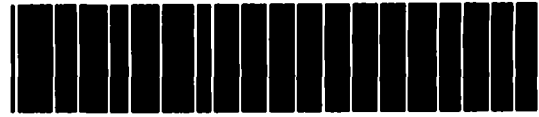


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31D09NW0007 2.15558 CAVENDISH

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SEP 06 1994  
MINING LANDS BRANCH

Vermiculite Occurrences in Cavendish Township

Southeastern Ontario.

*Decl. # 2.2715*

Frederick T. Archibald, B.Sc. Geologist.

December 31, 1992.

9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24

# CAVENDISH VERMICULITE OCCURRENCE

## Location Plan

RANGE #  
VIII

VII

VI

V

IV

III

II

I

### SCALE



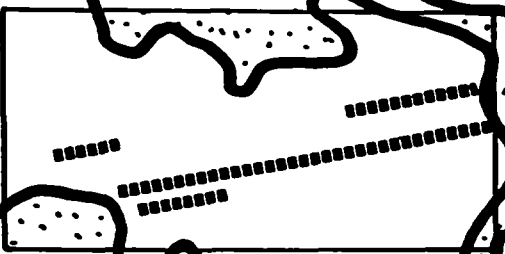
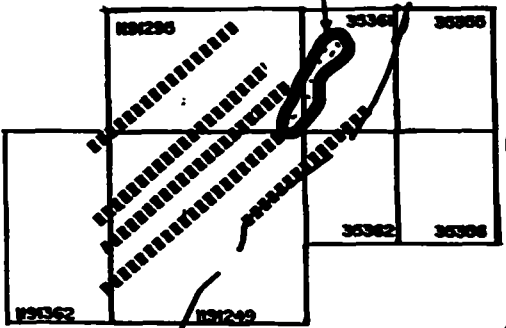
0 1320 2640 FEET  
0 400 800 METERS

HERNWAY 507

CATCHACOMA LAKE

HORSESHOE LAKE

MISSISSAGUA LAKE



CAVENDISH TO HARVEY TO

*J. Starchell*

**Final Report**  
on  
**Cavendish Vermiculite Project**

**Introduction-**

The objective of this project was to evaluate the size and potential of vermiculite bearing materials in the southern part of Cavendish Township, in the Lindsay-Peterborough District. No changes have been made to the project, with exception of the orientation of the grid system due to intense folding in the area.

Previously, several high-tonnage and good-grade vermiculite deposits were encountered some 2.4 kilometers to the east. Unfortunately, the close proximity of these deposits to cottages decreased the tonnage potential for mining and withdrew some of the best areas from mining.

The work performed on the property consisted of: geophysical surveys (consisting of Crone V.L.F. electromagnetics and proton magnetometer), line cutting and flagging of lines, geological surveys, and geochemical sampling of the weathered bedrock horizons. The surveys and sampling was done during eight phases between July 8 and November 30, 1992. Sample exfoliation and studies were completed between November 1 and December 24, 1992.

Some 15.9 kilometers of line was cut and/or flagged during the program. A total of 10.6 kilometers of magnetometer and V.L.F. electromagnetics was run, with a spacing of 100 meters between lines and intervals of 25 meters between stations on the lines (see Plates C through E). A total of 22.8 kilometers of geological survey was run during this program (see Plate B).

A total of some 338 samples were collected during the

geochemical sampling program; ten of which have come from adjacent areas to the north, east, and south of the main survey area. A majority of the samples have come from a marble-dolomite metasediment unit. Approximately 118 of these samples have indicated vermiculite values; and of these approximately 35 have significant values (26 of which are covered by claims controlled by the author.

The second phase of this project involves the evaluation of approximately 92 of these samples for percentage of vermiculite and for the size and density of the vermiculite. The size and density will be graded into different specific uses as outlined in this report.

A total of 71 days were spent on field work and laboratory analysis, 9 days on map preparation, and 5 days on report preparation. A total of \$3903.77 was spent on project expenditures A total of \$12,403.77 was spent on this project by F.T. Archibald.

## Summary-

Previously vermiculite was known to exist in a pit in the northwest corner of patented claim EO 35362 which is controlled and co-owned by the author. Extents of this vermiculite-bearing material was unknown until present. The surveys were carried over claims 1191249 and 1191295; including the surrounding areas.

A program consisting of: prospecting, geological surveying, magnetometer surveying, electromagnetic surveying, geochemical/soil sampling, and lab analyses were used to define the area for vermiculite potential. The author has had previous experience in evaluating vermiculite deposits in Ontario (during 1975 and 1976); although there was insufficient tonnages to progress these areas further.

A total of five vermiculite-bearing zones were delineated by the surveys. These zones are between 500 and 1100 meters in length and average between 25 and 125 meters in width. All of the zones are truncated to the north but continue off of the survey grid onto open crown-land to the southwest. Two claim blocks totalling six claims were picked up during the program to cover some of the areas showing better grades however some of the areas underlie open (crown-land) ground.

Laboratory studies of the material shows that the exfoliated vermiculite is of sufficient size and grade for marketing purposes; however sufficient tonnages would have to be outlined to accomplish this.

For this reason another exploration program is warranted.

## **Property-**

The original property consisted of three patented claims numbered 35355, 35356, and 35362. The original discovery of vermiculite was located on the north-west section of claim 35362. Consequently, it was found that this original discovery was along the eastern contact of a dolomite/marble unit which contained several parallel zones of vermiculite-bearing material, and claims 1191249 and 1191295 were picked up to cover these areas. The original claims consisted of approximately 130 acres. It was found that the vermiculite-bearing lenses continued off the property onto crown-land, and an additional 260 acres was added (for a total of 390 acres). The actual surveys cover an area of approximately 450 acres.

The original vermiculite discovery was made on Lots 19 to 23 in Concessions III and IV in the southeast section of Cavendish Township. This program located parallel vermiculite systems on Lots 12 to 14 in Concessions II and III of Cavendish Township.

The property is located some seven kilometers north on Highway #507 which runs between Buckhorn and Gooderham. It is approximately 35 kilometers northwest of Peterborough and 45 kilometers northeast of Lindsay. The property is also approximately 243 kilometers northeast of Toronto. The property is located approximately 1.2 kilometers north of the Cavendish/Harvey Township line along Highway # 507.

The property consists of gently rolling terrain with mature pine, maple, and oak (4 to 12 inch diameter). Overburden cover is shallow and on average is approximately 0.5 to 1.0 meters to bedrock. In the swamp areas, depths of up to 10 meters of overburden were encountered.

## **History-**

In 1950, H. Greene acquired the area where the work program was run, and the surrounding area. Vermiculite was located at: Lot 14-Concession II, Lot 23-Concession IV, Lot 25-Concession IV, and Lot 22-Concession IV.

In 1973, Globex Minerals Inc. prospected and drilled the area immediately to the east of the claims. This drilling consisted of a limited amount of diamond drilling and augur drilling.

In 1975 and 1976, under the supervision of the author, Goshawk Mines Ltd. had an exploration program consisting of: linecutting, soil sampling (auguring), diamond drilling, and backhoe trenching.

Approximately 1183 meters of diamond drilling and 3460 meters of backhoe trenching was accomplished during this program. Vermiculite was located over a strike length of some 1737 meters and over a width

A total of three vermiculite zones were outlined by these previous programs. The zones averaged 122 meters to 274 meters in width, and 183 meters to 823 meters in length. Due the close proximity to cottages, the program was terminated.

## Geology-

The area is underlain by carbonate-rich metasediments of marble and diopside (Grenville), amphibole-rich metasediments, syenite/syenite gneiss, and quartz monzonite. These units are all cut by pegmatite and syenite dykes. The metasediments are formed from metamorphosed limestone. Bands of altered biotite or amphibole rich material can be seen within areas of intense shearing. (See Plate B).

The vermiculite is mainly found within the weathered -silicified marble and dolomite bedrock; particularly in the areas of shallow swamps and bordering the swamps. Some pseudo-vermiculite can be seen within the amphibolite rich shears; caused in part to partial hydrothermal alteration. A majority of the vermiculite horizons are located within the marbles at the edge of the Anstruther granite batholith. A thin band of amphibolite is found between the Grenville marbles and the Anstruther batholith. Band of biotite-rich amphibolite and granite are found to cut the marble metasediments along schist (shear) contacts.

The modal makeup of the vermiculite is as follows:

40.0-42.4% SiO<sub>2</sub>

23.6-29.3% MgO

9.8-12.2% Al<sub>2</sub>O<sub>3</sub>

5.1-6.7% FeO

0.7-1.1% TiO<sub>2</sub>/CaO/K<sub>2</sub>O

The phlogopite, tremolite, and biotite hydrothermally alter to vermiculite, talc, and serpentinite. The vermiculite forms/precipitates at higher temperatures and different PH than the other minerals. Vermiculite is essentially hydrated aluminum and magnesium. In this case the



vermiculite is found in beige (phlogopite-biotite origin) and green (tremolite-serpentinite origin) sheets; the latter being the higher-grade material. There are (in minor amounts) red colour vermiculite flakes, caused by alteration of actinolite. The Mg content is caused by dissolution of dolomite from the calc-silicate rocks.

On the Goshawk/Insulite property to the east of the area prospected, the vermiculite bands strike at North 70 degrees East, and dip 20 to 60 degrees to the south.

## LITHOLOGY LEGEND

(after: E.G. Bright (OGS) 1981 Cavendish South)

14	<u>Paleozoic</u> Gull River Formation	- limestone & dolostone
	----- unconformity-----	
	<u>Precambrian</u>	
	<u>Late Mafic Intrusives</u>	
13	Mafic Intrusive	- dykes/sills/diabase/lampro.
	----- intrusive contact-----	
12	Intrusive Granites	- granitic pegmatites
	----- Late intrusive rocks -----	
11	Intrusive Granites	- granite/monzonite/diorite
	----- intrusive contact -----	
10	Intrusive Granites	- monzonite, granodiorite
	<u>Grenville Supergroup</u>	
9	Syenite rocks	- syenite/gneiss/qtz.monzonite
	----- intrusive contact-----	
8	Intrusive mafics	- amphibolite/ gabbro
	----- intrusive contact-----	
7	Intrusive felsics	- gneiss / fragmentals
6	Intrusive mafics	- amphibolite / gneiss
	----- Calcareous Metasediments-----	
5	Carbonate Metasediments	- marble/chert/sandstone
4	Amphibole Metasediments	- amphibolite / gneiss
	----- Clastic Metasediments-----	
3	biotite metasediments	- gneiss
	-----Quartzspathic Metasediments--	
2	Siliceous Metasediments	- gneiss
	<u>Middle Precambrian</u>	
	Basement gneiss & migmatites	
1	gneiss & migmatite (mafic-rich)	- amphibolite/gneiss/migmatite

## Geological Survey-

The geological survey was run during four periods between July and November, 1992. There was a one-week period in November when there was up to seven centimeters of snow cover; although this did not effect the survey as the ground conditions were not frozen.

A total of some 22.8 kilometers was traversed during the survey, along flagged lines and claim lines. Although this was a reconnaissance program attempting to locate vermiculite bearing material within the marble and dolomite units primarily, differentiation between biotite rich amphibolites and amphibole-rich amphibolites was not made.

A metasediment complex of marble and dolomite was located on the property. This unit is approximately 750 meters in width and at least 1200 meters in length; continuing off the property onto crown land in the southwest. Where the metasediment unit continues off the property, it is narrowing but still averages approximately 350 meters in width. To the north, at line 5 south or the mid-section of Horeshoe Lake, the metasediment unit is terminated by both amphibolite and syenite units. This same metasediment unit appears to outcrop approximately 0.9 kilometers to the south of the property and also 3.2 kilometers to the north of the property. It appears that the Goshawk Mines Ltd. vermiculite deposit is not connected to the zones outlined during the survey. The new zones occur on the north-west flank of a fold, and the Goshawk deposits occur on the ridge of the same fold; both are separated by biotite-amphibole-syenite amphibolite units. The Goshawk marble-dolomite metasediment units extend as far as the east boundary of claim 35355 (See Plate B).

Vermiculite bearing material is found all around the contact area of the metasediment unit; and within amphibolite rich shears which are trending off of the metasediment and within the sediment unit.

