Township (cf. maps 50b and 50c O.D.M.N.A.). As the ore at the Upper Beaver Mine occurs in the andesite, and to date, no ore had been found extending into the acid pyroclastics, the mercury trace survey was confined mainly to the basic portion of the contact areas.

Discussion of Results:

There is a precedence for expecting mercury anomalies or halos associated with certain types of ore deposits. The literature on geochemical exploration provides examples of anomalous concentrations of mercury in the air, soil, and bedrock.

In the course of the survey under discussion, high values were initially being obtained in that portion of the coarse dioritic horizon (cf. map 50b) that lies on Upper Canada claims. To check if this was a characteristic of the horizon, and, therefore, possibly not significant economically, the rest of this marked horizon was sampled (from Sourdough Lake south-east around the nose of the Spectacle Lake anticline). No significant concentration of high readings was obtained, so it was reasonable to assume that the high values obtained initially could be considered anomalous.

Two other clusters of high values were obtained on claims L265876, 878 and L263838 in the north group of claims in McVittie Township. Subsequent detailed geological mapping showed

these to be in an area where heavy pyrite mineralization, as exposed in old trenching, was associated with cherts and fragmentals similar to an association present in the Upper Beaver Mine.

Another area of high readings was found on claim L267063 in the southern claim group of McVittie Township. Detailed mapping in this area seemed to show them associated with a basic syenite rock and just west of the extension of a fault as postulated on map 50b and confirmed by the detailed mapping on claims L267063 and 064. The basic syenite is found at the Upper Beaver Mine in an irregular pattern generally in the andesite portion of the McVittie Basalts. The significance of the high readings is difficult to assess. The presence of the fault and the known mobility of mercury might account for it.

A similar association is postulated for a cluster of high readings at Victoria Creek in Gauthier Township, near the site of the old Argonaut Mine power dam. A fault or a syenite porphyry dyke is postulated to pass through this area based on results of a ground magnetometer survey carried out here.

Further detailed geological mapping, along with some type of deep penetration electro-magnetic surveying will be required, and follow-up diamond drilling, to properly assess the anomalous mercury results.

Pertinent Statistics of Survey:

No. of Samples taken and assayed:

Gauthier Twp. group	674
North group - McVittie Twp	201
South group - McVittie Twp	287

Miles of Line traversed:

Gauthier Twp. group	31.4 miles
North group - McVittie Twp. South group - McVittie Twp.	21.1 miles

Personnel:

Technical:	R. G. Roberts	(PhD. McGill) Dept. of Earth Sciences, U. of Waterloo, Waterloo, Ontario
	J. H. Morris	(B.S. Hon. Dublin) Waterloo, Ontario
	P. Maingot	(BSc. Queen's University. Kingston, Ontario) Dobie, Ontario
	A. White	Kirkland Lake, Ontario

Survey, Line Cutting:

H. White - Kirkland Lake, Ontario
J. Jalowikow - Kirkland Lake, Ontario
A. Canuel - Dobie, Ontario
J. MacGregor - Dobie, Ontario

Assaying:

J. Gregory - Kirkland Lake, Ontario
J. Grus - Kirkland Lake, Ontario

December 30, 1971.

"Paul Maingot"

Submitted by R. Michael Gray, P. Eng.

Vice President and Director
Upper Canada Mines Limited

Date: June 12, 1971.

2.903

MINING CLAIM No. 264379 10

RECORDED IN THE NAME OF	LETTER & NO.	RECEIPT NO.	DATE RECORDED
George S. Potter,	K 14641	1019508	August 7th, 1970.
ADDRESS: 38 Queen Street, Kirkland Lake, Ontario.			DATE AND TIME OF STAKING: July 25th, 1970 9.00 am

ASSESSMENT WORK CREDITS ASSIGNED TO OTHER CLAIMS

OFFICE USE ONLY	DAYS RECORDED	BALANCE

DESCRIPTION OF CLAIM: Gauthier Township Pt. Mining Rights Only

AKER AND RIVERS.

32D04NE0101 2.903 MCVITTIE

900

(File L 265426)

DATE	DAYS WORK		RECEIPT NO.
Dec.30,1970		Transfer of all interest to Upper Canada Mines Limited. A 26186. (L 264378)	1-333
Mar.1/71		Airborne Geophysical Certificate dated February 22nd, 1971. Prescribed times (under Section 84, Subsection 2) for performing the first and subsequent periods of work are advanced one year. (L 264378)	
Apr.21/72	20	days work Geochemical (L 265436)	

This Abstract is a copy of the entry in the Record Book and is not to be considered as assurance of the validity of the claim.

