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MINING LANDS SECTION

REPORT ON THE COMBINED
AIRBORNE GEOPHYSICAL SURVEY
ON THE PROPERTY OF
CARL FORBES
BAYLY TOWNSHIP
LARDER LAKE MINING DIVISION, ONTARIO

2.12991

BY

H. FERDERBER GEOPHYSICS LTD.

December, 1989

R.A. Campbell, B.Sc.
Geologist

REPORT ON THE COMBINED
AIRBORNE GEOPHYSICAL SURVEY
ON THE PROPERTY OF
CARL FORBES
BAYLY TOWNSHIP
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INTRODUCTION

On November 27, 1989 a combined airborne geophysical survey was carried out on the property of Carl Forbes in Bayly Township, Ontario. Magnetic and VLF-electromagnetic data was collected by the airborne division of H. Ferderber Geophysics Ltd. The survey was flown from a base at Val d'Or, Quebec. A total of 78.1 miles of data was collected.

The magnetic survey provides information which outlines the underlying geological structures and identifies any potential economic concentrations which may contain variations in accessory magnetic minerals. The VLF-electromagnetic survey helps define conductive zones which may represent shear zones and/or metallic sulphide deposits containing gold or base metal mineralization.

PROPERTY DESCRIPTION, LOCATION AND ACCESS

The Carl Forbes property is comprised of 61 claims in Lots 2 to 8, Concession III, IV and V, Bayly Township, Larder Lake Mining Division, Ontario. The claims cover approximately 976 hectares, are registered with the Office of the Mining Recorder in Kirkland Lake, and are listed in Appendix 1.

The property is situated approximately 13 miles south of Larder Lake, 22 miles southeast of Kirkland Lake, 24 miles north of New Liskeard and 1 mile east of the village of Wendigo Lake.

Provincial highway 624, south from Larder Lake, passes within 3 miles of the western boundary of the claim block. Gravel roads connect the village of Wendigo Lake to the Highway. Wendigo lake lies near the southern boundary while the northwest arm of the lake is situated 0.25 miles east of the eastern boundary. The lake affords excellent access to the claim block, by boat in summer or by snowmobile in winter. Roads north from highway 569 to the southeastern end of Wendigo Lake end 0.75 miles east and southeast of the claim block.

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The property is forest covered with numerous creeks flowing through the claim group. Topographical relief is low to moderate. Supplies, services and qualified manpower are available in Kirkland Lake-Larder Lake-New Liskeard area.

GEOLOGY

The property is located in the southern part of the Abitibi Volcanic Belt of the Superior Province of the Canadian Shield. The Abitibi Volcanic Belt extends for nearly 350 miles in a west-east direction from Timmins to Chibougamau. It is host to a variety of precious and base metal deposits including the Timmins, Kirkland Lake, Noranda, Val d'Or and the Chibougamau mining camps.

The Abitibi Volcanic Belt is comprised of a complex assemblage of interbedded volcanic and sedimentary rocks intruded by a variety of intrusives, from ultrabasic to granitic in composition. The rocks are Archean in age and have been metamorphosed to a greenschist facies. Numerous late Precambrian diabase dykes cut formations of the belt. The rocks generally strike east-west, have a near vertical dip, and are highly folded and faulted.

The Ontario Division of Mines, Map 2205 - Geological Compilation Series, Timmins-Kirkland Lake Area, outlines the geology of the area. This map indicates that approximately 50 percent of the property is underlain by intermediate pyroclastic metavolcanics, formerly classified as Keewatin rocks. The metavolcanics lie north and west of Coleman member sediments (conglomerate, arkose, greywacke, quartzite and argillite) of the Gowganda Formation. The irregular shaped contact trends east from the southwestern property boundary, then north-northeast, south-southeast and north-northeast along the east arm of Wendigo Lake. This latter contact is defined by a fault zone along the eastern arm of the lake and the Larder River.

Two small intrusions of metamorphosed mafic rocks (gabbro, diorite and lamprophyre), trend south-southwest through the metavolcanic rocks in the eastern third of the claim block, ending at the contact with the sediments. South of Wendigo Lake, just west of the southwestern boundary, the sediments are in contact with mafic intrusive sheets of diabase and granophyre. A narrow diabase dyke strikes east-northeast through the eastern half of the property, cutting sediments, metavolcanics and the eastern mafic intrusive body.

