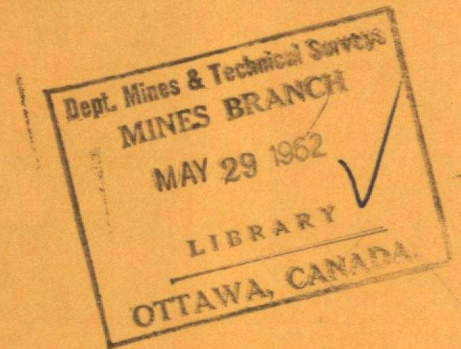




CANADA

**EVALUATION OF PEAT MOSS
AS APPLIED TO SOME BOGS
IN SOUTHERN ONTARIO**



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**R. BRUCE GRAHAM AND ASSOCIATES LIMITED,
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**DEPARTMENT OF MINES AND
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by

R. Bruce Graham* and T. E. Tibbetts**

- - -

SYNOPSIS

The investigation encompassed by this report is an attempt to assess the potential for commercial development of peat moss from some of the most important known peat deposits in the southern part of the province of Ontario. The authors' examination of the fourteen bogs selected and described was concentrated on procedures which it was thought would allow best assessment of the deposits in this regard.

Prominent among the factors considered are moss quality as determined by analytical methods, accessibility, location, topography, drainage, area, type of growth, and depth of the bog.

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Direction des mines

Bulletin technique TB 22

EVALUATION DE LA TOURBE DE MOUSSE: APPLICATION
À CERTAINES TOURBIÈRES DU SUD ONTARIEN

par

R. Bruce Graham* et T.E. Tibbetts**

RÉSUMÉ

L'examen dont il est question dans le présent rapport visait à déterminer s'il serait possible d'exploiter commercialement certaines des tourbières les plus importantes dans la partie sud de l'Ontario. Lors de l'examen des quatorze tourbières choisies et décrites ici les auteurs ont concentré leurs efforts sur les procédés qui, à leur avis, permettraient la meilleure évaluation possible des tourbières.

Parmi les principaux facteurs étudiés mentionnons la qualité de la mousse telle que déterminée à l'aide de procédés analytiques, l'accessibilité, l'emplacement, la topographie, le drainage, l'étendue, le type de végétation et la profondeur de la tourbière.

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SUMMARY

Studies of the literature on bogs in the southern part of Ontario investigated earlier, maps, and aerial photographs, allowed the authors to select fourteen bogs for field and laboratory examination. These fourteen bogs were assessed from viewpoints of location, access, area, depth, cover, drainage and nature of the peat material present.

Based on the above attributes, the Newington bog and, to a lesser degree, the Perth bog are believed to be such as to warrant consideration with respect to development for peat moss at the present time.

The following bogs provide sources of peat moss and meet the requirements of all of the named factors except quality of peat moss, which would be inferior to that presently in demand:

1. Winchester bog
2. Bunker Hill bog
3. Groveton bog
4. Cranberry Lake bog
5. Harmony Church bog

The Mer Bleue bog in the areas examined is too shallow with regard to good peat moss; however, much of the bog was not examined.

The Minesing swamp, Maple Valley bog, Milverton bogs, Kemptville bog, and West Osgoode bog contain little or no material which is considered useful for peat moss.

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INTRODUCTION

The Mines Branch some fifty years ago undertook investigations to determine the feasibility of developing some of the peat deposits in Ontario and Quebec as a source of fuel. This interest by the Canadian Government was prompted by the fact that the central provinces were far removed from the Canadian coalfields and were dependent upon foreign sources, mainly the United States, for their fuel supply. It was then believed that these sources were limited, a belief which was later disproven. The availability of large coal reserves in the United States close to the industrial heart of Central Canada, and the development of other fuel resources, combined to spell economic failure for exploitation of peat fuel deposits in Canada.

Peat moss is a non-replaceable resource, as distinguished from perennial plant crops, say of the blueberry type, and therefore falls in the areas of investigation encompassed by the Mines Branch. The Fuels and Mining Practice Division, from earlier investigations on peat fuel, has facilities available for the evaluation of peat deposits in regard to peat moss.

The working of peat bogs for moss recovery has expanded very rapidly in the past twenty years because of increasing recognition of the value of peat moss for agricultural and horticultural uses. Most of the Canadian production of peat moss, now of the order of

200,000 tons per annum, is exported to the United States, and the value of this industry has now reached about nine million dollars annually. In 1959, Canadian peat moss producers supplied about 50 per cent of the United States market. Indications are that the Canadian companies are taking over the role of supplying this market from German producers who formerly provided 80 per cent of the United States requirements.

About 90 per cent of the peat moss produced in Canada comes from the provinces of British Columbia, Quebec, New Brunswick and Nova Scotia. Manitoba and Ontario account for the remainder.

Nearly all of the peat moss produced in British Columbia is exported to California where it is much in demand for the beneficiation of the sandy soil that is widespread in that state. Peat moss from Quebec and the Maritime provinces is exported throughout the United States to points as far west as the Rockies.

Southern Ontario with its intense cultivation is the largest domestic consumer of peat moss, most of which originates in Quebec and the Maritimes. In 1960 in Ontario there was one peat moss operation on a fully commercial basis and two others working sporadically for local consumption, in contrast to thirty-one throughout the remainder of Canada. Transportation of baled peat moss is one of the main factors in evaluating the economic potential of a peat bog development, and the Southern Ontario area is in close proximity

to the relatively large United States market. Climate has a very important influence on the harvesting of peat moss. A dry climate is preferred since air drying is the most economical method of drying peat moss. In general it may be said that the climate in Southern Ontario is better for this drying than that in some areas where peat moss is currently being produced.

Some of the peat deposits covered in this investigation were examined by Leverin¹ and others some years ago. The present study is a more detailed investigation of the area covered by the earlier examinations and in addition includes peat deposits not formerly investigated in Southern Ontario. This report serves as an example of the manner in which peat deposits may be evaluated and therefore is expected to provide a guide for future investigations of other areas.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the assistance given by Mr. L. B. Halliday, of R. Bruce Graham and Associates Limited, during the field investigations and by Mr. T. A. Lloyd of the Fuels and Mining Practice Division who conducted the analyses of the samples collected. Acknowledgment is also due Mr. M. P. Pleet of this Division for assistance in preparing aerial photographs and maps for reproduction.