Along the edges of the metasediment unit, the vermiculite bearing zones appear to be confined within lenses. These lenses dip from 45 degrees (flat-lying) to 80 degrees (steeply-dipping); the latter being the prevalent dip (to the southwest). The vermiculite bearing materials in the central portion of this metasediment unit appear to be wider and have a greater potential for depth.

The metasediment unit is terminated north of Line 6 South (west side of Horseshoe Lake), and appears to pinch south of Line 17 South (southwest of claim 1191249). However, extensions of this zone can be found along Highway #507 a few kilometers south and north of the claim group.

## **VLF Electromagnetic Survey - Specifics and Results-**

The Crone Raden V.L.F. electromagnetic unit utilizes higher than normal frequencies and is capable of detecting small sulphide bodies and disseminated sulphide deposits. It is also used to detect fault or shear displacements, and can be used to suggest if the vermiculite horizons are fault or shear controlled. This method accurately isolates banded conductors and operates through areas of high noise or interference levels.

This method is capable of deep penetration but due to the low frequency used, its penetration is limited in areas of clay and conductive overburden. The components of dip angle in degrees of the magnetic field component, and field strength of the magnetic component of the VLF field are measured at each station.

There are several channels or stations available; each with a different frequency. A channel to be used should be parallel to the general strike of the area. If this cannot be determined, then two orthogonal stations are used to define any possible conductors. In this case, due to the southwest trend underlying the survey area, the station of Seattle, Washington with a frequency of 24.0 Khz was used.

The dip angle measurement measures the angle of inclination from horizontal of the direction of the resultant V.L.F., or the amplitude of major axis of the polarization ellipse. It is detected by a minimum reading on the field strength meter and is read from an inclinometer with a range of plus or minus ninety degrees. A conductor is designated by a true crossover pattern of the readings. The measurement is taken from an audio null when the instrument is held in a vertical position; after turning perpendicular to the direction in alignment with the V.L.F. field. The V.L.F. field is found by an audio null or minimum field strength measurement when the instrument is held in a horizontal

position. The accuracy of the dip angle is plus or minus 1/2 degree.

The field strength measurement defines the shape and attitude of the conductor by the strength of the field in the horizontal plane, or the amplitude of the major axis of the polarization ellipse. It is the minimum reading obtained from the field strength meter when the instrument is rotated in the horizontal plane; and is measured as a percent of the normal field strength established at a base station. The field strength of the V.L.F. stations drifts with time and must be adjusted with the base station every few hours. The field strength measurement has an accuracy of plus or minus two percent.

The readings were taken on lines at 100 meters apart and stations every 25 meters on each line. A total of 10.6 kilometers was run during the survey.

The field strength readings were plotted and contoured at ten percent of the total field. The base reading was set at one hundred percent.

The dip angle measurements were plotted and contoured at one inch to twenty degrees.

A total of four anomalous trends were outlined by the survey; all of which are in a north-south to northeasterly trend (parallel to the geological strike).(See PLATE D and E). One of these anomalies corresponds to a powerline on the west side of Highway #507. The other anomalies correspond to wet-swampy areas; two of which correspond with major shear zones. There are vermiculite anomalous areas corresponding with these other three anomalies. The survey was run in July and August of 1992.

It has been deduced that the vermiculite bearing areas occur in areas of low-wet overburden where the rocks have been subjected to weathering processes; thus helping to form vermiculite under optimum

temperature and PH conditions.

The VLF electromagnetic survey has only been useful in locating the low-swampy ground channels, and was therefore not influential in determining the vermiculite-bearing materials.

### **Proton Magnetometer Survey- Specifics and Results-**

The survey was completed with the use of the Exploranium-Geometrics 'Unimag' Proton Magnetometer. It has a digital readout with a sensitivity of plus or minus ten gammas.

Station readings were taken at intervals of twenty-five meters on lines spaced at one hundred meters apart. A total of 10.6 kilometers was traversed during the survey.

The accuracy of the readings was increased by averaging two or three readings; especially in areas of high magnetic fluctuation. There were several areas of high magnetic conductivity encountered during the survey.

The 'world gamma range' selector on the instrument was brought down to a scale relative to the airborne magnetics in the area when plotting the final resultant readings. A scale of 58,500 gammas was set as the world gamma range for the area. The survey was run in July and August, 1992.

Results, after plotting corrections for diurnal drift, are plotted at a scale of one inch to one hundred meters. The results were contoured at one hundred gamma intervals.

Four anomalous trends were outlined by the survey; trending in a north-south to northeasterly direction and parallel to the geological strike of the area (See PLATE C).

The anomalous trends correlate with iron-rich amphibolite dykes which run through the marble-dolomite metasediment unit; and along the eastern contact of the metasediment unit. Vermiculite-bearing material has been found associated with some sheared amphibolite dykes which cut the metasediment unit.

The magnetometer survey has been useful in delineating the



amphibolite dykes which cut the metasediment units, and the contact areas of the metasediment units. In areas overlain by swamp, where geological information is lacking, the survey helped to locate these contact areas.

It has been found that iron-rich areas do coincide with vermiculite-bearing materials, although it is not known if there is any correlation between the two. It is thought that the iron and magnesium are precipitated out during the metamorphic processes; during which time (under high temperatures) the vermiculite is formed. The magnesium and iron content within vermiculite averages from 29 to 36 percent of the total modal makeup of the vermiculite.

The magnetometer survey has been useful in delineating geological contacts between the iron-rich amphibolite units and the iron-free dolomite/marble units. There appears to be some correlation between the vermiculite bearing materials and the contact areas of the metasediment units, and also with amphibole-rich shears which cut the metasediment units.

### **Geochemical-Soil Testing Program-**

Approximately 338 samples were taken during this phase of the program. Of these, ten were taken in areas adjacent to the main section of the survey grid. (See Plate A for locations).

The samples were taken for the most part from the soil horizon immediately above the bedrock. Extra care was taken to try and obtain chips of the bedrock. Dolomite/marble units appeared for the most part to be weathered to semi-weathered. The amphibolite units, with exception of the sheared units, appeared to be more massive and less resistant to weathering processes.

On average the samples were taken at 0.5 to 1.0 meters in depth. The southern and extreme northern sections of the property were overlain by shallow overburden. The areas surrounding Horseshoe Lake and to the southwest of Horseshoe Lake were overlain by deeper overburden averaging 1.0 to 3.0 meters in depth. Drilling indicated that depths of up to 10.0 meters of overburden are found in some of the swamps surrounding Horseshoe Lake. The drilling program was run over areas which indicated high surface values and areas of possible high tonnage situations.

It was found by initial prospecting that the main vermiculite values coincide with the marble/dolomite metasediment units, and within sheared amphibolite/amphibolite gneiss units which are in close contact with the metasediment units. For this reason a majority of the samples were taken from the marble/dolomite units.

Samples were taken every 25 meters on lines spaced at 100 meters apart.

These samples were evaluated visually by using a propane torch to exfoliate a portion of the samples. Samples were first pulverized before exfoliating. The samples were divided into three categories:

- A) no visual vermiculite exfoliating**
- B) visual indication of vermiculite under 5% volume (V or \*)**
- C) visual indication of vermiculite over 5% volume (VG or \*\*or\*\*\*)**

**Samples which indicated vermiculite were used in a qualitative determination program to determine:**

- A) exact percentage of vermiculite**
- B) size distribution of vermiculite**
- C) weight of vermiculite (pounds per cubic foot determination).**

**The initial phase of logging and visual determination took between 0.5 and 1.5 hours per sample on average. The detailed analyses of size distribution and weight determination (including sample drying) averaged 6.6 hours per sample. The samples were dried in a convection oven at temperatures of under 100 degrees F. Low temperatures are needed as higher temperatures will change the exfoliation potential of the vermiculite molecules. The samples are then pulverized and weighed. before exfoliating. After exfoliating each sample, the vermiculite is weighed. The samples are then screened using: +4, +4 to -8, +8 to -14, +14 to -28, -28 screen fractions. Each fraction is weighed and then pound per cubic foot determinations are made.**

**Results of Program-**

Some 338 geochemical/soil samples were taken during the program. Most of these were obtained within the marble/diopside units; the rest within amphibolite rich shear zones. Of the samples taken, 135 (40%) contained vermiculite.

Ninety two samples have been analyzed for quantitative analyses and size distribution/density analyses.

### **Industrial Use for Vermiculite-**

Vermiculite is primarily used in gypsum plaster, insulation, and replacing sand in concrete. It is desirable due to its low density, high heat resistance, low thermal conductivity, light weight, chemical properties, and acoustic (sound-proofing) qualities. It is also cheaper to transport as it expands only upon heating.

Other vermiculite deposits located in Canada are in the Sudbury and Perth areas. Due to the high asbestos/talc contents, these deposits are not in high demand. There are only four other producers of vermiculite in the world. These are: Libby (Montana), Palabora (South Africa), Enoree (South Carolina), and Santa Luzia (Brazil). The first three are high grade (-90% vermiculite) but within narrow lenses and pods. The last is not in high demand due to a high biotite content.

Vermiculite is generally graded into six categories: #1 is coarser than +4 mesh (density of 7 pounds per cubic foot), #2 is between -4 and +14 mesh (density of 6 pounds per cubic foot), #3 is between -14 to +28 mesh (5 pounds per cubic foot), and #4 to #6 is between -28 and +48 mesh (4 pounds per cubic foot). #1 is used for loose fill and agricultural purposes, #2 is used for refrigerator insulation or asphalt impregnation or plaster/concrete aggregate, #3 is used for agricultural growing or plaster/concrete aggregate, and #4-6 is used for fillers/insecticide carriers/paint extenders and home insulation. Vermiculite competes with gypsum, perlite, foamed slag, clay, and sand. Vermiculite has a higher K factor and is lighter than the others; although it has less compressive strength.

## **Results of Surveys-**

Five zones with vermiculite-bearing material were outlined by this project. All of these zones trend in a southwest to northeast direction; parallel to the geological trend for the area.

All of these zones are contained within a marble/dolomite complex which occurs under claims 35362, 1191249, and 1191295. These zones are terminated to the north but although the marble complex narrows and squeezes to the southwest it does continue further past the survey grid.

**Anomaly A** which contains two vermiculite- bearing bands from 25 to 75 meters in width, has been traced for a distance of at least 500 meters in length. This trend occurs along the west contact area of the marble complex. The vermiculite, although finer in size, has been found in amounts ranging from 4 to 38 percent by volume. The richest material is found from line 7 south to line 9 south and approximately 825 meters west of Highway #507. This vermiculite is characteristically beige colour.

**Anomaly B**, some 100 meters east of Anomaly 1, averages between 25 and 40 meters in width. It has been traced for a distance of at least 1100 meters. This anomaly is in the central section of the marble complex and is bordered by low swamp areas. The richest sections, averaging between 8 and 25 percent vermiculite by volume, is located between lines 9 south and 11 south at a distance of approximately 500 meters west of Highway # 507. It is of the beige variety.

**Anomaly C**, some 50 to 100 meters east of Anomaly B, is considered to have the greatest potential for grade and tonnage. It ranges from 25 to 75 meters in width and has been traced for a length distance of at least 700 meters. This anomaly is in the central portions of the marble complex, and appears to narrow to the south. The richest sections,

between lines 8 south and 10 south, average between 4 and 26 percent vermiculite by volume. Although most of this zone lies along the edge of a low-swamp area, it is felt that there is a high-tonnage situation underneath of the swamp. This zone lies approximately 400 meters west of Highway #507. The vermiculite consists of both beige material and of green-platy material. The green-mica rich material generally is of higher grade.

Anomaly D. approximately 150 meters east of Anomaly C, is approximately 25 to 75 meters in width and 700 meters in length. It is located approximately 150 to 250 meters west of Highway #507. Although values as high as 13 to 18 percent vermiculite by volume can be associated with this zone, it is generally of lower grade than the other zones. The richest material is found between line 13 south and line 15 south. The vermiculite associated with this zone is of the massive/beige variety. This zone is located in the central portions of the marble complex.

Anomaly E. approximately 100 to 125 meters east of Anomaly D, is located along the east contact of the marble complex. It is associated with shear zones. The vermiculite is of the beige variety and the green-mica variety, and the grade varies between 3 and 18 percent vermiculite by volume on average. Although grades as high as 69 percent have been encountered, these higher grades are associated with narrow lenses within the sheared marbles. This zone is from 25 to 100 meters in width and consists of several bands of vermiculite-bearing material which can be traced for a length of at least 700 meters. It generally lies along the west side of Highway #507 and lies under and along the side of a low-swamp area. The vermiculite is of both beige/massive and green-mica varieties.