The Ontario Geological Survey, Mineral Deposits Circular 18, Gold Deposits of Ontario, Part 2 (1979), p 190, indicates that a gold occurrence, the Bute Larder Occurrence, lies 0.5 miles north of Wendigo Lake in central Bayly Township. The occurrence must be situated somewhere near of the southern boundary of the claim block. Quartz lenses in a fracture zone striking N25 degrees W. in metavolcanic rocks contain pyrite and chalcopyrite mineralization. Assays obtained in 1938 varied from trace to 0.48 oz/ton Au. Map 2205 shows that Cu and Pb-Zn occurrences lie in sedimentary rocks in the vicinity of claim 1049846 and just southwest of claim 1048755, respectively.

INSTRUMENTATION AND SURVEY METHODS

The survey was completed using a 1972 Cessna 172, fixed-wing aircraft, call letters CF-EWK, owned and operated by H. Ferderber Geophysics Ltd. The pilot and navigator/operator were Y. Saucier and D. Monastesse, of Val d'Or and Vassan, respectively.

Geophysical sensors were mounted in modified wing tips. The geophysical, navigation and data acquisition systems are described in the following pages.

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Magnetometer

The magnetometer used was GEM Systems GSM-11, high sensitivity airborne proton (Overhauser) magnetometer. The instrument continuously measures the Earth's magnetic field at a 0.01 gamma sensitivity for 1 reading per second or 0.05 gamma to 10 readings per second at a 0.1 gamma absolute accuracy. For this survey four readings per second were collected at a sensitivity of 0.04 gamma. The analog output is on 3 channels, from 1 to 10,000 gammas full scale.

VLF-EM System

A Hertz Totem 2A VLF-EM System was used to measure the changes in the total field and in the vertical quadrature field on two frequencies simultaneously, with an accuracy of 1%. The primary transmitting station of Seattle, Washington (NLK), frequency 24.8 kHz was employed in survey.

Radar Altimeter

The ground clearance was measured with a King 10/10 A radar altimeter. The survey was flown at a mean clearance of 300 feet with the altimeter producing an accuracy of 5% (15 feet) at this altitude.

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Tracking Camera and Video Centre

A RCA TC-200 colour video camera and Galaxy 200 video centre were used to record the flight path on standard VHS type video tapes. Manual fiducials were indicated on the picture frames for reference with digital printout. Flight path recovery was aided using a Panasonic Colour Video Monitor-S1300 and Video Cassette Recorder AG-2500.

Data Acquisition System

A Picodas Group Inc. PDAS 1100 data acquisition system featuring seven analog inputs with two frequency inputs and external interfacing was used. A Termiflex Corp. ST/32 Keyboard control unit and Sharp Corp. LCD display unit are connected to the data acquisition system. At present this system stores the altimeter VLF-1 inphase, VLF-1 quadrature, VLF-2 inphase, VLF-2 quadrature, magnetic field (coarse), magnetic field (fine), and the fourth difference (noise), and fiducials on 3.5 inch floppy disk drive. The data is then printed out in digital and profile form.

The survey was conducted on north-south lines were flown at an average aircraft altitude of 300 feet. The lines were flown at spacings of 440 feet at a speed of approximately 90 miles per hour. Navigation was visual using airphoto mosaics, at a scale of one inch to 1320 feet, manual fiducials and the flight path recovery system as references.

DATA PRESENTATION

Flight lines, fiducial points and geophysical responses were reproduced from the airphoto mosaics at a scale of one inch to 1320 feet (1:15,840). The outline of the claim block and the claim map are shown on each map sheet.

The aeromagnetic data was corrected for diurnal variations by using a base line as reference. The data was then contoured at 20 and 100 gammas intervals and presented on Map MG-1.

The VLF-EM was transferred from the Totem 2AG memory to profiled form. A base value was determined for the VLF-EM profiled data. These values were used to correct for variations in transmitter strength and the corrected values were plotted on Map EM-1. The positive values were contoured at intervals of 2%. The conductor axes were determined and labelled A, B, C, etc. No priority was attached to the labelling system.