¹ Harald A. Leverin, "Peat Moss Deposits in Canada"; Can. Dept. of Mines and Resources, Mines and Geology Branch, Report No. 817, 1946.

THE FORMATION AND CHARACTERISTICS OF PEAT MOSS

The formation of peat deposits results only in undrained or badly drained terrain. Only certain plants can grow in this type of terrain, and their continued existence is dependent upon adequate rainfall and low rate of evaporation. For these reasons the botanical forms which eventually form peat deposits flourish only in parts of the world which provide this type of environment, mainly in Europe and North America. Such plants as sphagnum and hypnum mosses, and certain grasses, shrubs and sedges, are the predominant growth under these conditions. As these plants die the level of water excludes atmospheric oxygen, thus preventing the normal decomposition of the plant. Decomposition does proceed at a very slow rate and the plant form disintegrates, this process being termed humification. The degree of humification can, within wide limits, be indicated by a simple test described by Rigg.² A quantity of peat is pressed in the hand and observation is made of what comes out between the fingers and what remains in the hand. If nothing but water comes out, humification has not begun. If all the material comes out and nothing is left in the hand, humification is almost complete. There are stages between the extremes, indicated by such words as slightly, somewhat or moderately humified. The fibrous, unhumified stage is termed peat moss, and the final stage is known as peat fuel.

² George B. Rigg, "Peat Resources of Washington"; Bulletin No. 44, Division of Mines and Geology, Department of Conservation, State of Washington, U.S.A., 1959.

Swinerton³ describes a usual vertical section of a peat bog as follows:

1. A bed 6 to 12 in. thick of living sphagnum mosses, overlying 6 to 10 feet of unhumified dead moss, which is known as peat moss;
2. A bed of well humified woody peat, containing partly decomposed stumps and roots;
3. Beds of reed and sedge peat, formed by humification of reed or sedge plants; and
4. Finally a layer of dark jelly-like ooze, sometimes called sedimentary peat, resting on a clay or silty bottom.

This description demonstrates that the peat deposit began with vegetation growing in open water, this vegetation on decomposition yielding a plastic colloidal material called "sedimentary peat". Next came the growth of sedges and reeds which formed a fibrous type of peat. The build-up of this material high enough above water level, and the presence of mineral foods, allowed the growth of trees and shrubs until exhaustion of mineral salts caused these plants to die off, giving rise to woody peat. This was followed by the growth of sphagnum mosses which normally form the upper part of the bog.

In areas where partial drainage has occurred or where climatic conditions have changed resulting in a lowering of the water level, layers of well humified peat material occur at the surface of the bog, with unhumified peat or peat moss at lower depths -- a fact

³ A. A. Swinerton, "Peat Moss in Canada"; Can. Dept. of Mines and Technical Surveys, Mines Branch, Information Circular IC 104, February 1958.

that can only be established by examination of the various strata compounding the bog. Other factors contributing to this occurrence are fire and harvesting of the live moss.

Dead sphagnum moss, slightly humified, is usually what is referred to as "good peat moss". This moss, of which there are several species, has a distinct cellular structure. It is usually yellowish in colour, but can be shades of brown depending on light, moisture and acidity conditions of environment. The plants have a slender stem and many clusters of short, leafy branches. They have no roots, but have small rhizoids which help in the absorption of water. The stem grows at the tip and when old its base dies.

Table 1 presents the characteristics of different classes of peat material.

Further detailed descriptions of the formation, structure and botany of peat deposits may be obtained from the following publications:

- | | |
|-----------------------|---|
| Anrep, A. V. | Investigations of Peat Bogs and Peat Industry of Canada, 1911-1912; Can. Dept. Mines; Mines Branch. Bulletin No. 9, Rpt. No. 266; 1914. |
| Auer, Vaino | Peat Bogs in Southeastern Canada; Can. Dept. Mines; Geol. Survey, Memoir No. 162, Rpt. No. 2230; 1930. |
| Gerard, H. | Peat in Quebec; Quebec Dept. Mines, G. R. 31; 1947. |
| Haanel, B. F. | Final Report of the Peat Committee; Can. Dept. Mines; Mines Branch, Rpt. No. 641; 1926. |
| Leverin,
Harald A. | Peat Moss Deposits in Canada; Can. Dept. Mines and Resources, Mines and Geol. Branch, Rpt. No. 817; 1946. |

TABLE 1

CHARACTERISTICS OF DIFFERENT CLASSES OF PEAT

Major Classes	Subdivisions (Types) of Peat	Vegetation Sources of Peat	Colour of Peat	Texture of Peat	Structure of Peat
I. <u>Sedimentary Peat</u>	Oozy, macerated, or pulpy peat	Aquatic	Olive green, brown to black	Coarse to very fine grained, pasty	Amorphous, soft sticky, impervious
	Calcareous sedimentary peat		Grey to greyish brown or cream coloured	Coarse to finely divided	Gritty, crumbly
	Silicious sedimentary peat		Greyish brown to black	Fine grained	Plastic to friable
Ia. <u>Sedimentary Fibrous Peat</u>	Cattail peat,	Marsh	Dark brown to black	Partly stringy fibred, sticky to platy	Dense, plastic to lumpy
	Tule peat, etc.		Yellowish, reddish to dark brown	Coarse to fine fibred, loamy to powdery	Matted to felty porous, brittle
	Reed peat		Reddish brown to dark brown	Coarse to fine fibred, loamy to powdery	Matted to felty porous, brittle
	Sedge peat				
II. <u>Fibrous Peat</u>	Hypnum moss peat	Bog	Yellowish brown to dark brown	Fine fibred	Loose to firm porous
	Sphagnum moss peat		Yellowish brown to dark reddish brown	Coarse to fine fibred	Spongy porous to fluffy
IIa. <u>Woody-Fibrous</u>	Heath shrub peat		Brown to dark reddish brown	Partly fibred, coarse fragmented	Firm, lumpy
	Willow-alder peat		Brown to very dark brown	Partly fibred to coarse woody, granular	Sticky to loose crumbly
	Bay shrub peat		Swamp forest	Brown to blackish brown	Partly fibred to coarse woody, granular	Compact, sticky to lumpy
III. <u>Woody Peat</u>	Coniferous woody peat		Reddish brown to dark brown	Coarse woody, fragments to granular	Loose to firm, lumpy or crumbly
	Mixed woody peat		Brown to dark brown	Woody fragments to loamy granular	Lumpy to friable
	Deciduous woody peat		Dark brown to black	Woody fragments to loamy granular	Lumpy to mellow loamy

PROPERTIES AND USES OF PEAT MOSS

Peat moss as a useful product is basically distinguished by its high water-absorbing capacity, its resistance to decay, and its acidity. Ability to retain water under moderate drying conditions contributes greatly to its value.