Although vermiculite has been found to be associated with sheared amphibolite within the marble unit and trending away from the

marble unit, it is generally of low grade and uneconomical.

### Summary of Results-

Of the 338 samples taken during the surface geochemical/sampling program, 92 of the samples returned vermiculite values. Of the samples which returned vermiculite values, some forty-one ( 44.6% of the samples) of them contained significant values. Significant values are determined as those which are over two percent vermiculite by volume.

Significant values were returned from all five of the vermiculite-bearing anomalies. The highest percentage of vermiculite found in each anomaly is as follows:

Sampling has indicated that the zones continue to the south-southwest and to the east of the survey area. Two claim blocks of six claims were staked during this program to cover some of the important areas.

A majority of the vermiculite is contained within the -28 to +48 mesh size fraction (grades 4 to 6), but there is sufficient material also in the -14 to +28 (grade 3) mesh size fraction.

Approximately 42 percent of the samples within the -8 to +14 mesh fraction contain material with a density of 3 to 7 pounds per cubic foot, and approximately 23 percent of the samples within the -14 to +28 mesh fractions contain material with the same density. Only 10.9 percent of the samples containing vermiculite contained material coarser than +8 mesh size.

Visual indications during the field studies indicated that Anomaly C and Anomaly E contained coarser vermiculite material with lower densities.

The method of exfoliation of vermiculite using propane torches



is sufficient for field studies but it has been found that without proper temperatures at specific time intervals, vermiculite will not expand to its fullest potential. It is therefore estimated that the vermiculite under ideal conditions will occupy more of the coarser mesh intervals, and that the densities will be lower than what this study has indicated. An oven with 1350 to 1700 degrees F. should be used for future exfoliation of materials.

## **Conclusions-**

**This phase of the exploration program has expanded the previously known areas of vermiculite-bearing material which were first located on patented claim EO35362. Prospecting, geological mapping, geochemical/soil sampling, and magnetometer surveys were all useful tools in outlining these vermiculite deposits. Vermiculite has been found to be associated with defined geological units (metamorphosed limestone), and it has been found that the magnetometer survey is useful in delineating between the iron-rich amphibolites and the iron-poor marble/limestone units.**

**A total of five vermiculite-bearing zones in total were outlined; encompassing a surface area of over 450 square meters.**

**It appears that these zones, all of which lie within a marble (metamorphosed limestone) unit, trend in a northeasterly direction (N 20 degrees E). These zones are truncated in the middle section of Horseshoe Lake (at Line 6 South), but appear to continue off the property and survey grid to the southwest.**

**The vermiculite-bearing zones are located either at the contact of the marble complex or in the central portions of the marble complex. At the contact edges the vermiculite material appears to be relatively shallow and unweathered at depth but in the central areas appears to be wider and weathered to greater depths.**

**It is possible that the material in the central sections of the marble complex is possibly an accumulation of weathered material within a "bowl" or trough; and for this reason there is potential for a large-tonnage situation in this area. Although Anomaly E, in the northwest section of claim EO 35362, has some of the highest vermiculite percentages per volume of material, it is thought that Anomalies C and B respectively have the greatest potential for both grade and volume.**

A total of ninety two samples returned vermiculite assays. Approximately forty-five percent of the vermiculite-bearing samples contained over two percent vermiculite by volume. A majority of the highest-grade samples cover an area of approximately 600 meters square (800 meters east-west and 400 meters north-south). This area is located to the south and southwest of Horseshoe Lake.

Most of the vermiculite-bearing materials are located in low ground or at the edges of swamps. It is possible that there is one large area of accumulation in some areas where some of the anomalous zones are one of the same. It is also thought that some of these anomalous zones are close enough to each other to be mined together.

There is sufficient quantities of vermiculite within the -8 to +28 mesh fractions, (the majority in the -14 to +28 mesh range), with a density of 3 to 7 pounds per cubic foot. The exfoliated vermiculite coincides with the industrial categories of #3 grade to #6 grade. The size and grades outlined by lab analyses indicate that this material is useful as plaster/concrete aggregate, fillers, and paint extenders. With a proper method of exfoliation ( using an ideal exfoliation temperature of 1350 to 1650 degrees F. over a specific time period), it is thought that there is sufficient material in the higher-grade/ coarser size fractions which would be useful for insulation purposes. There appeared to be coarser material associated with Anomalies B, C, and E.

It visually appears that the vermiculite in this deposit is relatively free of talc, serpentinite, and other gangue minerals. It also appears that this vermiculite is anhydrous or of the non-absorbing type; thus it would be more useful as an insulating material than for planting/agricultural material.

## **Recommendations-**

The next phase should be to evaluate the area and depth of the higher grade vermiculite-bearing materials to outline the tonnage and grade potential. There is surface area of approximately 400 meters by 800 meters (between Lines 7 south and 11 south on the south and southwest side of Horseshoe Lake) which should be tested by a "grid" pattern of testing to see if this is in effect a large bowl-type accumulation of residual material. At the same time a backhoe should be used to bulk-test and sample at depth (to approximately 4.5 to 5.5 meters depth) on each of the anomalies where high values were indicated. One fence per anomaly would total approximately 500 to 600 meters of trenching. These trenches could be logged, sampled, and backfilled in approximately 40-50 hours of backhoe time.

This vermiculite deposit, contained within a marble complex, terminates to the north but extends to the southwest. The extent of this deposit is unknown and continues to the southwest into an area overlain by crown-land. As the highgrade values continue into this area, it should be geologically mapped and sampled to see the extent of this zone. A magnetometer survey would be useful in outlining geological contacts under swamp or heavy-overburden areas.

Vermiculite-bearing material has been located in several other locations: on the Harvey-Cavendish Township line some 0.8 kilometers to the south, on the Insulite/Goshawk property some 2.4 kilometers to the east, and in a roadcut on Highway #507 in line of strike and some 4.4 kilometers to the northeast. It is possible that all of these areas are inter-related.

Although the marble complex is truncated to the north, it is possible it squeezes and bulges; thus giving the possibility that there are a series of marble complexes. There is a large area of open crown-land

underlain by metamorphosed limestone or marble some 3.6 to 4.4 kilometers to the north of the present survey area which should be investigated during the next program phase; at the same time the detailed survey and bulk-sampling programs are being run.

December 31, 1992.

Toronto, Ontario.

A handwritten signature in cursive script that reads "F.T. Archibald".

F.T. Archibald, B.Sc. Geologist.

## References

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**Farkas, A.- MOE Report- Research & Technology Report 485C**

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**Guillet, G.R.- ODM Industrial Mineral Report #7-Vermiculite in Ontario**

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**Jewell, J.P.- Report on Olympus Mines Ltd. Property; N.Burgess Township**

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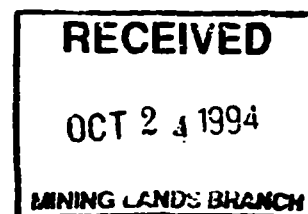
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**Wilson, H.S.- Investigation of Vermiculite-Bearing Samples from Olympus**

**Mines Ltd.- Stanleyville, Ontario. April 18, 1961.**

Field Analyses of 338 Samples

- 232 samples either logged and /or exfoliated in the field  
(locations marked by o or o symbol with locations marked)
- 101 samples taken but visual inspection indicated they were not  
vermiculite bearing thus no logs or exfoliations were done.  
(locations marked by X symbol in locations maps)



**LEGEND. — X no vermiculite value**  
**\* Vermiculite visible**

**Sample Analysis -**

Sample Nos./Location	Wet Wt.(gm.)	Dry Wt.(gm.)	Exfol Wt.(gm.)	Verm Content
J003	26.5	26.4		X
J004	19.8			*
J007	20.0	20.0		X
J0013	11.9			*
J0017	13.2			*
J0018	19.9	19.9		X
J0019	25.9	25.9		*
J0023	16.5			*
J0030	19.4	19.4		X
J0031	19.7	19.7		X
J0034	19.5	19.5		X
J0036	18.6			*
J0039	15.3			*
J0050	21.6	21.6		X
L5S - 0+50W	21.4			*
L6S + 0+50W	105.2	105.2		X
L6S - 6+50W	24.5	24.5		X
L6S - 8+25W	15.6			*
L6S - 8+50W	14.8	14.8		X
L6S - 7+75W	17.9			*
L6S - 9+25W	19.8			*
L7S - 0+25W	43.1	43.1		X
L7S - 1+00W	71.1			*
L7S - 1+50W	36.5	36.5		X



L8S - 0+75W	49.1	49.1	X
L8S - 1+00W	35.7	35.7	X
L8S - 1+25W	84.2	84.2	X
L8S - 1+50W	20.9		*
L8S - 2+50W	56.2	56.2	X
L8S - 9+00W	15.9		*
L9S - 4+00W	34.6	34.6	X
L9S - 5+25W	17.6		*
L9S - 5+50W	61.8		*
L9S - 5+75W	21.7		*
L9S - 6+00W	23.2		*
L9S - 6+25W	21.4		*
L9S - 8+50W.	13.7		*
L9S - 8+75W	17.6		*
L9S -			
L10S - 2+25W			*
L10S - 5+00W	79.3	79.3	X
L10S - 6+25W	66.3	66.3	X
L10S - 3+75W	157.6	157.6	X
L11S - 3+00W	73.1	73.1	X
L11S - 3+25W	85.1	85.1	X
L11S - 3+50W	97.3	97.3	X

L12S - 1+50W	19.4		
L12S - 3+25W	118.6	118.6	X
L12S - 5+00W	243.7	243.7	X
L12S - 3+50W	29.5	29.5	X
L12S - 4+75W	38.1	38.1	X
L12S - 6+00W	108.8	108.8	X
L12S - 7+75W	46.0	46.0	X
L13S - 1+75W	33.4	33.4	X
L13S - 2+75W	40.3		
L13S - 4+25W	34.6	34.6	X
L13S - 4+75W	25.4	25.4	X
L13S - 5+25W	67.9	67.9	X
L13S - 7+00W	52.5	52.5	X
L13S - 7+50W			
L13S - 7+75W	1.2	1.2	X

Sample Analysis -

Sample Location	wet Wt.(gms)	Dry Wt.(gms.)	Exfol. Wt.(gms.)	% Verm.
BL - 4+75 W				X
L1+50S - 5+25 W				X
BL - 600 W				X
L0+50N - 1+75W				X
L1+11N - 2+75E				X
L1+00N - 5+50W				X
L0+50N 4+50W				X
L0+50S - 6+00W				X
L0+50N - TL				X
L1+00N - 1+50W				X
L1+00N - 1+50E				X
L1+00N - 5+75W				X
L0+50N - 5+00W				X
L0+00 - 0+25W				X
L0+50S - 2+00W				X
L0+50N - 1+50E				X
L1+00S - 0+25W				X
L2+50S - 4+75W				X
L4+00S - 4+75W				X
L2+50S - 5+25W				X
L4+50S - 6+00W				X
L0+00 - 0+75W				X
L1+00N - 4+25W				X
L3+50S - 5+25W				X
L0+50N - 0+75E				X

Sample Location Wet Wt.(Gms) Dry wt.(gms) Exfol. Wt.(gms) %Verm.