SURVEY RESULTS AND INTERPRETATION

Magnetic Survey

The results of the magnetic survey indicate that approximately 90% of the property is underlain by rocks of low magnetic susceptibility exhibiting low magnetic relief, less than 60 gammas. These areas are probably underlain by intermediate metavolcanic pyroclastic rocks and sediments. The two narrow northeast and northwest trending linear magnetic highs distort the magnetic contour pattern and obliterate the definition of a contact between the metavolcanics and sediments. An east striking low, along Wendigo Lake (lines 37 to 23), could represent a potential fault zone along part of this contact.

The two narrow linear highs are indicative of diabase dykes. The Cu. occurrence lies near the intersection of the two dykes, in the vicinity of the southern boundary. It appears that the northeast striking dyke is the younger in age, offsetting the northwestern dyke near the location of the occurrence.

The three magnetic highs: on line 6 north of the dyke; on lines 3 to 5, 0.5 south of the northeast dyke; and across the southeastern property boundary: probably define the positions

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of the metamorphosed mafic intrusive bodies. The northeast striking narrow, linear low, lying between the two southern highs, could represent a fault zone cutting the eastern metamorphosed mafic intrusive. The southwestern end of the fault zone is situated near the Pb and Au occurrences.

VLF-Electromagnetic Survey

The results of the VLF-electromagnetic survey indicate that 15 conductive zones underlie the claims of Carl Forbes. The conductive zones have four general trends, roughly eastwest (A to H), southwest-northeast (I), southeast-northwest (J to K) and south-north (L to N).

Zone A is comprised of 6 conductors striking east and east-southeast from line 34, bifurcating in the vicinity of lines 21 and 22, near a creek. The east end of the zone is cut-off by the northeast striking diabase dyke and the third conductor from the west appears to be folded by the emplacement of the northwest trending dyke. Zone A could represent a shear zone in metavolcanic rocks, just north of a possible contact with the sediments to the south. The southeastern end of the zone lies near the Cu occurrence.

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Zone B is made up of 2 conductive zones (two western and 4 eastern conductors), separated by 0.6 miles of nonconductive material. The eastern ends of the east and west zones are cut-off by the dykes and two conductors lie over creeks. Zone B may define the location of a discontinuous shear zone in metavolcanic rocks.

Zones C and D are short, three and two line conductors, located west of two creeks. They could be caused by small shears in metavolcanic rocks.

Zones E, E₁ and F are three short parallel trending conductors situated in a magnetic high, between two lows. The conductors lie west of a probable fault zone and could delineate weak shears in metamorphosed mafic intrusive rocks. Zones E and E₁ lie just north of the Pb. occurrence and west of the Au prospect.

Zone G is comprised of two conductors trending east-southeast across the northern boundary and a magnetic low. This zone may delineate the position of weak, sheared metavolcanic rocks.

Conductor H lies over a creek in the northwestern corner of the property and is probably caused by conductive overburden.

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Zone I is comprised of 5 conductors, striking southwest from the northeastern boundary. The northern 4 conductors lie along the northeastern diabase dyke and represent a shear zone associated with the emplacement of the dyke while the southern-most conductor is situated over a creek and appears to be produced by conductive overburden.

Zone J trends southeast along the northern end of the western diabase dyke, east of a similar trending creek. This zone could also define the location of shears along the edge of the dyke.

Zone K is a short, one line north-northwest conductor lying east of a creek. It may represent a short shear in metavolcanic rocks, northwest of a body of metamorphosed mafic intrusive rock.

Conductor L is located along a creek and is probably caused by conductive overburden.

Zone M strikes south across the central part of the northern boundary and across the magnetic contour pattern. The conductor could delineate a cross-cutting shear within metavolcanic rocks.

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Conductor N trends north from the northeast striking dyke across a magnetic high defining the location of a small metamorphosed mafic intrusive body. It represents the position of a possible cross-cutting shear zone in metamorphosed mafic intrusive rocks.