The main use of peat moss is in horticulture. As a soil conditioner it adds porosity and retains moisture. It gives body to sandy soil and lightens heavy clay. It is useful on lawns, golf courses and race tracks for the above, and as a carrier or diluent for chemical fertilizers.

Peat moss has been used for many years for stable and chicken litter, the discarded material making an excellent fertilizer rich in nitrogen. Minor uses are or have been in the metallurgical and brewing industries. It is a deodorant and has been used as an insulator. Peat moss is an excellent packing material for perishable vegetables and for cut flowers.

Substitutes for peat moss as chicken and stable litter and as an insulator have resulted in a decline in these uses. This has been more than offset by the ever-growing horticultural demand.

To satisfy the requirements for which it is used, peat moss must be fibrous, elastic, relatively unhumified, and resistant to decomposition. As well, it must have the ability to add vegetable matter to the soil and must possess a high absorptive capacity. Its acidity should lie within a pH range of 3.5 to 5.5. Some nitrogen

content in the peat moss is an advantage.

As humification (decay) of peat moss increases, absorptive capacity and elasticity decrease and the colour becomes darker. The material becomes heavy and on drying is hard and brittle, disintegrating in the preparation process into an unsatisfactory product.

Different varieties of unhumified peat exhibit the above properties in varying degrees. For practical purposes, most of them absorb sufficient water. Five main plant varieties form peat moss and the water absorbing capacities of their residues were described by Leverin as follows:

- | | |
|--|---|
| Sphagnum Moss | - There are six varieties which absorb from 18.6 to 26.8 times their own weight of water. This is the most desirable variety of moss. |
| Eriophorum
(Cotton Grass) | - Absorbs appreciably less water than the sphagnum variety. |
| Reed and Sedge
(Exclusive of Carex) | - Absorb from 3.5 to 8 times their own weight of water. |
| Hypnum Moss | - Absorbs from 8 to 13 times its own weight of water. |
| Carex
(Reed and Sedge
group) | - Absorbs from 8 to 13 times its own weight of water. |

The elasticity and fibrous nature of peat moss forming plants vary. Eriophorum, Reed, Sedge, and Carex plants are grassy varieties and the residues do not have the good cellular texture of that of the sphagnum variety. Hypnum is a mossy plant but the

residue is brittle when dry and hence lacks some of the commercial applications of sphagnum produced peat moss.

Water absorption, ash, acidity, and nitrogen are measured quantitatively. Absorptive capacity decreases with humification for each moss type. The ash content varies with the botanical origin of the peat moss and with the foreign mineral-matter present.

For horticultural uses, peat moss with an absorptive capacity greater than 12 times its own weight of water, an ash content of less than 5%, and a pH of 3.5 to 6, is desirable.

In the characterization of peat moss by feel and appearance, elasticity and fibrous structure are the most important qualities. However, an absorptive value in excess of 15 is an assurance that a high proportion of sphagnum moss is present. Although the presence of a high proportion of slightly humified sphagnum is indicated by a light colour, the market does not appear at present to be aware of this, inasmuch as it is not particularly selective as to colours from light-yellowish brown to dark brown.

For horticultural use the moss is air-dried to 35% moisture or less by weight, and is broken down and screened to 1/4 inch or less. For poultry litter it is shredded to 3/4 inch (medium shredded) and the dust is removed. For stable litter the moss is coarsely shredded.

SAMPLING AND ANALYSIS METHODS

Sampling

The general procedure that was followed in establishing sampling areas of a bog was to select three locations forming the apices of a triangle, the distances between them being from 1000 to 1500 feet. The pace-and-compass method was used for locating the points, and these were connected by reference to topography on aerial photographs. If the results warranted, additional sample areas were selected. The sample areas were then plotted on aerial photographs at the scales indicated. The aerial photographs are used in this report to illustrate the descriptions of the bogs.

A thick-walled, piston-type sampling instrument (see sketch, Figure 1) was used to collect samples at the selected sampling areas. This instrument consists of a sample chamber, about $3/4$ inch in diameter and 15 inches long, and a piston one end of which is tapered to allow easy movement through the bog material. The overall length, including detachable rod handle, is five feet. In sampling, when the desired depth is reached, the piston is drawn into the sample chamber by pulling upward on the handle. This upward motion is arrested automatically by a locking device. The open sample chamber is then pushed downward, forcing material from the bog into the chamber and thereby allowing recovery of a sample core. Extension rods are attached to the handle of the instrument

to recover samples beyond a depth of 5 feet. These rods can be marked off at one-foot intervals in order to measure intermediate depths. Many deposits yield strata of well humified peat underlying a heavy growth of sphagnum moss; it is therefore important, in order to obtain a true conception of the structure of a bog and the quality of its different strata and their thicknesses, to sample at regular intervals in depth.

Green or only slightly humified moss does not core in the sampler; hence lack of core recovery is an indication of little or no humification. However, in locations where the sampler could not be used the bog was sampled with a shovel to a depth of 2-1/2 feet. In other such areas a post-hole digger was used to obtain samples to a depth of 5 feet.

The samples collected were examined and briefly described. Consecutive samples of similar material were grouped as one.

Loss of moisture in the samples was minimized by placing them in plastic bags, the tops being tied with string. Each sample was tagged, the tags indicating sampling location and depth interval.

Complete analysis was not conducted on all samples, because at some sampling areas the sample collected was insufficient.