L1+00N - 1+00W			X
L0+50N - 0+75W			X
L4+00S - 6+00W			X
L4+00S - 5+50W			X
L1+00S - 4+00W			X
L4+50s - 5+75W			X
BL - 3+25E			X
BI - 3+00W			X
L4+50S -7+00W			X
L4+00S - 4+50W			X
L4+00S - 6+25W			X
BL - 5+75W			X
L0+50S - 1+75W			X
L1+00N - 3+00E			X
BL - 5+00W			X
L4+50S - 5+50W			X
L4+50S - 6+25W			X
L0+00 - 3+50W			X
L4+00S - 5+25W			X
L0+50S - 4+75W			X
L4+50S - 7+25W			X
L1+00S - 1+00W			X
L1+50S - 2+75W			X
L4+00S - 5+75W			X
L1+00N - 4+50W			X
L1+50S - 5+75W			X

Sample Location	Wet Wt.(gms)	Dry Wt.(gms)	Exfol. Wt.(gms)	% Verm.
BL	- 3+00W			X
L3+50S	- 6+00W			X
L1+50S	- 3+00W			X
L2+50S	- 3+50W			X
L0+50S	- 5+00W			X
L4+00S	- 6+50W			X
L4+00S	- 4+ <del>50</del> W			X
BL	- 1+50W			X
L1+00S	- 4+50W			X
BL	- 1+ <del>50</del> W			X
L0+50N	- 1+25 <del>W</del>			X
L3+00S	- 6+00W			X
L0+50N	- 4+25W			X
L0+50N	- 0+50W			X
BI	- <del>0</del> +75W			X
BL	- 0+25W			X
L0+50N	- 1+50W			X
L1+00N	- 1+75W			X
L0+50N	- 5+50W			X
L0+50N	- 0+50E			X
L3+00S	- 3+75W			X
BL	- <del>0</del> +50W			X
L1+00N	- 0+50W			X
TL	- 1+00N			X
L1+00N	- 1+75E			X

Sample Location	Wet Wt.(gms)	Dry Wt.(gms)	Exfol Wt.(gms)	% Verm.
L0+00 - 4+50W				X
L0+50N - 4+75W				X
L1+00N - 0+25W				X
L0+50N - 1+75E				X
L4+50S - 4+75W				X
L1+00S - 4+75W				X
L0+00 - 3+75W				X
L0+50S - 4+50W				X
L0+00 - 4+25W				X
L0+00 - 4+00W				X
EL - 2+00W				X
EL - 5+50W				X
L1+00N - 2+25W				X
L1+00N - 5+00W				X
L1+00N - 2+50E				X
L1+00N - 4+75W				X
L1+00N - 1+25W				X
L1+00N - 2+00W				X
L0+50N - 1+00E				X
L1+00N - 0+75W				X
L0+50N - 0+25E				X
L0+50N - 2+50W				X
L2+00S - 5+00W				X
L1+00N - 2+25E				X
L1+00N - 5+50W				X

Sample Location    Wet Wt. (gms)    Dry Wt (gms)    Exfol. Wt (gms)    %Verm.

L1+00N - 3+75W

X

L4+00S - 5+00W

X

L0+00 - 5+~~25~~W

X

L4+50S - 6+50W

X

L1+00N - 4+00W

X

L0+00 - 2+~~25~~W

X

L2+00S - 4+00W

X

L0+50N - 5+25W

X

L4+50S - 6+75W

X

L1+50S - 3+75W

X

**Sample Location : Description**

**L4+50S-6+00:Liteyellow/buff,sandysilt,dry,loose,oddroot+frag,poor flakes**

**L0+00-0+75W:buff/mid bn., matted, moist,homogeneous,lot flakes,no frags**

**L1+00N-4+25W: dk.bm.color, loose, sandy, lot frags, poor flakes**

**L3+50S-5+25W: moist, matted, dk.bn.to buff, lot frags+silver flakes**

**L0+50N-0+75E:moist, matted,dk.bn./buff, odd frag., few roots, lot flakes**

**L1+00N-1+00W: moist/matted,buff brown,odd frag.,lot silver flakes,roots**

**L0+50N-0+75W: dk.bn. ,matted, moist, few roots, small flakes, no frags.**

**L4+00S-6+00W dry, fine buff/yellow sandy soil, lot frags, poor flakes**

**L4+00S-5+50W: dry, fine sandy soil, dk.brown,lot frags, poor flakes**

**L1+00S-4+00W: dry, buff/dk.bm. sandy soil, lot frags, poor flakes**

**L4+50S-5+75W: dry, red.bn. sandy soil, lot frags/flakes**

**BL - 3+25E: dk.brown, granular marble, dry, roots, poor flakes (Bedrock)**

**L4+50S-7+00W:fine grey, sandy/granular, lot frags, dry, no roots or flakes**

**L4+00S-4+50W:lite buff bn., moist/matted, lot flakes, no frags. or roots**

**L4+00S-6+25W : fine, grey sandy, lot frags, lot roots, no flakes, dry**

**BL -5+75W:lite buff bn.,moist/matted, lot flakes, no frags.,homogeneous**

**L1+00N-3+00E:dk.red/bn.,sandy,dry,loose/granular soil,lot frags.,no flakes**

**BL -5+00W: dk.red/bn., sandy, dry, loose, lot frags., no flakes**

**Sample Location : Description**



**L4+50S-5+50W: mid.buff bn., dry, loose, sandy soil, lot frags., no flakes**  
**L4+50S-6+25W:mid bn./buff color,dry,loose,sandy soil,lot frags.,no flakes**  
**L0+00-3+50W : mid.buff bn., dry, loose, sandy soil, lot frags., no flakes**  
**L4+00S-5+25W: mid.bn/buff color, dry, loose, sandy,lot frags.,no flakes**  
**L0+50S-4+75W:grey/bn,matted-clay (marl),wet,no frags/roots,lot flakes**  
**L4+50S-7+25W: moist/matted(marl),wet,lot flakes,some frags.,no roots**  
**L1+00S-1+00W:red/bn.,loose, dry, sandy with frags., no flakes**  
**L1+50S-2+75W: wet,grey/blk.marl,lot frags,silver lge.flakes (on bedrock)**  
**L4+00S-5+75W:fine, loose, dry, mid bm.sandy soil, odd flake, no frags.**  
**L1+00N-4+50W: dk.red/bn.loamy soil, lot frags., poor flakes, dry**  
**L1+50S-5+75W:Lite gm./bn.micaceous, loose, wet/matted, small flakes**  
**BL -3+00W: lite green/bn.,micaceous,lot frags/flakes(bedrock)**  
**L3+50S-6+00W: very wet,gn./bn., lot mica flakes + frags., loose, matted**  
**L1+50S-3+00W:wet, lite buff color, sandy alt.marble?, no flakes,**  
**L2+50S-3+50W: wet, dk.gm./blk, micaceous, sandy, fine flakes**  
**L0+50S-5+00W: wet, lite gm./bn., lot flakes, loose, matted, no frags.**  
**L4+00S-6+50W : moist, gm./bn. micaceous,lot larger flakes, lot frags.**  
**L4+00S-4+50W: wet gm./buff, lge. flakes, lot roots, matted, odd frag.**

**Sample Location : Description**

**BL -1+50W: moist, red/bn., sandy fine soil ,fine flakes, lot mica**

**L1+00S-4+50W: wet, dk.bn./blk.with lot silver flakes, odd frag.**  
**BL - 1+25W: moist, red/bn.sandy loam, matted, odd flake**  
**L0+50N-1+25E: moist, red/bn.sandy loamy soil, lot flakes, odd frag.**  
**L3+00S-6+00W: very wet, dk.bn./blk.laom, lot silver flakes, lot frags.**  
**L0+50N-4+25W:moist, red/bn.sandy loam lot silver/green flakes, no frags.**  
**L0+50N-0+50W: dryer, red/bn.sandy, lot silver flakes, odd frag.**  
**BL - 0+75W: moist, matted, w. roots, lge. silver flakes in bn. sandy loam**  
**BL -0+25W: moist, matted sandy soil, w. roots,lge.silver flakes,lot frags.**  
**L0+50N-1+50W: moist, red/bn.sandy soil, lot flakes, loose, no frags.**  
**L1+00N-1+75W:moist lite buff/ bn. sandy soil, loose, lot flakes, roots**  
**L0+50N-5+50W:dry,loose,bn/blk.sandy soil,lot roots,silver flakes,no frags.**  
**L0+50N-0+50E: loose,moist,med.bn.sandy,lot silver flakes+roots,no frags.**  
**L3+00S-3+75W: wet, loose, dk.bn.sandy, lot silver flakes, no frags.**  
**BL - 0+50W: moist,lite buff/bn.,matted silts,lot silver flakes,no frags.**  
**L1+00W-0+50W: lite red/bn.sandy loam, no frags.,lot silver flakes(med)**  
**TL - 1+00N: moist, grey clay/loamy marl, lot frags, poor flakes**

**Sample Location : Description**

**L1+00N-1+75E: moist, mid.bn.sandy soil, lot roots/silver flakes/odd frag.**  
**L0+00-4+50W: wet, matted, mid.-dk.bn.sandy, large flakes**  
**L0+50N-4+75W: dryer, loose dk.bn.sandy soil, less silver flakes, no frags.**

**L1+00N-0+25W: moist, med.bn., loose sandy soil, lot roots, poor flakes, no frags.**

**L0+50N-1+75E: dry loose granular marble, poorly flaked, lot roots,no frags**

**L4+50S-4+75W: moist/matted , mid bn., sandy, lot flakes/roots, no frags.**

**L1+00S-4+75W: wet,lite grey/bn.sandy, lot silver flakes, no frags**

**L0+00-3+75W :wet, dk.bn/blk.organics over med/grey marl, odd flake**

**L0+50S-4+50W: wet, dk.bn.organics over grey marl, larger flakes**

**L0+00 - 4+75W: wet, grey/buff bn. sandy soil, no frags, lot med.flakes**

**L0+00 - 4+00W: wet, grey/buff sandy soil, no frags, lot med. flakes**

**BL - 1+00W: moist, red/bn.sandy loam, lot flakes, no frags.**

**BL - 5+50W: moist, dk.bn.sandy loam, poorly flaked, no frags.**

**L1+00N-2+25W: wet,dk.bn./blk. sandy loam, lot lge. silver flakes, no frags.**

**L1+00N-5+00W: moist,loose,red/bn.sandy loam,few flakes,homogeneous**

**L1+00N-2+50W:dry, dk.bn.loamy soil, lot frags + silver flakes**

**L1+00N-4+75W: dk.bn.loamy soil, loose, dry, lot roots, no frags.**

**L1+00N-1+25W: dry, lite red/bn., loose sandy soil, lot roots, poor flakes**

#### **Sample Location : Description**

**L1+00N-2+00W:wet,lite red/bn.buff sandy soil,lot frags/roots,some flakes**

**L0+50N-1+00E:moist,lite red/bn.sandy soil, no frags,some flakes/roots**

**L1+00N-0+75W: moist, lite red/bn.loamy soil, lot roots, flakes, no frags.**

**L0+50N-0+25E: moist, lite red/bn.loamy soil, w.roots, flakes, no frags.**

**L0+50N-2+50W: moist, red/bn.loamy soil, lot roots, flakes, no frags.**

**L2+00S-5+00W: fine lite buff sand with frags,poorly flaked**

**L1+00N-2+25E: dry, dk.bn.loamy soil, lot roots, odd frag., poor flakes**

**L1+00S-5+50W: dry, red/bn.sandy soil, odd frag., few flakes**

**L1+00N-3+75W : mcist, dk.bn.loamy soil,lot roots/frags., small flakes**

**L4+00S-5+00W:dry,mid.bn./buffcolor,matted marl, no frags/roots, flakes**

**L0+00-5+50W: dry, loose, red/bn.sandy soil, lot frags, no roots/flakes**

**L4+50S-6+50W: dry,loose,fine red/bn.sandy soil,lot roots/frags.,no flakes**

**L1+00N-4+00W: dry, loose, dk.bn/blk.soil, lot roots/frags/flakes**

**L0+00 -2+00W:dry,loose,red/bn.loamy soil,lot roots,no frags,poor flakes**

**L2+00S-4+00W: moist,lite buff sandy soil, lot roots, no frags, poor flake**

**L0+50N-5+25W: lite bn./buff sandy soil, lot roots, odd frag., poor flake**

**L4+50S-6+75W: dry, mid bn. sandy soil, lot roots/frags, some flakes**

**L1+50S-3+75W: dry, loose, red/bn.sandy soil,lot roots/frags, poor flakes**

08/01/92 8:55AM  
 000000098  
**YOUR RECEIPT**  
**THANK YOU**  
 FLVM'S STORE  
 G.S.T. NUMBER  
 R122231590

1 2.69  
 1 4.69  
 2 1.49  
 2 1.19  
 2 1.59  
 2 1.19  
 3 2.34  
 3 1.28  
 1 2.39  
 10 @  
 0.25 @  
 7 2.50  
 \* 21.65 ST  
 \* 0.38 II 1  
 \* 0.44 II 2

QTY	PRICE/PRIX	AMOUNT/MONTANT
9		50
	TAX	
	TOTAL	50

AMOUNT/MONTANT  
 5090000  
 Shell Canada Products Limited  
 Produits Shell Canada Limitee

Sold to / Vendu à  
 Sold by / Vendu par  
 Esso Petroleum Canada  
 Pétroles Esso Canada

TOTAL 2610896  
 PRODUCT S/S QTY PRICE  
 I UNL 11.37  
 AMOUNT 21.00

071192  
 TOTAL 2610896  
 I - GST included 1 - GST Taxable  
 I - TPS include 1 - TPS Taxable

CASH 20.00  
 CHANGE 2.32  
 TAX 17.68  
 ON PST 1.23  
 1.08  
 1.59 T  
 3.74 T  
 1.90 T  
 1.67 T  
 3.99 T

\*\* THANK YOU FOR SHOPPING A&E  
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 Pétroles Esso Canada  
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TOTAL INCLUDED GST \$3.40  
 PRODUCT S/S QTY PRICE  
 I UNL 95.063 0.547  
 AMOUNT 52.00

250 498 415 9 30016  
 Sold to / Vendu à  
 Sold by / Vendu par

Motor oil  
 Huile moteur  
 57.00  
 20028591  
 080292  
 Fuel amount includes PST where applicable.  
 Calculant TPV inclus, s'il y a lieu.