CONCLUSIONS AND RECOMMENDATION

The results of the airborne magnetic survey was helpful in helping delineate the geology and structures on the Forbes property in Bayly Township. Fifteen conductive zones lie over the claim block, outlined by the data produced by the VLF-electromagnetic survey. The magnetic results indicate that most of the property is underlain by rocks of low magnetic susceptibility, presumably intermediate pyroclastic metavolcanic rocks, in the north, and sediments, to the south. Three small metamorphosed mafic intrusive bodies are situated within metavolcanics rocks in the eastern part of the claim group. Two diabase dykes strike northeast and southwest across the claim group. A Cu occurrence is located near their intersection and a possible fault strikes west from this point, near a contact between the metavolcanics and sediments. A second fault zone strikes northeast between two highs defining the locations of metamorphosed mafic intrusives.

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The Au prospect and Cu occurrence are thought to lie somewhere near the southern end of this fault zone.

Of the 15 conductive zones outlined in the VLF-EM survey, 13 represent potential shear zones within metavolcanics, metamorphosed mafic intrusive rocks and along contacts with the diabase dykes. These potential shear zones could contain sulphide mineralization which may be gold or copper bearing.

The property should be mapped with emphasis placed over areas containing conductive zones in an attempt to explain their origin. A program of ground geophysics comprised of magnetic and horizontal loop-electromagnetic surveys could then be completed to better define geological structures and conductive zones. If the results of these surveys prove positive, conductive zones with good magnetic and geological signatures should be tested by diamond drilling.

Respectfully submitted

H. Ferderber Geophysics Ltd.



R.A. Campbell, B.Sc.

Geologist

APPENDIX 1 - CLAIM LIST

L1046219	L1049819
1046220	1049820
1046222	1049821
1046225	1049822
1046226	1049823
1048746	1049824
1048747	1049825
1048748	1049826
1048749	1049827
1048750	1049828
1048751	1049829
1048752	1049830
1048753	1049831
1048755	1049832
1049712	1049833
1049717	1049834
1049718	1049835
1049719	1049836
1049720	1049837
1049721	1049838
1049722	1049839
1049723	1049840
1049724	1049841
1049725	1049842
1049726	1049843
1049727	1049844
1049728	1049845
1049729	1049846
1049730	1049859
1049731	1049860
	1049861



Ministry of
Northern Development
and Mines

M.L.

2.12.991

460



31M13NE0105 2.12991 BAYLY

900

90

Mining Act

Report of Work
(Geophysical, Geological and Geochemical Survey)

2.1299

Mining Lands Section, Mineral Development and Lands Branch

Type of Survey(s) AIRBORNE MAGNETIC + VLF - EM	Mining Division LARDER LAKE	Township or Area BAYLY TOWNSHIP
Recorded Holder(s) RAVEN RESOURCES INC.	Prospector's Licence No. 7-4869	
Address 139 CARTER AVE. KIRKLAND LAKE ONT.		Telephone No. 567-4696
Survey Company H. FERDERBER GEOPHYSICS LTD.		
Name and Address of Author (of Geo-Technical Report) R.A. CAMPBELL - 169 PERREULT AVE. VAL D'OR P.Q. JAP2H1		Date of Survey (from & to) 27 11 89 Day Mo. Yr. Day Mo. Yr.

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Other	
	Geological	
	Geochemical	
Non Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Other	
	Geological	
	Geochemical	
Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	33
	Magnetometer	33
	Other	

Mining Claim		Mining Claim		Mining Claim	
Prefix	Number	Prefix	Number	Prefix	Number
L	1046219	L	1049720	L	1049822
L	1046220	L	1049721	L	1049823
L	1046222	L	1049722	L	1049824
L	1046225	L	1049723	L	1049825
L	1046226	L	1049724	L	1049826
L	1048746	L	1049725	L	1049827
L	1048748	L	1049726	L	1049828
L	1048749	L	1049727	L	1049829
L	1048750	L	1049728	L	1049830
L	1048751	L	1049729	L	1049831
L	1048752	L	1049730	L	1049832
L	1048753	L	1049731	L	1049833
L	1048755	L	1049819	L	1049834
L	1049712	L	1049820	L	1049835
L	1049717	L	1049821	L	1049836
L	1049718				
L	1049719				

list continued on page 2.....

RECEIVED 47
Total number of Mining Claims covered by this report of work.