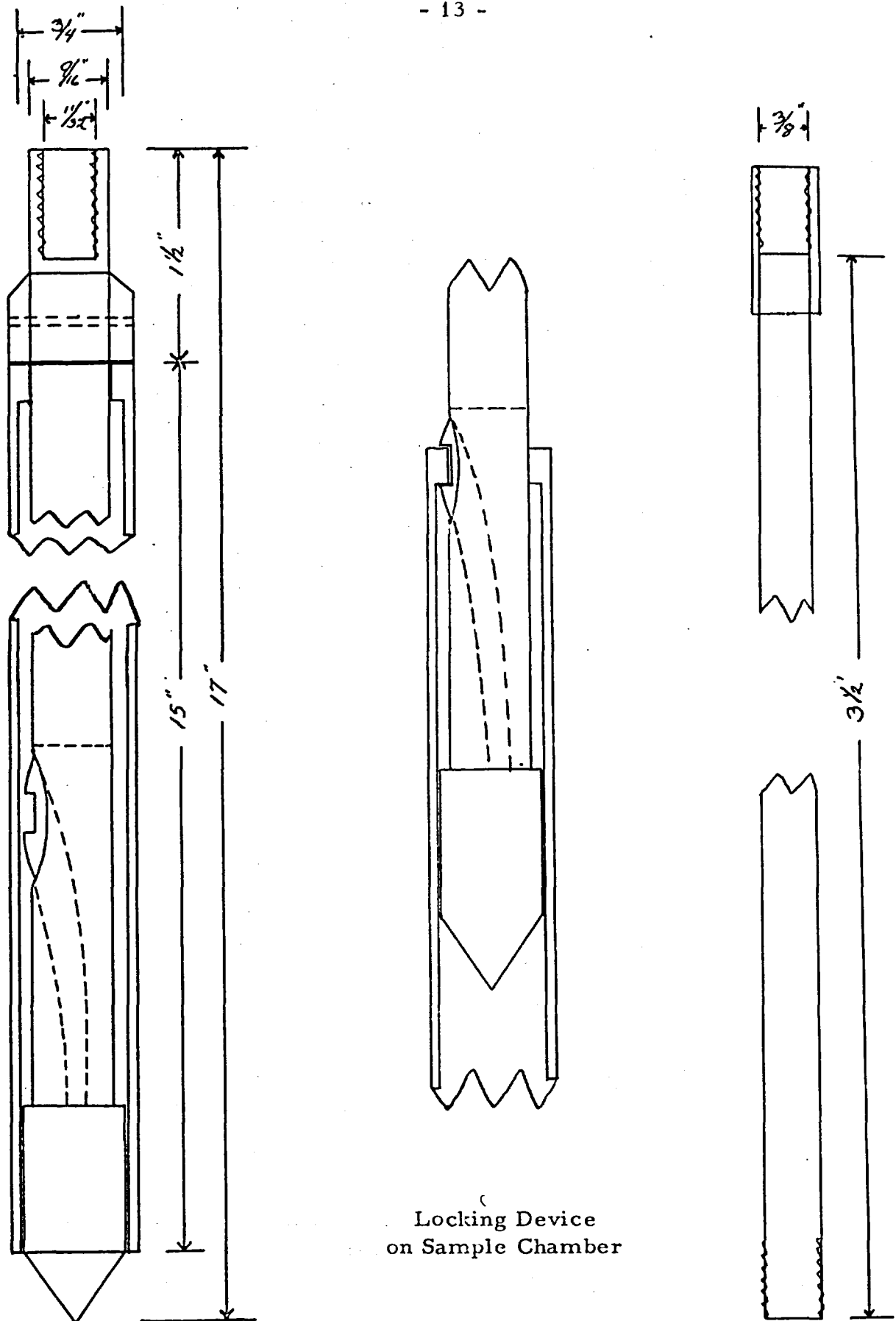


Figure 1. - Peat Sampler, Fuels and Mining Practice Division

Analysis

All analyses were conducted in the Fuels and Mining Practice Division in accordance with recognized methods, some of which were described by Leverin as follows:¹

"Methods of Chemical Analysis and Physical Tests

Moisture Content. Place 5 to 10 grams in a tared and covered weighing bottle and weigh to the nearest milligram. Record the weight. Remove the cover and place vessel and contents in a drying oven at 105°C to 110°C until constant weight is obtained. Before each weighing, cool the vessel and content in dessicator. Compute the percentage of moisture, based on oven-dry weight.

Acidity. Determine the hydrogen ion concentration (pH value) by any convenient approved method. (In this investigation hydrogen ion indicator paper was used.) In preparing the solution for this test, use distilled water of known pH value and sample in a ratio 4 to 1, respectively, by weight, permitting the material to soak for 30 minutes at a temperature of 20° to 30°C. Determine the pH value at approximately 25°C.

Absorptive Value. For this determination, peat in the raw state must not be subjected to partial preliminary drying, because dried or partly dried peat or muck may not re-absorb water to its original absorbing capacity. In the analysis a sample of 30 grams of the peat as described above is weighed out and 1 litre of boiling water poured over it, then stirred up several times until the peat sinks to the bottom of the beaker. After soaking for at least 6 hours, the water is decanted off and the mass is turned into a mortar, then mashed with a pestle, and the water that has been already decanted off is poured on the peat moss.

¹ Harald A. Leverin, "Peat Moss Deposits in Canada"; Can. Dept. Mines and Resources, Mines and Geol. Branch, Report No. 817; 1946.

When stirred by hand, no lumps should be felt, only loose fibres. The alluvial peat moss is poured into a graduated, cube-shaped, copper-wire basket having a mesh of from 2 to 1 millimetre, and a content of 1 litre. Peat substance that screens through the basket with the water is poured into the basket with the other peat and screened again. No notice should be taken if the filtrate is muddied and still contains some small particles of peat. The basket is then inclined at an angle of 45 degrees with one corner turned downward and is kept in this position until less than one drop of water a minute passes from the basket. The basket with content is then weighed, standing in an evaporating basin. The basket, peat and basin are dried at 105°C until constant weight is obtained. Knowing the weight of the empty basket and basin, the absorptive value is computed for absolutely dry peat and for peat of 25 per cent moisture content."