18 1972

Mining Recorder

MINING DIVISION

2.903

Revised Assessment

L.	Groch			L.	Groch		
263838	N/C	X		265883	2/3	X	
264374	N/C	X		84	2/3	X	
80	1/2	X		85	1/4	X	—
81	N/C	X		86	1/3	X	
265426	1/2	X		87	2/3	X	
27	N/C	/		267057	N/C	N/C	
28	N/C	N/C		58	N/C	N/C	
265430	1/2	X		59	N/C	N/C	
31	N/C	/		60	N/C	N/C	
265434	N/C	/		267063	1/2	X	
35	2/3	X		64	1/3	X	
265725	N/C	/		267066	N/C	X	
26	1/4	X	—	67	1/3	X	
27	1/3	X		267071	2/3	X	
28	1/2	X		72	1/3	X	
29	N/C	X		267200	1/3	X	
30	N/C	/		1	1/2	X	
31	N/C	X		2	2/3	X	
32	1/3	X		3	1/3	X	
33	N/C	/		4	1/3	X	
265737	1/3	X		5	2/3	X	
38	1/3	X		6	1/3	X	
31	1/4	X	—	7	1/2	X	
40	N/C	X		8	2/3	X	
265745	N/C	/		9	1/4	X	
46	1/2	X		316698	N/C	X	
47	2/3	X		99	N/C	X	—
48	N/C	X		700	/	X	
265753	1/4	X		1	N/C	X	—
54	1/2	X		2	1/3	X	
55	/	X		3	1/2	X	
56	1/2	X		4	/	X	
57	1/2	X		5	/	X	
265875	N/C	/					
76	1/2	X					
265878	1/3	X					
79	N/C	X					
265882	N/C	N/C					

71

1.75
1.75
3.50
6.75
10.25

3.75
3.75
50
8.00

13.43
67 | 900.00
67
230
201
290
268
220
204
(18)

1.50
1.50
75
3.75

6.50
3.75
10.25

400

45
22
67

$\frac{1}{3}$ - 10 $\frac{1}{3}$ - 9

$\frac{2}{3}$ - 14

5 - $\frac{1}{3}$

47

$1\frac{2}{3}$

$1\frac{1}{3}$

$1\frac{1}{3}$

$\frac{2}{3}$

13.43
67 | 900.00
67
230
201
290
268
220

19.25
3.33
22.58

0 ÷ (45 + 22) = 13.4

TRIM LINE

Arnold Twp. – M.321

EAST ASTRONOMIC

Label Twp. – M.359

NORTH ASTRONOMIC

McVittie Twp. – M.370

NORTH ASTRONOMIC

EAST ASTRONOMIC

McElroy Twp. – M.366

THE TOWNSHIP
OF

GAUTHIER

DISTRICT OF
TIMISKAMING

LARDER LAKE
MINING DIVISION

SCALE 1 INCH 40 CHAINS

LEGEND

PATENTED LAND	P.
CROWN LAND SALE	C.S.
LEASES	L.
LOCATED LAND	L.L.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.