21P-191 ONT  
 57.00  
 57.00

July	9	gas	(A+P)	6.50	FLYNN SHELL
	9	food		17.68	
	9	lodging	AT?	11.00	
	9	meal	LITTLE GULL MEANS	7.58	
	9	meal		24.67	TRAVEL INN
		gas	(ESSO)	52.00	
	11	gas	(ESSO)	21.00	
	15	food	* gas 9.00 - JAH'S gas tank G	9.43	
	15	gas		23.30	FLYNN SHELL
	16	maps	MNR	16.79	
	16	maps	MNR	6.90	
	18	hardware (flag tape)	<del>BURBANK HARDWARE</del>	21.44	REG PERLIN LTD
	18	food		4.61	BUCKINGHAM IGA
	31	hardware (flag tape)	? 20 HOME	11.45	MCCANN HOME
	28	gas	PETROCAN	58.00	
	28	groceries		6.77	BUCKINGHAM IGA
	28	groceries		22.47	BUCKINGHAM IGA
	28	hardware	BUCKINGHAM HARDWARE	28.88	
	28	groceries		66.72	BUCKINGHAM IGA
	18-31	cabin rental		160.00	BUCKINGHAM PINE MOTEL
	29	groceries		17.50	BUCKINGHAM IGA
	30	groceries		7.60	"
	30	hardware		4.58	PRO HOME
Aug.	1	gas	* gas 57.00 ESSO G	14.80	
	1	gas		2.88	
	5	motel	* into Flynn's 5.20 F	224.00	NEW KENNEDY HOTEL
	6	groceries		6.77	SHEPP IGA
	6	hardware	* Aug 2 hardware 20.50 F	14.35	PRO HOME
	6	meals	* Aug 2 gas. ESSO 57.00 G	18.17	MCDONALD
	6	meals		10.00	NORTH END REST
	6	meals		16.48	" "
	7	meal		6.44	BUCKINGHAM REST
	7	meal		9.14	" REST.
	7	meal		8.28	NORTH END REST.
	8	meals		12.88	WALK 32 REST
	8	meals		12.25	BUCKINGHAM REST.
	8	meals		13.43	HOWEL'S
	8	gas		5.08	FLYNN SHELL
	14	equipment purchase (scales)		718.75	LABEQUID
	5	meal		8.68	NORTH END REST
	8	gas	* AUG 10 27.02 gas 27.02 G	61.00	ESSO
	14	meals		4.93	HOWEL'S
	16	meals		10.75	FLYNN SHELL
	16	meals		4.97	D.T. CONVENIENCE
	16	meals		5.06	THREE SUNS REST
	4	gas		24.51	ESSO
	9	meals		11.68	
	17	meals		20.52	ST. HUBERT
	14	gas		16.30	ESSO
	10	meals		22.52	ST. HUBERT
	10	meals		27.02	H
Oct.	22	motel		63.00	MEEVANCE LODGE MOTEL
	22	gas		16.50	PETROCAN
	22	meals		14.78	NEW DUTCH SHELL
	21	gas		17.06	NEW DUTCH SHELL ESSO
	21	groceries		21.52	BUCKINGHAM IGA
Nov.	18	meal		6.56	MILYON RESTAURANT
	18	meal		6.48	HOWEL'S
	18	gas		25.20	-PETROCAN

Nov. 2	photos for report (Motophoto)	10.87	PETROL
2	meal	3.48	RESTAURANT
29	gas	43.50	FLYNN'S SHELL
Dec. 2	gas (Flynn's Shell)	39.00	
2	gas (New Dutch Shell)	30.00	FLYNN'S SHELL
2	meal (New Dutch Restaurant)	4.89	
Aug. 10	student labour (Robert Archibald @ \$5/hr)	400.00	
4	student labour (Tara Lowry @ \$5/hr) (CASH)	165.00	
	truck mileage @ 30¢/km. (3329 km in 1992) (rented from F.T. Archibald Consulting Ltd.)	998.70	
	<b>TOTAL EXPENDITURES-----</b>	<b><u>\$3785.05</u></b>	

**NEW ROCKLAND MOTEL**  
 3 Canal Street East, P.O. Box 286  
 BOBCAVAGEON, ONTARIO K0M 1A0  
 (705) 738-4300

*CAS 14*

Check-out time is 10:30 a.m.  
 The person registering is responsible for  
 all damages caused to room, furnishings  
 and fixtures.

GUEST NAME: *Ed S. Crook Baker*

ROOM NO: *117*

DATE: *09.01.92*

# DAYS	RATE	ROOM TOTAL
1		148.00
		TAX 2.40
		MISC CHARGES 3.36
		TOTAL 153.76

**Thank You**

This is Your Receipt  
 Please Retain

No 1515

TRAPPERS INN TAVERN  
 705-657-8591

G.S.T. #  
 R105371264

07/15/92 21544  
 001E#4444

BEER 50.00

FOOD 50.75

FOOD 14.75

FOOD 33.95

WINE 12.05

TAXI 10.37

TAXES 10.72

TAXES 10.70

ITEMS 40

EXITOTAL 113.91

CASH 111.71

CHANGE 2.20

74.00  
 100.00-394  
 74.00 508

07/15/92 10:30 50104 5/4  
 001E#4444

164238 15:13:32 06-30-92  
**HOME HARDWARE STORES**  
 2885 DUFFERIN STREET  
 TORONTO M6B3S5 PH/7836119

1034204 KNIFE, RETRACTABLE 10-099 6.29  
 1.00  
 1145308 TORCH KIT, PROGRAMME BM #20 7.97  
 1.00  
 SUBTOTAL 14.26  
 G.S.T 1.00  
 P.S.T 1.14  
 TOTAL 16.40  
 CASH 15.40  
 CHANGE 1.00

1 2 6  
 R106240492

TRAPPERS INN TAVERN  
 705-657-8591  
 G.S.T. #  
 R105371264  
 09/03/92  
 0019#6041  
 1:40PM  
 50  
 \$16.16  
 ITEMS  
 \$16.16

RECEIPT  
 221393

GUESTS	DATE	GST	PSI
2	09/02/92		69

GST REGISTRATION NO.

*03-02-92*

1K \$3.89  
 1K \$7.99  
 1K \$5.49  
 7Q 0  
 0.02 a  
 1K \$1.40  
 \$18.77 s  
 \$1.50K

\$20.27K

9228-03MA



09/16  
09/16  
09/16

09/16  
09/16  
09/16

09/16  
09/16  
09/16

09/16

TRAPPERS' INN TAVERN  
35-657-8591

S.T. #  
105371264

7/15/92  
2:54PM  
01EM446

BEER 7 \$3.00  
JDD TX T% \$0.75  
JDD TX T% \$4.75  
JDD TX T% \$3.55  
DSE ST \$12.05  
TAX1 \$0.84  
TAX2 \$0.72  
TAX3 \$0.30

TEMS 40  
\*\*TOTAL \$13.91  
CASH \$13.91  
CHANGE \$0.00

TRAIL

TRAIL  
TRAIL

TRAIL  
TRAIL

TRAIL  
TRAIL

TRAIL

164238 15:13:32 06-30-92

HOME HARDWARE STORES

2885 DUFFERIN STREET  
TORONTO M6B3S5 PH/7836119

1034204 KNIFE, RETRACTABLE 10-099 6.29  
1.00 e 6.29  
1145308 TORCH KIT, PROPANE BN #20 7.97  
1.00 e 7.97

SUBTOTAL 14.26  
G.S.T 1.00  
P.S.T 1.14  
TOTAL 16.40  
CASH 16.40  
CHANGE 0.00

1 2 6  
R106240492

TRAPPERS' INN TAVERN  
35-657-8591

S.T. #  
R105371264

09/05/92  
001644041

ITEMS 50  
\*\*TOTAL \$16.16

WESTSIDE JUGGITY  
\* OPEN DAILY \*  
7 AM TO 11 PM

09/02/92 6:36PM  
777E#0552 SANDY

STAT T% \$2.49  
D'RUGS T% \$4.09  
S T \$6.58  
PST68% \$0.53  
GST67% \$0.46

CASH \$7.57

\* THANKS FROM \*  
\* WESTSIDE \*

03-02-92  
SEP

1 TX \$3.89  
1 TX \$7.99  
1 TX \$5.49  
70 Q  
0.02 @  
1 TX \$1.40  
\$18.77 S  
\$1.50 TX

\$20.27 CA

9 2 2 8 - 0 3 M A

GUESTS	DATE	GST	TAX	TOTAL
2	SEP 21 1992			29.15
RECEIPT				
221393				
GST REGISTRATION NO.				

F.T. ARCHIBALD CONSULTING LTD.

100 ADELAIDE ST. WEST, SUITE 702  
TORONTO, ONT. M5H 1S3

0003

AUG. 17 19 92

PAY TO  
THE ORDER OF

ROBERT C. ARCHIBALD

Four Hundred

100  
DOLLARS

\$ 400.00



ROYAL BANK OF CANADA  
20 KING STREET WEST BRANCH  
TORONTO, ONTARIO M5H 1C4

F.T. ARCHIBALD CONSULTING LTD.

C.C.C.S. - TORONTO, ONT  
C.U.C.D. DATA CENTRE  
566-828 08/19/92 1-1

FOR

C. AUBIN - Employee

PER

*[Signature]*

⑈000003⑈ ⑆06012⑆003⑆ 170⑆614⑆2⑈ ⑆0000040000⑆

5 ORIG 0100 WHITEPRINT BLACK/BLUE LINE

**\*\* MINIMUM CHARGE \*\*** **12.00**

*pd Sept 7 '92*

**TOTAL AMOUNT 12.00**

ADDITIONAL INSTRUCTIONS **CAVENDISH**

GST 12.00 0.84

PRO ORDER ORDERED BY **CW**

PST 12.00 0.96

409 Precision Copy

ENLARGEMENTS, REDUCTIONS AND RESTORATION  
COLOUR PHOTOCOPIES

**TOTAL ==> \$13.80**

WHITEPRINTS NEGATIVES OVERHEADS CAD SERVICE  
EPIAS PLATES PMT PRINTS MOUNTING & LAMINATING SERVICE  
DYLAR FILM POSITIVES OFFSET PRINTING 5080 COPIES  
STATS INSTANT PRINTING FAX SERVICE PRINTED CIRCUIT NEGS



# Paragon

**INVOICE**

**TERMS: NET 30 DAYS**  
Overdue unpaid balances subject to a 2% per month service charge.

**INDUSTRIAL PHOTOGRAPHIC REPRODUCTIONS LIMITED**  
1160 ELLESMERE RD., SCARBOROUGH, ONTARIO M1P 2X4 (416) 291-2542 FAX: (416) 291-5888  
G.S.T. REGISTRATION No. R121025647

13655 363-5054

**C W ARCHIBALD LTD**  
100 ADELAIDE ST W - 702  
TORONTO ONT  
M5H 1S3

**PLEASE DO NOT WRITE IN THIS BOX**  
INVOICE DATE  
**08/13/92**  
INVOICE NO.  
**132545**

TRACINGS WILL BE RETURNED WITH PRINTS UNLESS OTHERWISE INSTRUCTED

TIME REQUIRED <b>08/13/92</b>	CUSTOMER ORDER NO.	G.S.T. STATUS	PROV. LICENCE NO. <b>EXTRA</b>	DATE OF ORDER <b>08/04/92</b>
----------------------------------	--------------------	---------------	-----------------------------------	----------------------------------