Total miles flown over claim(s).
Date **DEC. 28/89** Recorded Holder or Agent (Signature) **Carl P. Forbes**

I hereby certify that I have a personal and intimate knowledge of the facts set forth in this Report of Work, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying
CARL P. FORBES 70 McCAHUS AVE. KIRKLAND LAKE ONT.

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT - BUREAU
OFFICE

Date **DEC. 28 / 89** Certified By (Signature) **Carl P. Forbes**

For Office Use Only

MAR - 5 1990

Total Days Cr. Recorded 4026	Date Recorded Dec 28/89	Mining Recorder [Signature]
	Date Approved as Recorded March 2/90	Provincial Manager, Mining Lands [Signature]

LARDER LAKE MINING DIV.
RECEIVED
DEC 28 1989
AM 1:55 PM
71819-103110-112131415

DM



TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Airborne Magnetic and VLF-Electromagnetic

Township or Area Bayly Township

Claim Holder(s) Carl Forbes

Survey Company H. Ferderber Geophysics Ltd.

Author of Report R.A. Campbell

Address of Author 169 Perreault Ave, Val d'Or, Qc

Covering Dates of Survey November 27, 1989 (linecutting to office)

Total Miles of Line Flown 78.1

MINING CLAIMS TRAVERSED
List numerically

11046219 et al (prefix) (number)
(see attached Appendix)

SPECIAL PROVISIONS
CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

- Geophysical
-Electromagnetic
-Magnetometer
-Radiometric
-Other
Geological
Geochemical

DAYS per claim

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer 33 Electromagnetic 33 Radiometric (enter days per claim)

DATE: Dec 20, 1989 SIGNATURE: R.A. Campbell Author of Report or Agent

Res. Geol. Qualifications 2.6609

Previous Surveys

Table with 4 columns: File No., Type, Date, Claim Holder

TOTAL CLAIMS 61

If space insufficient, attach list

OFFICE USE ONLY

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) Magnetic and VLF-Electromagnetic

Instrument(s) Gem GSM-11 magnetometer and Hertz Totem 2A VLF-EM
(specify for each type of survey)

Accuracy 0.04 gammas and 1%
(specify for each type of survey)

Aircraft used Cessna 172 Fixed-wing

Sensor altitude 300 feet

Navigation and flight path recovery method Navigation was visual on airphoto mosaics. Flight

path recovery was obtained with a RCA colour video camera and a
panasonic colour video monitor.

Aircraft altitude 300 feet Line Spacing 440 feet

Miles flown over total area 78.1 Over claims only 50.35

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

Skead Twp.

THE TOWNSHIP OF

BAYLY

DISTRICT OF
TIMISKAMING

LARDER LAKE
MINING DIVISION

SCALE: 1-INCH=40 CHAIN

LEGEND

- PATENTED LAND
- CROWN LAND SALE
- LEASES
- LOCATED LAND
- LICENSE OF OCCUPATION
- MINING RIGHTS ONLY
- SURFACE RIGHTS ONLY
- ROADS
- IMPROVED ROADS
- KING'S HIGHWAYS
- RAILWAYS
- POWER LINES
- MARSH OR MUSKEG
- MINES
- CANCELLED

NOTES

400' Surface rights reservation around all lakes & rivers

Areas withdrawn from staking under Section 43 of the Mining Act, R.S.O. 19/0

Order No	File	Date	Disposition
(R ₁) W 64/77	72880 + 2	16/6/77	S.R.O.
(R ₂) W 63/83	31283	2/12/83	S.R.B.M.R.
(R ₃) NR W 16/80	31283	15/12/80	S.R.O.