NOTES

400' Surface Rights Reserved along all lakes and rivers

2.903

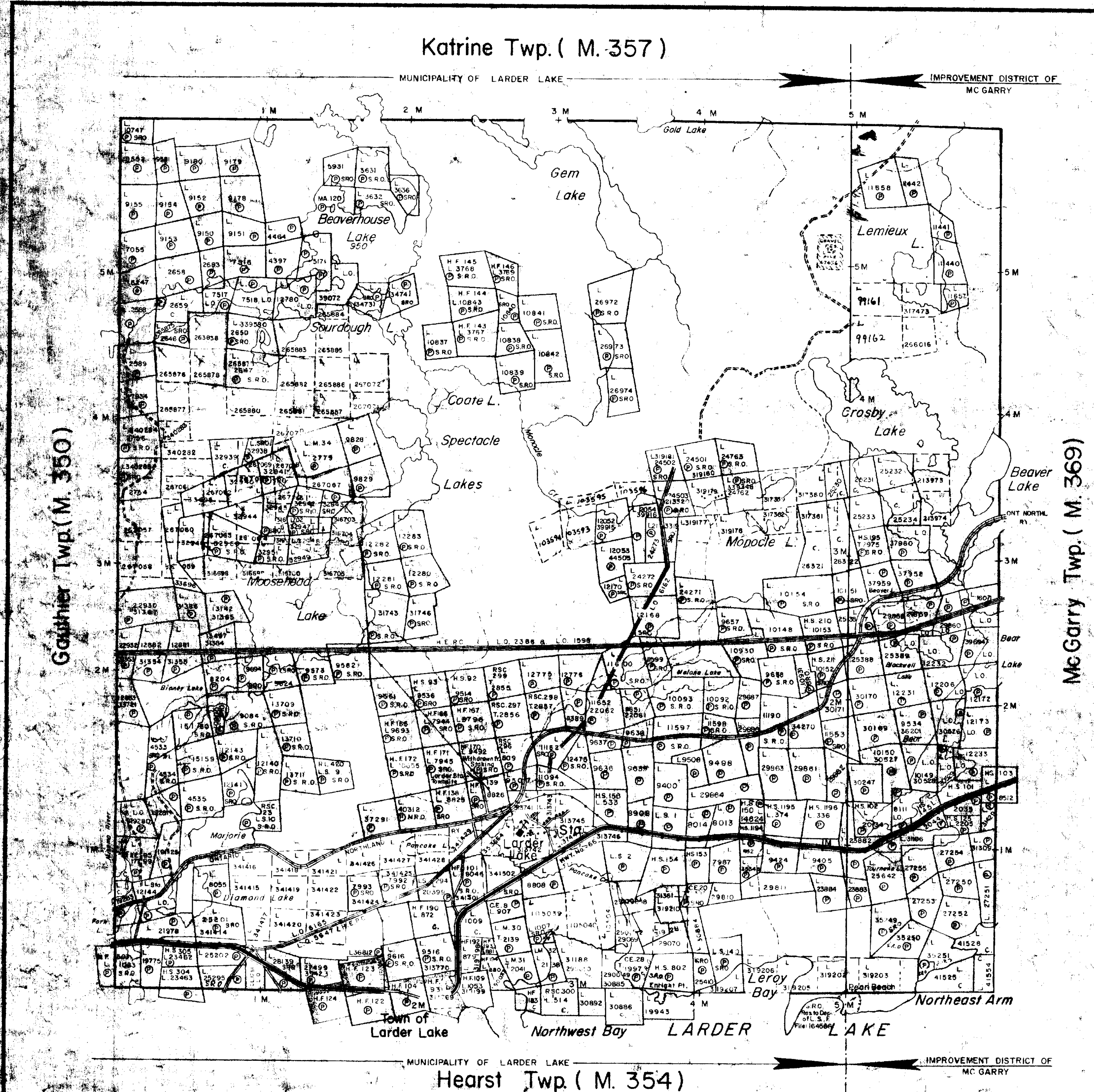
PLAN NO. M.350

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

32D04NE0101 2.903 MCVITTIE

200

TRIM LINE



Katrine Twp. (M. 357)
MUNICIPALITY OF LARDER LAKE
IMPROVEMENT DISTRICT OF MC GARRY
Gauthier Twp. (M. 350)
McGarry Twp. (M. 369)
Gem Lake
Beaverhouse Lake
Sourdough L.
Coate L.
Spectacle Lakes
Moosehead Lake
Lemieux L.
Crosby Lake
Monocle L.
Beaver Lake
Bear Lake
Diamond Lake
Marjorie
Larder Lake
Town of Larder Lake
Northwest Bay
LARDER LAKE
Leroy Bay
Northeast Arm
Hearst Twp. (M. 354)

THE TOWNSHIP OF McVITTIE

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C

NOTES

400' SURFACE RIGHTS RESERVATION AROUND ALL LAKES AND RIVERS.