In addition to the above analyses, ash content and nitrogen were determined as follows:

Ash -

In determining the ash content, the dried sample and crucible* from the moisture determination are used. The weighed crucible and peat moss are placed in a cold, standard muffle furnace and then heated to a temperature of 750°C. This temperature is maintained constant until constant weight of the residue is obtained. The crucible and ash are cooled in a desiccator and weighed. The percentage of ash is then calculated.

* A porcelain crucible is now used instead of a weighing bottle as described by Leverin for the moisture determination.

Nitrogen -

This determination is made by the Kjeldahl-Gunning method. One gram of sample is boiled with 30 ml of 1.84 specific gravity sulphuric acid, 7 to 10 grams of potassium sulphate and 0.6 to 0.8 grams of metallic mercury in a 500-ml Kjeldahl flask until all particles are oxidized and the solution is nearly colourless. Boiling is continued for two hours after the colourless stage is reached.

The solution is then cooled and diluted with 200 ml of cold water and the following reagents are added: 25 ml of potassium sulphide (40 grams of potassium sulphide per litre), to precipitate the mercury; 1 to 2 grams of granular zinc, to prevent bumping; and, finally, sufficient strong sodium hydroxide solution to make the whole solution distinctly alkaline (usually 80 to 100 ml). The flask is inclined and the sodium hydroxide is slowly added. The flask is immediately attached to a condensing apparatus and the solution is agitated by gently shaking the flask. The ammonia is distilled over into 10 ml of standard sulphuric acid solution. The solution is distilled slowly until 150 to 200 ml of distillate have passed over. The distillate is then titrated, using methyl orange indicator, with standard sodium hydroxide solution. The percentage of nitrogen in the sample is then calculated using a standard formula.

METHOD OF SELECTING BOGS FOR EXAMINATION

Air-photo examinations were made of all recorded bogs in the southern part of Ontario lying south of a line joining Lion's Head, in the Bruce Peninsula, with Lindsay, Marmora and Ottawa, and continuing east to the Quebec boundary*. The air-photos were obtained from the Ontario Department of Lands and Forests, Toronto, and from the National Air Photographic Library, Department of Mines and Technical Surveys, Ottawa.

Information derived from the air-photo examination was cross-checked with information obtained from persons in the trade and from various publications.**

Areas of organic terrain in southern Ontario exhibit features on air photographs which permit of easy identification, namely:

- (1) They all occur in local depressions.
- (2) They are characterized by dense forest growth with local open areas.
- (3) Open bog areas which could contain peat are rimmed by a thick growth of deciduous trees succeeded towards the open area by spruce trees.
- (4) If no spruce trees are present, thick, low bush grows between the deciduous trees and the open area, or a mixture of all three growth types is present.

* The location of most of these bogs is shown on the set of maps accompanying the report, "The Physiography of Southern Ontario", published by the Ontario Research Foundation in 1951.

** See the selected bibliography at the end of this report.

- (5) Organic terrain is distinguished from mineral soil, on the air photograph, by the type of cover, texture or grain.
- (6) If a bog is too shallow to be of interest with respect to peat moss production, this fact can sometimes be distinguished on air photographs by the gradual merging of shading and textural contrast between the organic and mineral soils. Cultivation seldom enters the area of heavy growth rimming a deep bog.

In this way and with the help of the stereoscope, the size, accessibility, density of growth, topography, and drainage pattern could be determined. In some instances it was possible to differentiate bogs that were too shallow to be of interest. The selection of bogs for field examination was made, from the above information, on the basis of surface growth, drainage and area.

Below are some of the considerations:

Surface Growth: Other things being equal, the fewer the trees that grow in a bog the lower will be the cost of preparation. Particular attention was paid to those bogs that were essentially free of trees.

Drainage: The cost of drainage is an important factor in bog development. Topographic maps were examined to determine feasibility of drainage. Bogs adjacent to lakes and rivers represent a prohibitive development cost if they are at the same elevation as the adjacent water. Such bogs were eliminated from the investigation.

Area: The bog area required depends on the depth of the moss and on the scale of production anticipated. To be commercially attractive on other than a part-time basis, a supply to support a production in the order of 150,000 bales per year should be considered. Assuming a minimum depth of five feet and a settling of

two feet due to drainage, one acre contains 130,680 cu. ft. Assuming a volume of 150 cu. ft. per ton for air-dried peat, there are present 871 tons per acre. This is equivalent to 21,780 bales, or sufficient to supply production for 0.14 years. Based on the above estimates, 75 to 100 acres of open bog were taken as minimum prerequisite area.

DESCRIPTIONS OF PEAT BOGS EXAMINED, AND ANALYSES OF SAMPLES

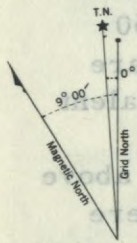
Air photographs of thirty-six areas containing bogs and groups of bogs were studied. Of these, all but fourteen were eliminated from field and laboratory examination on the basis of information derived from the photographs following the procedures outlined in the preceding section. Brief descriptive summaries of some of the bogs so eliminated are given in the Appendix.

The Appendix also presents brief summaries of the information published earlier on some bogs in the area encompassed by this present investigation.