(Q) QUARRY PERMIT

Ba - 1
(R₄) Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. WJB/85

L.U.P. Lot 5, Con.3 No. 104645, No. 104636

02080304

PLAN NO. - M. 323115

ONTARIO

MINISTRY OF NATURAL RESOURCES

REGULATORY AND MAPPING BRANCH

VI

V

IV

III

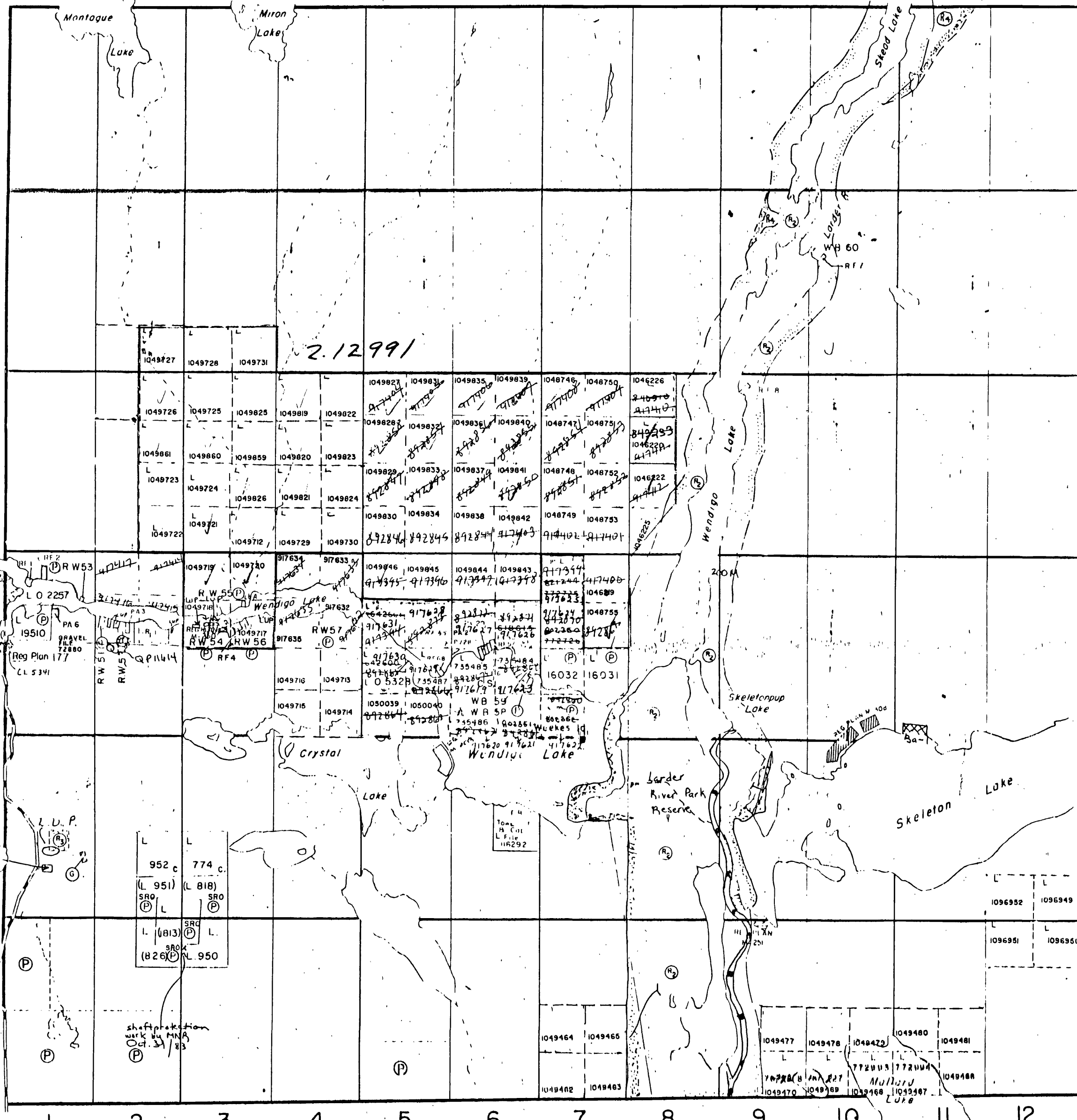
II

I

Mulligan Twp.

Twp.