ORIGINALS CLOSED	DRAWING NO. OR DESCRIPTION	TYPE OF PRINT REQUIRED	COPIES OFF EACH	TOTAL SQ. FT.	PRICE PER SQ. FT.	AMOUNT
------------------	----------------------------	------------------------	-----------------	---------------	-------------------	--------

1	ORIG 0116 WHITEPRINT DYLAR .002" SEP		6	39.0	1.45	56.55
---	--------------------------------------	--	---	------	------	-------

*pd Aug 24 '92*

**TOTAL AMOUNT 56.55**

ADDITIONAL INSTRUCTIONS **CAVENDISH**

GST 56.55 3.96

PRO ORDER ORDERED BY

PST 56.55 4.52

418 Precision Copy

ENLARGEMENTS, REDUCTIONS AND RESTORATION  
COLOUR PHOTOCOPIES

WHITEPRINTS NEGATIVES OVERHEADS CAD SERVICE  
EPIAS PLATES PMT PRINTS MOUNTING & LAMINATING SERVICE  
DYLAR FILM POSITIVES OFFSET PRINTING 5080 COPIES  
STATS INSTANT PRINTING FAX SERVICE PRINTED CIRCUIT NEGS

**I. WORK PERFORMED BY APPLICANT (Continued)**

2. Project #2 area/name _____		No. days worked by applicant
Traditional prospecting	No. of samples _____	_____
Geological surveys	Scale _____	_____
Geophysical surveys	Type _____ Miles/km _____	_____
Geochemical surveys	Type _____ No. of samples _____	_____
Drilling	Type _____ Ft/m _____	_____
Stripping/Trenching	Method _____	_____
Other	Type _____	_____
	<b>TOTAL</b>	-----
<b>TOTAL DAYS (ALL PROJECTS)</b>	<b>A.</b>	<b>71.0</b>
(Attach additional sheets for additional project areas as required) Appendix to report		

**II. EXPENDITURES (total of all projects) - Summary of I and II**

1. Number of working days by applicant	71.0 days	\$ 7100.00
(A) x \$100/day .....		_____
2. Number of report preparation days by applicant x \$100/day	14.0	\$ 1400.00
.....		_____
3. Analyses/Assay costs samples prep & analyzed in field		\$ -----
.....		_____
4. Equipment rentals/supplies (specify)		
hardware (Flag, tape etc)	\$ 47.24	
weigh scale purchase	\$ 718.75	\$ 913.76
truck rental - (@ 30¢/km)	\$ 147.77	_____
office/xerox/map prep:		_____
5. Contract services (state type)		
student labour	\$ 565.00	
(@ \$5 per hour)		\$ 565.00
.....		_____
6. Travel (state method: road, air, etc.)		
truck @ 30¢/km.	\$ 998.70	
.....		\$ 998.70
.....		_____
7. Food and Accommodation .....		\$ 1426.31
8. Other expenses (specify, e.g. helpers)		
student labour as per #5	\$ _____	
.....	\$ _____	\$ -----
.....	\$ _____	_____
<b>TOTAL EXPENDITURES .....</b>		<b>\$ 12,403.77</b>

No. 3061

Otonabee Region Conservation Authority

Camping Permit

Name: F.T. ARCHIBALD

Address: 1 ROYAL-BIRKDALE LANE  
THORNHILL ONT. L3T1V1

Licence # 072519 Colour Blue Make: B.M.C.

No. In Party: \_\_\_\_\_ Campsite: \_\_\_\_\_

Date In: July 9 Date Out: July 10

	# OF NIGHTS	FEE	TOTAL
Campsite	<input checked="" type="checkbox"/>	1	11.00
Hydro Campsite	<input type="checkbox"/>		
Boat Docking	<input type="checkbox"/>		

The Otonabee Region Conservation Authority accepts no responsibility for accidents or loss resulting from the use of its properties and/or facilities.

Vehicles should be locked when unattended.

Visitors are subject to all Authority rules and regulations.

Area closes at 9 p.m.

- W. Caves
- Selwyn
- H. Mill
- S. Creek

5191 2300 285 8521

Do not write above this line - Ne rien écrire au dessus de cette ligne

1079-02792-09/4  
FREDERICK ARCHIBALD

05642576 MC CAN  
013 1217 FROM AR  
013 402 447 AF Y

Customer's Signature - Signature du client

The issuer of the card identified on this form is authorized to pay the amount shown on this upon proper presentation. I promise to pay such card together with any other charges thereon subject to and in accordance with the agreement governing its use of such card.  
L'émissionnaire de cette carte est autorisé à payer le montant indiqué sur cette carte sur présentation de celle-ci. Je m'engage à rembourser cette somme et les autres charges sur cette carte, conformément aux conditions de l'accord régissant l'usage de cette carte.

Master

Bank of Montreal  
Banque de Montréal

5331529

Description	Amount - Montant
Flagging tape	9.95
Tax - Taxe	1.50
Total	11.45

Sales slip  
Facture de vente

CUSTOMER COPY  
COPIE DU CLIENT

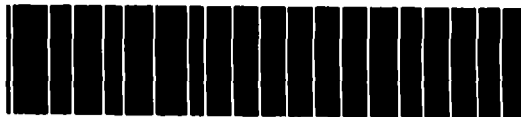
F. T. Archibald Consulting Ltd.

702 - 100 ADELAIDE STREET WEST  
TORONTO, ONTARIO, CANADA  
M5H 1S3  
416-363-5054  
FAX 416-363-5228

Cavendish Twp Project ~~CONFIDENTIAL~~

July 8,9,10,11,14,15,16,17,29X3,30X3,31X3  
August 1X3,2X3,3

July10	gas	52.00
9	gas	6.50
9	food	17.68
9	lodge	11.00
9	meals	7.58
9	meals	24.67
11	gas	21.00
15	food	9.43
15	gas	23.30
16	maps	16.79
16	maps	6.90
16	hardware	21.44
16	food	4.61
16	gas	9.00
28	gas	58.00
28	groceries	6.77
28	groceries	22.47
28	hardware	28.88
28	groceries	66.72
28-31	cabin rental	160.00
29	groceries	17.50
30	groceries	7.60
30	hardware	4.58
31	hardware	11.45
Aug.2	campsite/lodge	11.00
2	meals	20.50
2	meals	14.66
1	gas	14.80
1	groceries	2.88
2	gas	57.00
	mileage to Aug.2	
	1975 km @ .30-----	592.50



# Report of Work Conducted After Recording Claim

Mining Act

Transaction Number  
W9490.00048  
**2.15558**

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 158 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7884.

- Instructions:
- Please type or print and submit in duplicate.
  - Refer to the Mining Act and Regulations for requirements of filing assessment work or consult the Mining Recorder.
  - A separate copy of this form must be completed for each Work Group.
  - Technical reports and maps must accompany this form in duplicate.
  - A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s) <b>Alan A. Archibald</b>		Client No. <b>A 51431</b>
Address <b>74 Conley St. Thornhill, Ontario L4J 2X5</b>		Telephone No. <b>905-660-1554</b>
Mining Division <b>Southern Ontario</b>	Township/Area <b>Cavendish</b>	M or G Plan No. <b>M 72</b>
Dates Work Performed From: <b>August, 1992</b>	To: <b>December, 1992</b>	

### Work Performed (Check One Work Group Only)

Work Group	Type
Geotechnical Survey	till sampling / prospecting / geophysics / geology / magnetometer
Physical Work, including Drilling	
Rehabilitation	
Other Authorized Work	<b>SECTION 18 ONLY</b>
Assays	
Assignment from Reserve	

**RECEIVED**  
SEP 06 1994  
MINING LANDS BRANCH

Total Assessment Work Claimed on the Attached Statement of Costs \$ 16,658.00

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

### Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
<b>F.T. Archibald</b>	<b>702-100 Adelaide St. West, Toronto, Ontario M5H 1S3</b>

(Attach a schedule if necessary)

### Certification of Beneficial Interest \* See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.

Date	Recorded Holder or Agent (Signature)
June 30, 1994	<i>F. Archibald</i>

### Certification of Work Report

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

Name and Address of Person Certifying  
**Frederick T. Archibald**

Telephone No.	Date	Certified By (Signature)
416-3635054	June 30, 1994	<i>F. Archibald</i>

### Recorder or Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Recorded Stamp
\$ <b>1,981</b>	<b>July 7/94</b>	<i>[Signature]</i>	<b>SOUTHERN ONTARIO MINING DIVISION</b> <b>RECEIVED</b> JUL -7. 1994 AM BU
	Approved Approval Date	Date Approved	
	<b>Oct 5/94</b>		

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units
2.155	1191249	4
58	1191295	2
	35355	1
	34356	1
	34362	1
Total Number of Claims		5

Value of Assessment Work Done on the Claim	Value Applied to this Claim
7,772	1,321
3,887	660
1,249	
1,249	
2,497	
Total Value Work Done	
16,654	1,981

**RECEIVED**  
 SEP 06 1994  
 MINING LANDS BRANCH

Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
-	6,451
	3,227
	1,249
	1,249
	2,497
Total Assigned From	
	14,673

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to prioritize the deletion of credits. Please mark (✓) one of the following:

1.  Credits are to be cut back starting with the claim listed last, working backwards.
2.  Credits are to be cut back equally over all claims contained in this report of work.
3.  Credits are to be cut back as prioritized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

**Note 1:** Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

**Note 2:** If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature <i>[Handwritten Signature]</i>	Date <b>JUNE 30 1994</b>
---	--	--------------------------





Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Transaction No./N° de transaction

2.15558

Mining Act/Loi sur les mines

July 8 to December 31, 1992

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4<sup>e</sup> étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre	565.00	565.00
71 days	Field Supervision Supervision sur le terrain	10,650	11215.7
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type office 14 day	2100.00	2100.00
			2100.00
Supplies Used Fournitures utilisées	Type office map	147.77	147.77
	equip.purch.	718.75	718.75
	field hardwar	47.24	47.24
			913.76
Equipment Rental Location de matériel	Type		
			=====
<b>Total Direct Costs Total des coûts directs</b>			<b>14228.75</b>

2. Indirect Costs/Coûts indirects

Note: When claiming Rehabilitation work indirect costs are not allowable as assessment work. Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
Food and Lodging Nourriture et hébergement	room & board	1426.31	1426.31
Mobilization and Demobilization Mobilisation et démobiliation	3329 X 35¢ km.	998.70	2425.01
<b>Sub Total of Indirect Costs Total partiel des coûts indirects</b>			<b>2425.01</b>
<b>Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)</b>			<b>2425.01</b>
<b>Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)</b>			<b>16653.76</b>

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note: Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

- Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
- Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
x 0.50 =	100%

Remises pour dépôt

- Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
- Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
x 0,50 =	

Certification Verifying Statement of Costs

I hereby certify: that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as agent/ part owner I am authorized (Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente: que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de titulaire enregistré, représentant, poste occupé dans la compagnie je suis autorisé

à faire cette attestation.

Frederick T. Archibald

Signature: Frederick T. Archibald Date: June 30, 1994



Ontario

Ministry of  
Northern Development  
and Mines

Ministère du  
Développement du Nord  
et des Mines

~~Geoscience Approvals Office~~  
933 Ramsey Lake Road  
6th Floor  
Sudbury, Ontario  
P3E 6B5

November 7, 1994

Our File: 2.15558  
Transaction #: W9490.00048

Mining Recorder  
Ministry of Northern Development  
and Mines  
MacDonald Block, Room M2-17  
900 Bay Street  
Toronto, Ontario  
M7A 1C3

Telephone: (705) 670-5853  
Fax: (705) 670-5863

Dear Sir/Madam:

**Subject: APPROVAL OF ASSESSMENT WORK CREDITS ON MINING CLAIMS  
SO.1191249 ET AL IN CAVENDISH TOWNSHIP**

---

The deficiencies in the original submission have been rectified.

Assessment work credits have been approved as outlined on the report of work form for the submission. The credits have been approved under Section 12, Geology, Section 13, Geochemical, and Section 14, Geophysics (MAG), Mining Act Regulations.

The approval date is November 1, 1994.

If you have any questions regarding this correspondence, please contact Lucille Jerome at (705) 670-5861.