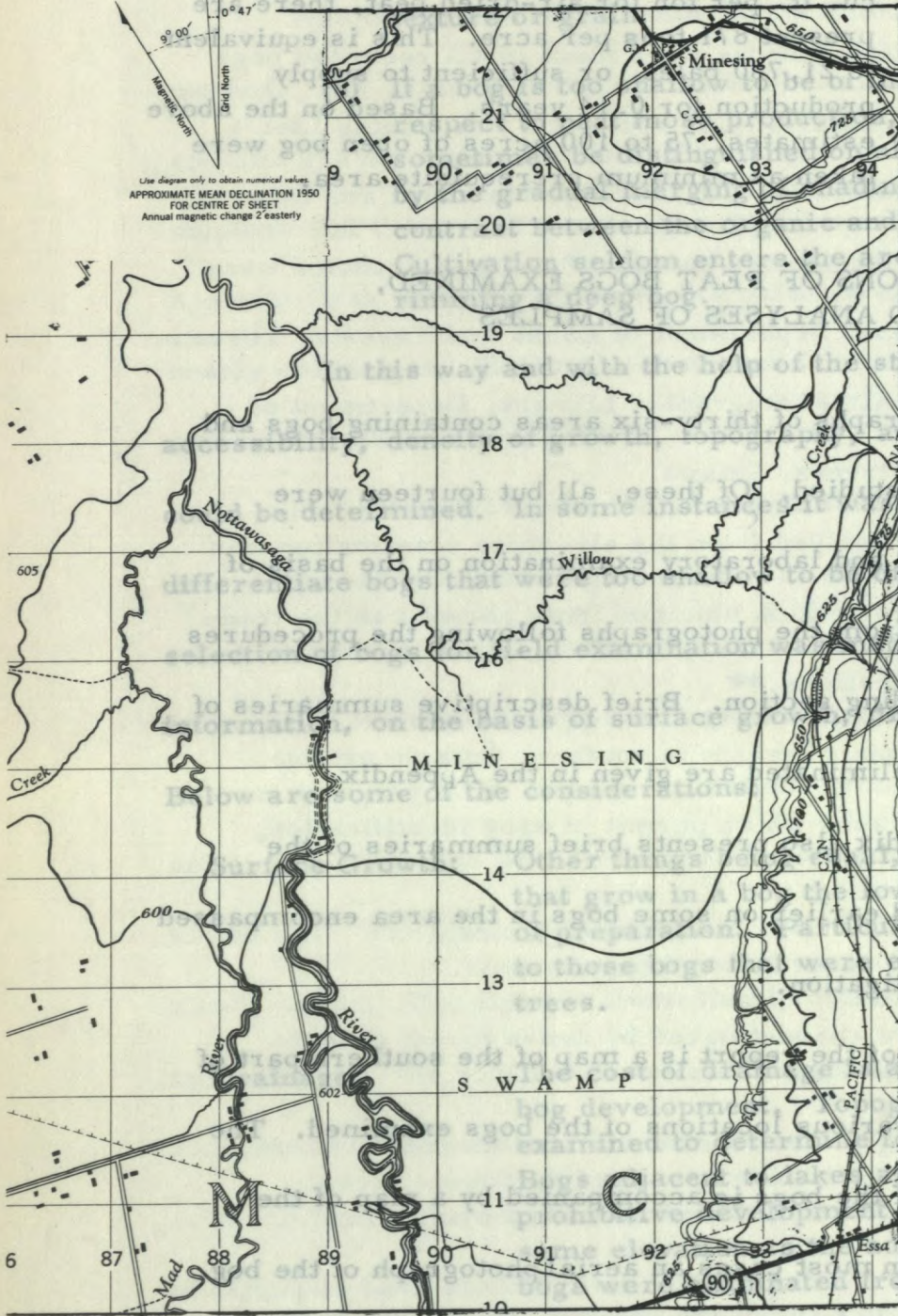
At the end of the report is a map of the southern part of Ontario showing the various locations of the bogs examined. The description of each of the bogs is accompanied by a map of the immediate area and in most cases an aerial photograph of the bog.

BARRIE

31^D/₅ WEST HALF

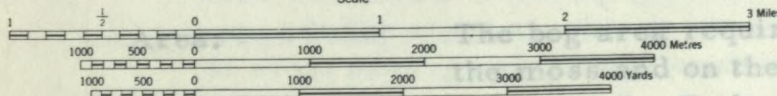


Use diagram only to obtain numerical values.
APPROXIMATE MEAN DECLINATION 1950
FOR CENTRE OF SHEET
Annual magnetic change 2' easterly