Marter



LEGEND

TOTAL FIELD CONTOUR INTERVAL 20 GAMMAS

○ FIDUCIAL POINT

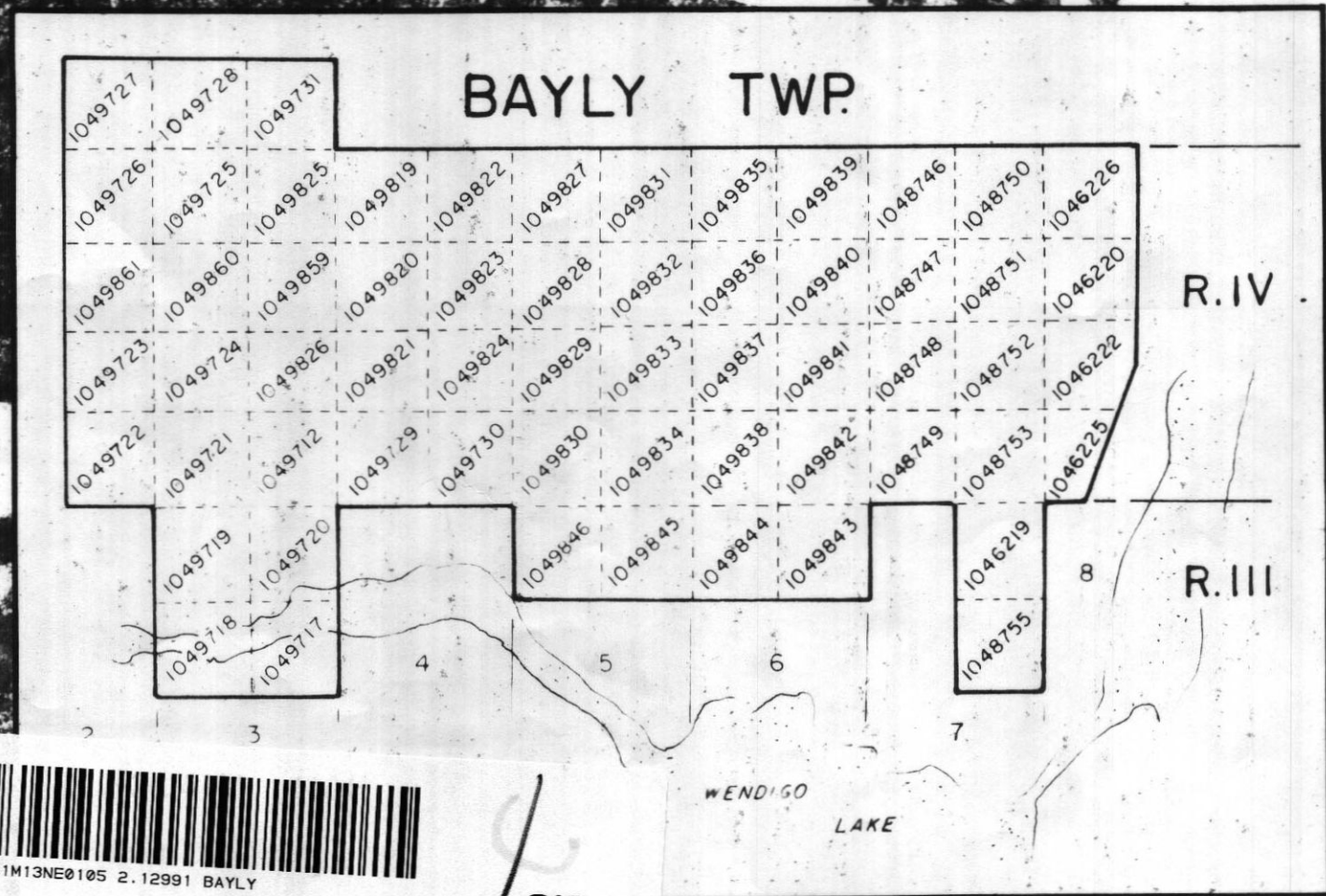
> LINE DIRECTION


BASE VALUE 58 000 GAMMAS

⊖ MAGNETIC LOW

— 100 GAMMAS

— 20 GAMMAS



TYPE OF WORK		AIRBORNE MAGNETIC SURVEY	
CLIENT		CARL FORBES	
PROJECT	2.12991	AREA	BAYLY TWP
 H. Ferderber Geophysics Ltd.	SCALE	1" = 1/4 mile	DATE
	DRAWN BY	J.M.	DEC. 1989
		MAP OR SHEET NO. MG-1	

31M13NE0105 2.12991 BAYLY

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