ORIGINAL SIGNED BY:

Ron C. Gashinski  
Senior Manager, Mining Lands Section  
Mining and Land Management Branch  
Mines and Minerals Division

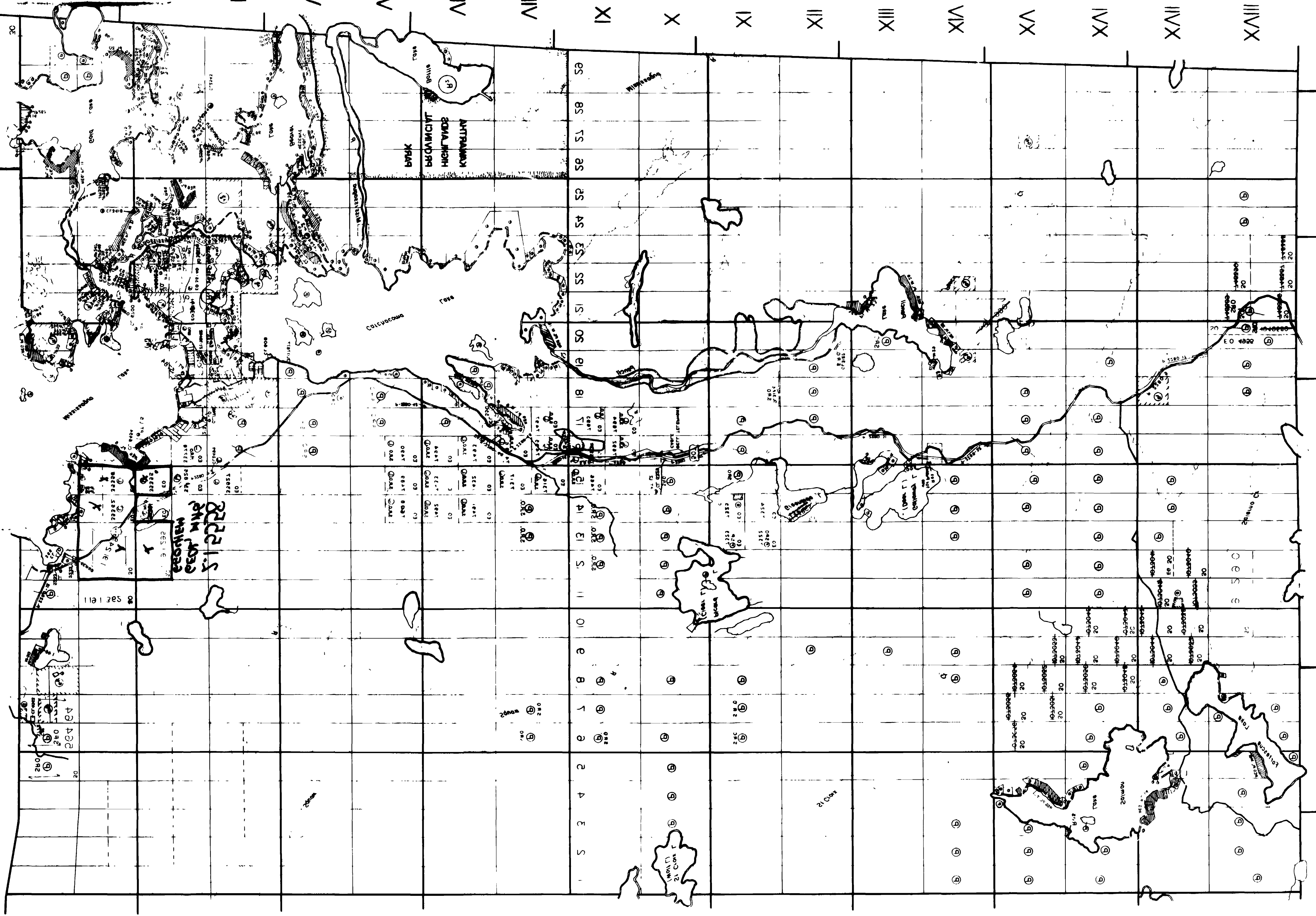
LJ/jl  
Enclosures:

cc: Resident Geologist  
Tweed, Ontario

Assessment Files Library  
Sudbury, Ontario

HAYAGY TWB (W-101)

BVILSIAW TWB (W-25)



(2E-M) qWT nartymaia

(4E-M) qWT ywlad

(2A-M) qWT yarturana

5.12.2000

baseu ab ot toti iz be usei  
- FOR SURVEY PURPOSES -

NOTE

- 1. The survey was conducted in the field.
- 2. All measurements were taken at the same time.
- 3. The accuracy of the measurements is ± 0.1 m.
- 4. The results of the survey are given in the following table.
- 5. The measurements were taken by the following personnel.

RECEIVED

ORGANIZACIJA ZA  
KARTIRANJE  
REPUBLIKE SRBIJE  
POSREDOVANJE  
SRBIJE  
BR. 1111

# CAVENDISH

FOR THE COMMISSION

82

СТ-М-10 ИЛДР

ОПЛАТНО ПОДРОБНО  
СТАВИТИ НА РАДУ

INFORMATION  
ON THE BASIS OF THE  
ORIGINAL INFORMATION  
MATERIALS FOR THE  
IDENTIFICATION OF THE  
SOURCE OF THE  
RECORDING MATERIALS  
AND THE SOURCE OF  
THE INFORMATION  
HAS BEEN COMPLETED  
ON THIS MAP  
THE INFORMATION

APR 25 10  
DATE OF ISSUE

DATE	NO.	REVISION
19.05.01	1	INITIAL
19.05.01	2	REVISION
19.05.01	3	REVISION
19.05.01	4	REVISION
19.05.01	5	REVISION
19.05.01	6	REVISION
19.05.01	7	REVISION
19.05.01	8	REVISION
19.05.01	9	REVISION
19.05.01	10	REVISION

APPROXIMATE POSITION  
OF THE SURVEY  
AND THE LOCATION OF  
THE SURVEY

THE SURVEY WAS CONDUCTED  
IN THE FIELD  
AND THE RESULTS ARE  
GIVEN IN THE FOLLOWING  
TABLE



Scale 1:50,000

Handwritten signature or initials at the top left.

САВЕДИШ ВЕРНИЦИТЕ ОСУЩЕСТВЕНЕ  
МАШИНОТЕМАТ  
УЛУГОВЕ

бр 399 Л



ТОГ # 1000000

№ 1000000

RECEIVED  
2 FEB 08 10:00 AM  
MILITARY BRANCH

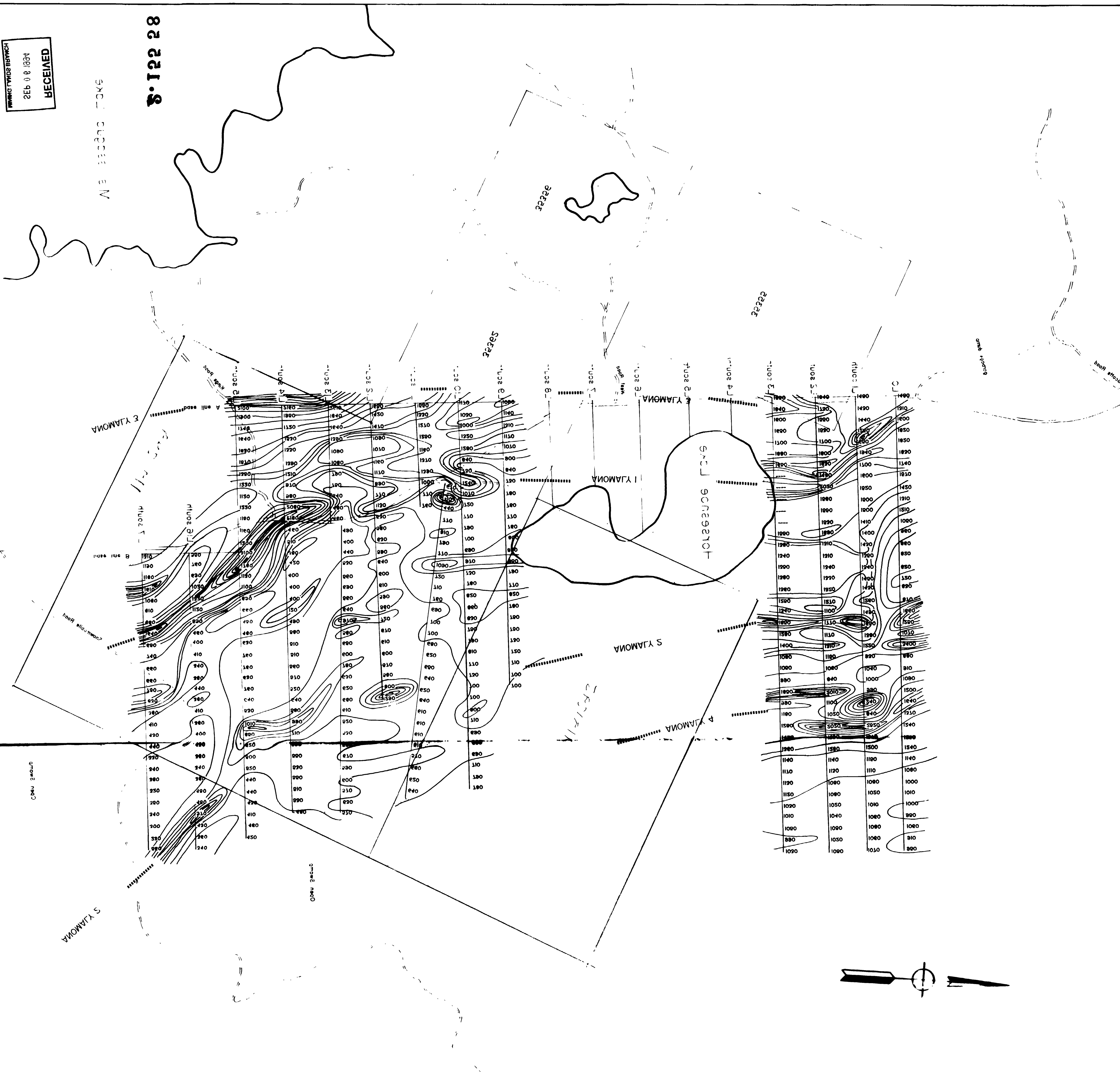
5 YAMONA

СМУ ЗАГЛУ

СМУ ЗАГЛУ

СМУ ЗАГЛУ

82122.8



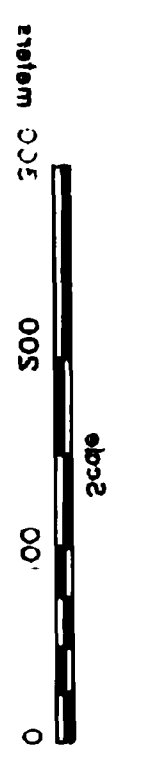
САВЕИДИШ ВЕРИЦИУЕДЕ ОССУРЕНЦЕ

УВЕРУС СИТЕИДИМОУРТЕДЕ  
этинемучисадам тигрелте блейт

RECEIVED  
APR 30 1952  
MAIL ROOM

83 221.5

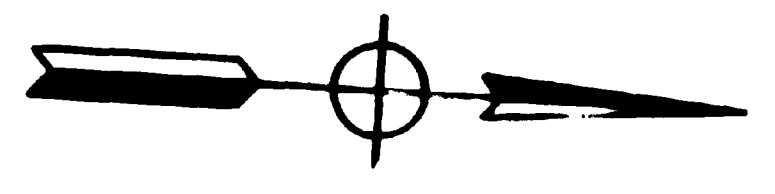
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ТОЗ # yowrghH

Legend



555

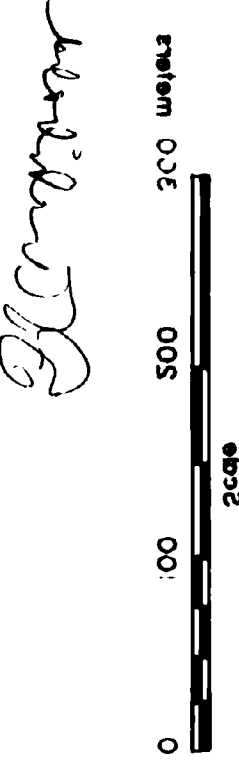








0485



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# CAVEINDISH VERMICULITE OCCURRENCE

- - sampling stations
- VC- vermiculite (+12%)
- V- vermiculite (-12%)