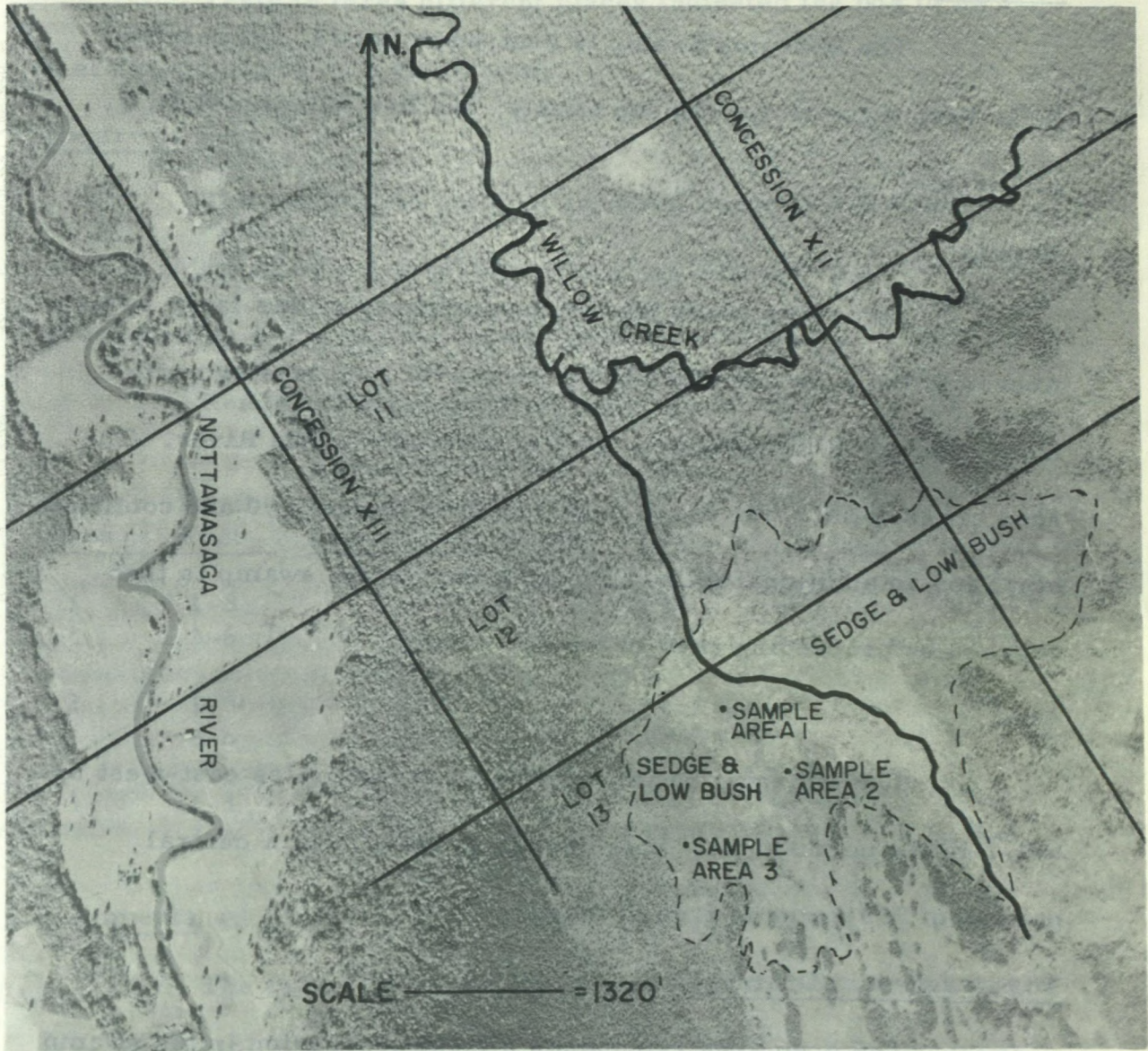


REFERENCE

Road, hard surface, heavy duty,	3 or more lanes	Part completed
.. hard surface, heavy duty	2 lanes	Route No.
.. hard surface, medium duty,	3 or more lanes	2 lanes
.. loose surface, graded and drained	3 or more lanes	Not less than 14 ft wide
Other Roads		Poor condition
Private Road		
Trail		
Railway, double track	Station	
.. single track	Stop	Sliding
.. abandoned		
.. narrow gauge or electric		
Bridge, overpass or underpass		
Boundaries, International		
.. Provincial		
.. County		
Reservation, Indian, Military		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station		
Survey Monument		
Bench Mark	B.M.	357-4
Spot Height, (in feet)		547
House		
Barn		
Mill or Factory, small		4.5-M
School		+5
Church,		+
.. conspicuous Tower or Spire		†
Post Office		P
Telephone Exchange		T
Mine or Open Cut		X
Cemetery or Churchyard		C
Quarry		Q
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore Flats		
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation	175	
.. depression	200	
Wooded Areas, heavy		
.. light		



DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT



(Photo Courtesy Dept. of Lands and Forests, Ontario)

MINESING SWAMP

The open area of the swamp is covered by sedge and low bush. Cover a beltway and of sedge against later low

1. Minesing Swamp

Location

The Minesing Swamp is centred in Lot 12, Concession XIII, Vespra township, Simcoe County, and lies 50 miles N.N.W. of Toronto.

Access

Numerous roads lead to the periphery of this large swamp. Access to the area examined is by the gravel road leading north from Highway 90 immediately west of the Nottawasaga River. The road crosses the river 4-1/5 miles north of Highway 90 and continues north for an additional mile. The open part of the swamp is then reached by proceeding east on foot for 1 mile.

Area

The Minesing Swamp covers an area 6 miles east-west by 6-1/2 miles north-south. It is heavily forested, but a central portion of 200 acres is free of trees.

Topography and Drainage

The open area represents a local depression in the swamp which drains north into Willow Creek. Willow Creek drains into the Nottawasaga River. This river is the main drainage channel for the Minesing Swamp.

Cover

The open area of the swamp is covered by scrub bush, 3

to 8 feet high, growing on reed and sedge peat.

Depth

Tests in three different places indicated the bog to be 6 feet deep, resting on a clay bottom.

Nature of Peat

The unhumified layer of reed and sedge is 1 foot thick. This is followed by a 2-foot thickness of well humified material, succeeded by 3 feet of completely humified oozy muck.

Results of laboratory tests are as follows:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen, %</u>	<u>pH</u>
1	1-3	15.2	--	--	--
	3-6	14.6	20.5	3.43	5-6
2	1-3	18.4	13.1	--	--
	3-6	20.0	15.0		
3	1-3	17.1	--	--	--
	3-6	22.3	13.0	2.50	5-6

Comments

The type of peat and the degree of humification indicate that this bog is not suitable as a source of horticultural peat moss, although the material could be used locally to give body and humus to soil.

One would expect that such a large bog would be deep. The well developed natural drainage appears to have prevented a deep accumulation of organic material.