Areas withdrawn from staking under Section 43 of the Mining Act

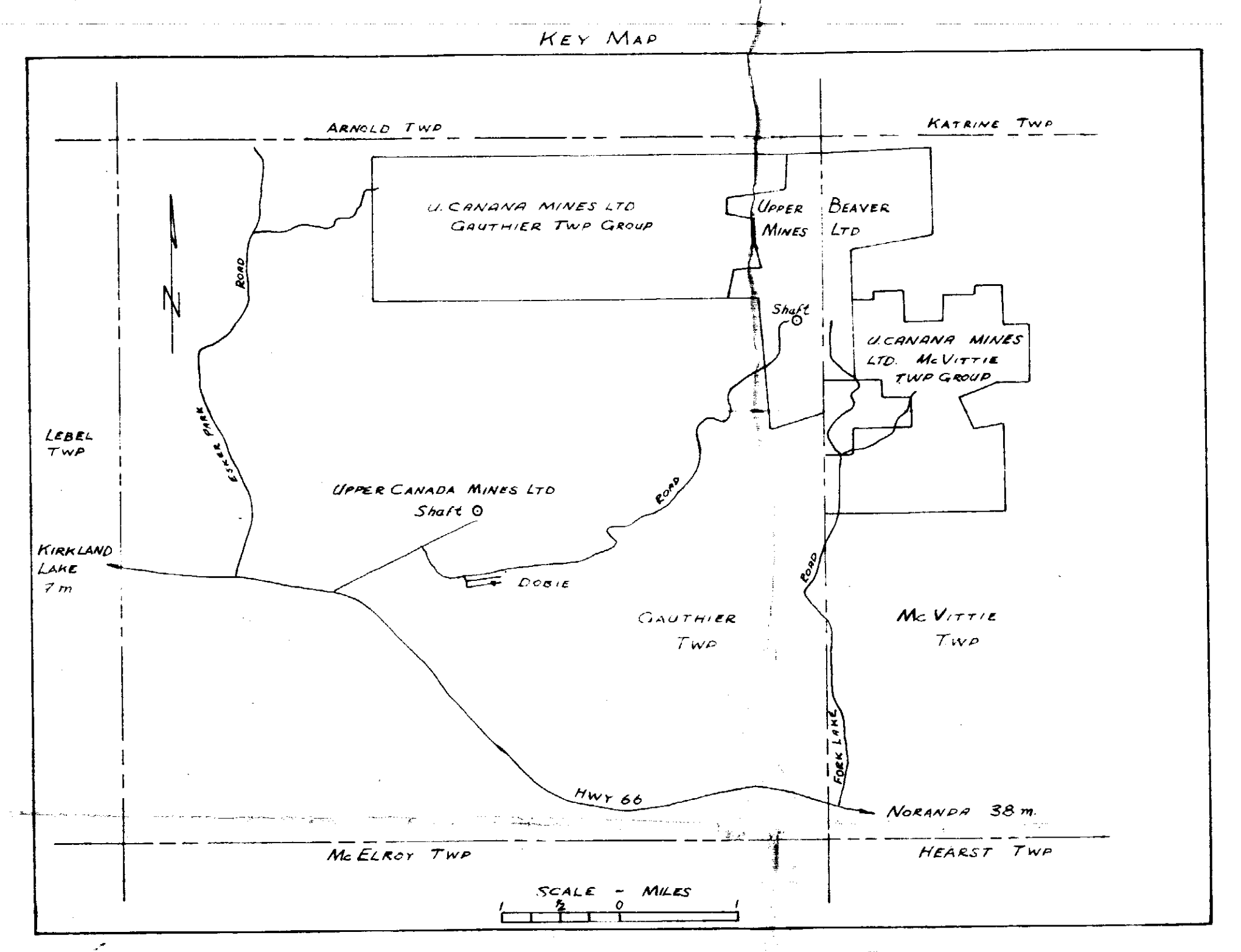
File	Date	Disposition

2.903

PLAN NO. M.370

ONTARIO DEPARTMENT OF MINES AND NORTHERN AFFAIRS


Upper Beaver Mines Limited
Beaverhouse Lake
Sourdough Lake
Victoria Creek
Key Map
Legend
Traverse Lines
Sample Location
Value of Analysis (of Hg vapour) in micrograms per litre
Transit Surveyed Tie Lines
Base Lines
Picket Lines
Drill Hole (vertical projection)
Value of Analyses (of Hg Vapour) in Micrograms per Litre
.00 to .50
.50 to 1.00
1.00 to 3.00
> 3.00
Geology
(based on O.D.M maps 50b & 50c with modifications)
Diabase 5
Syenite Porphyry 4
Basic Syenite 3
Basic Volcanics



LEGEND

Traverse Lines	
Sample Location	o
Value of Analysis (of Hg vapour) in micrograms per litre	·40
Transit Surveyed Tie Lines	— — — —
Base Lines	
Picket Lines	4N
Drill Hole (vertical projection)	66-2

Value of Analyses (of Hg Vapour) in Micrograms per Litre

.00 to ·50	o
·50 to 1·00	o
1·00 to 3·00	o
> 3·00	o

GEOLOGY
(based on O.D.M maps 50b & 50c with modifications)

Diabase	5
Syenite Porphyry	4
Basic Syenite	3
Basic Volcanics	
Andesite	2a
Dioritic Lava	2b
Fragmental	2c
Acid Volcanics	
Dacite	1a
Fragmental	1b
Contact	
Fault	

UPPER CANADA MINES LIMITED

ROCK MERCURY TRACE SURVEY

GAUTHIER & McVITTIE CLAIM GROUPS

SCALE

JUNE - NOVEMBER 1971

2.903