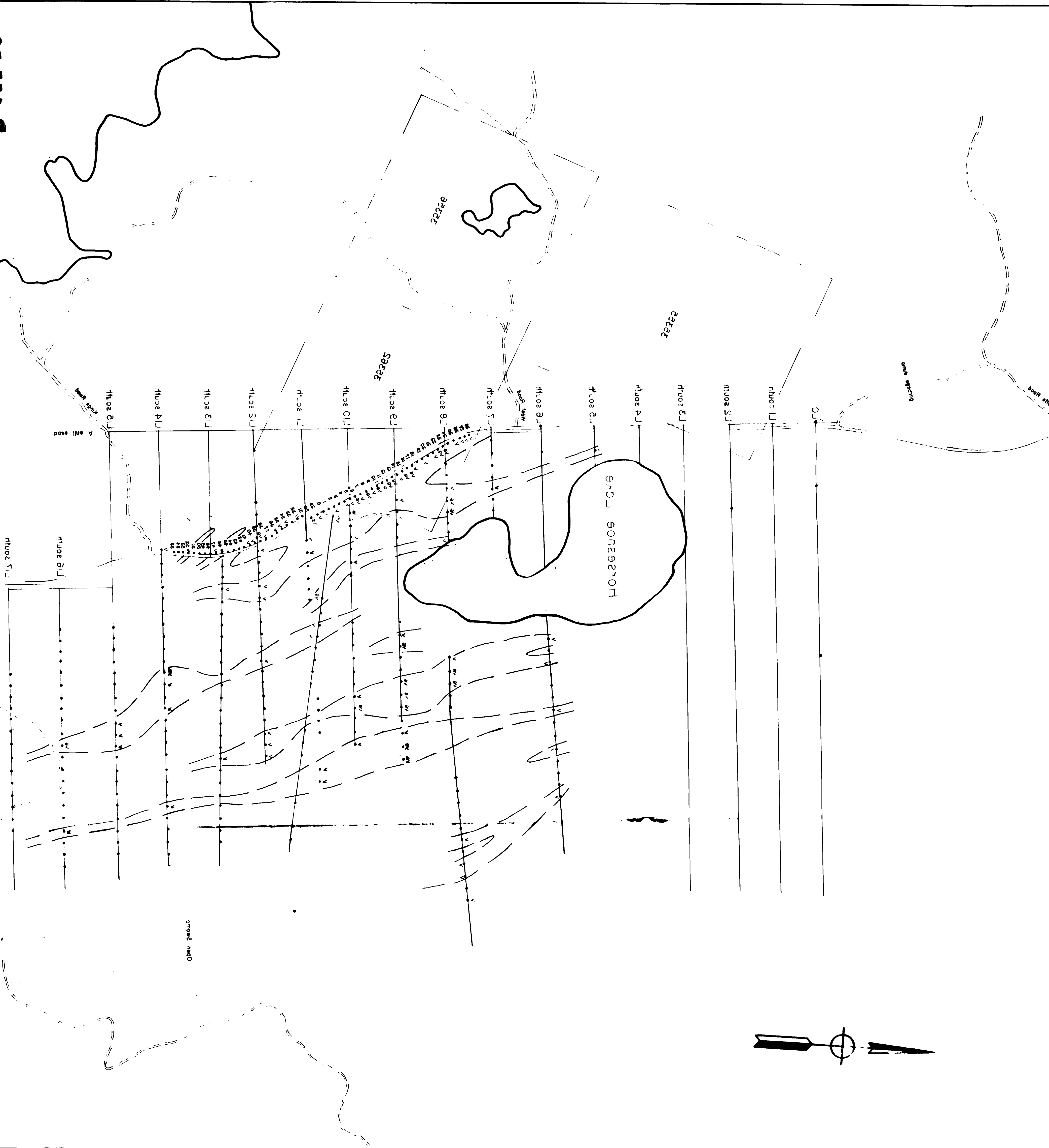
## Legend

TOB # Yawright

RECEIVED  
 FEB 08 1997  
 MINNAC

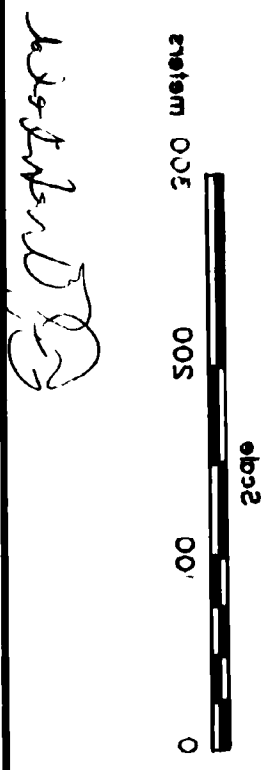
Open Shovel

Wissassaugua Lake  
 S. 122 28





520



САВЕИДИШ ВЕРИМЦИГИТЕ OCCURRENCE

УЛУВУРА СИТЕНАМОТДИЕЛ  
ДИП АНДИ МЕСАРИЕМДИ

Гедерд

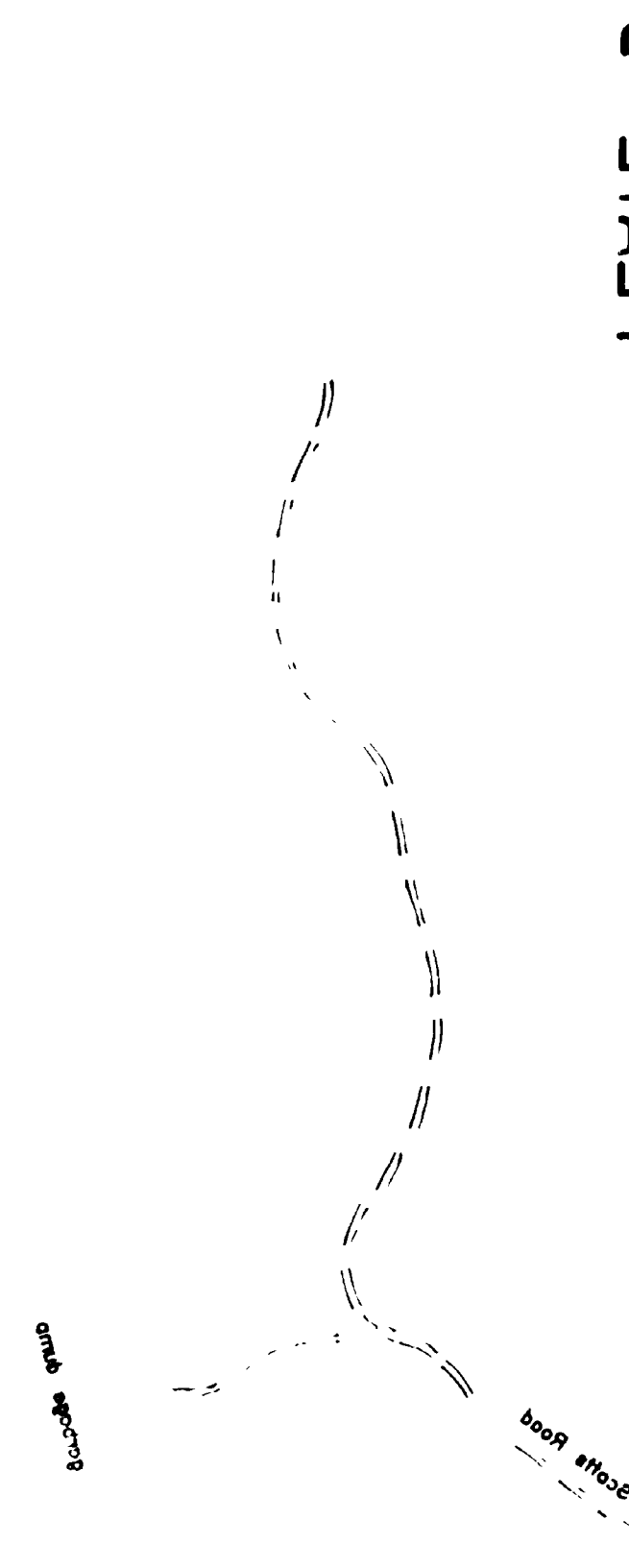
Гедерд

ТОР # yowtigh

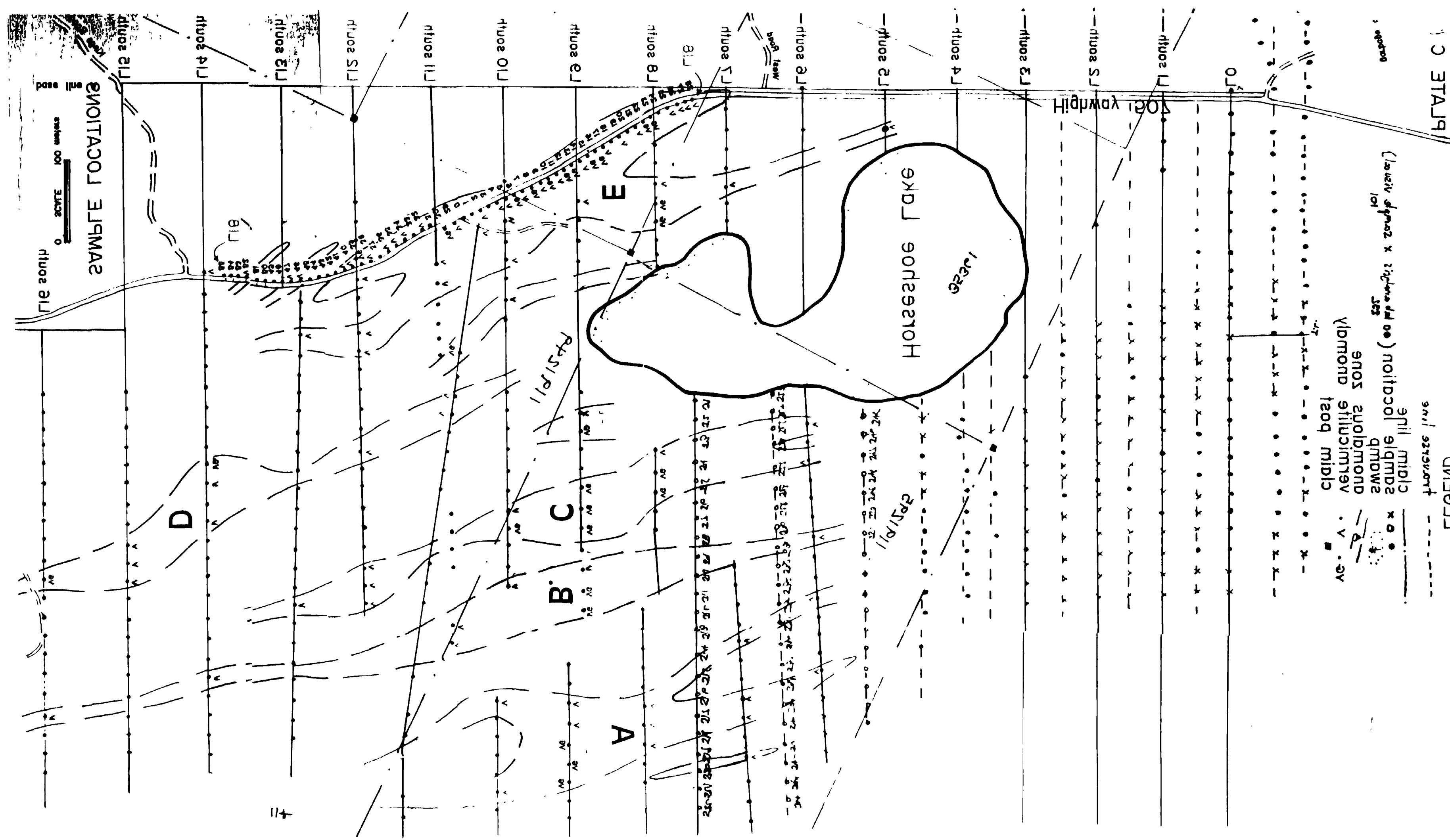
RECEIVED  
25 FEB 08 1984  
MILWAUKEE COUNTY DISTRICT

Мисиссиссипи Гакс

82 312 28







LEGEND

claim post

sample location

swamp

vermiculite anomaly zone

claim

gate

claim post

vermiculite anomaly zone

swamp

claim

sample location

gate

GATE C

Horeasanos Lake

SCALE 100 meters