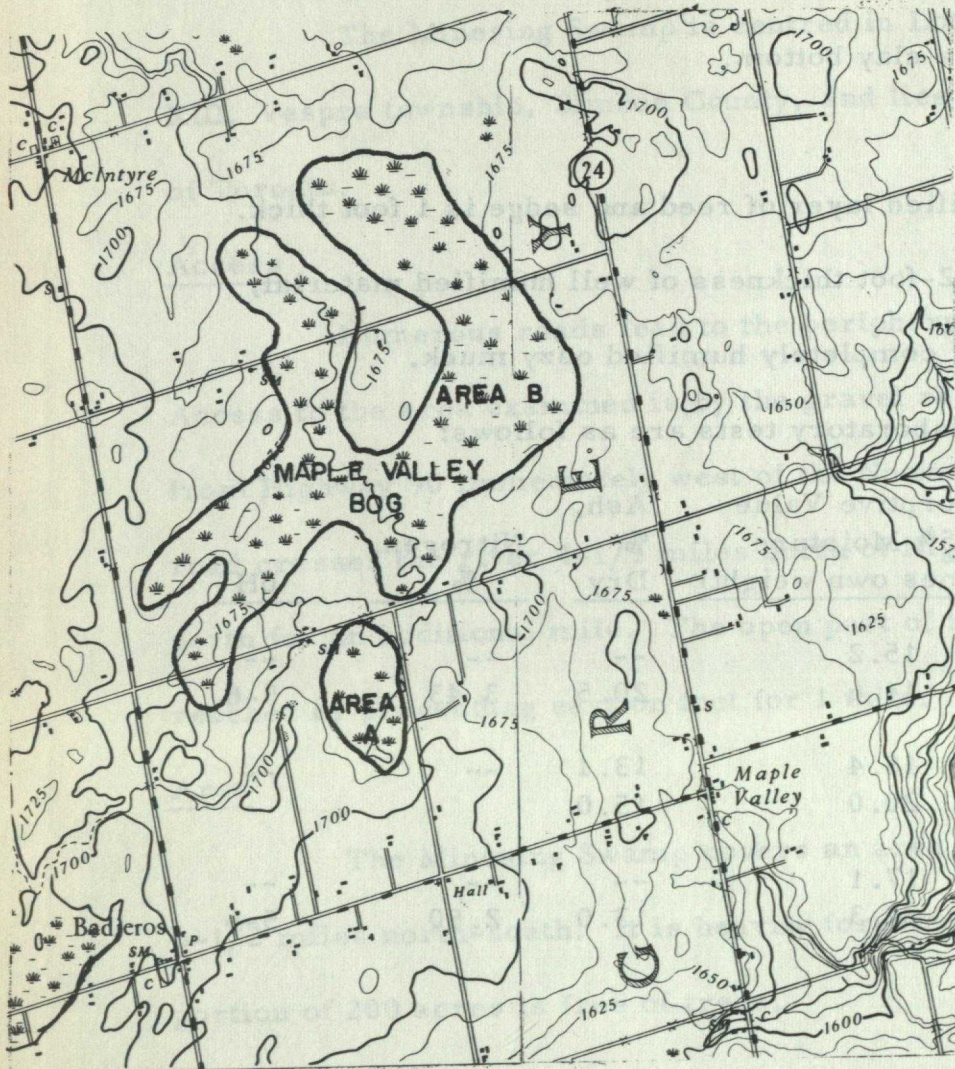
DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

COLLINGWOOD
41^A/₈ WEST HALF

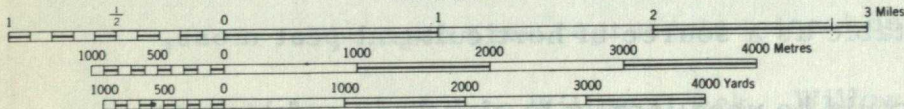
COLLINGWOOD
41^A/₈ EAST HALF

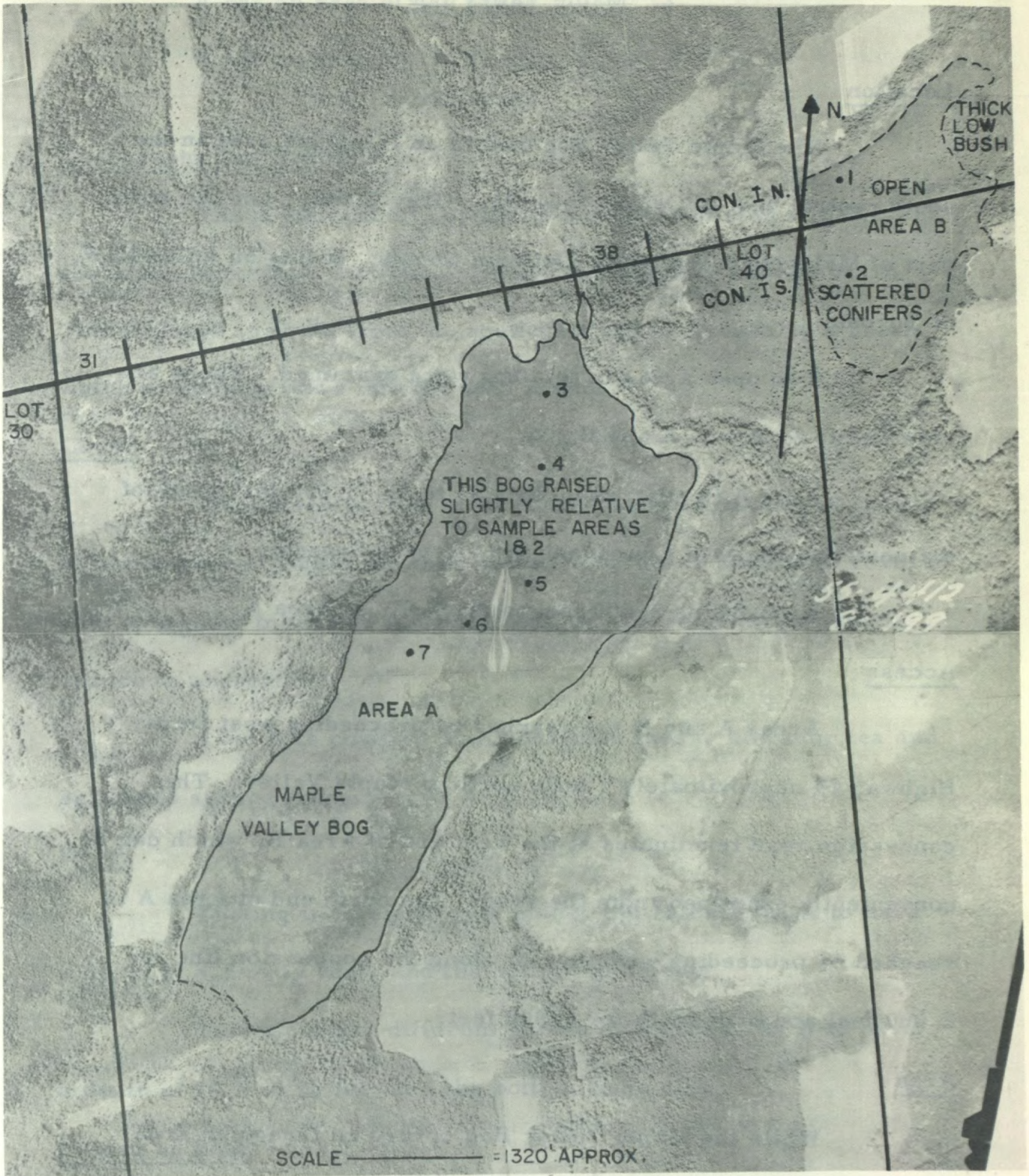
REFERENCE

Roads;	3 or more lanes	Part. completed
hard surface, heavy duty	2 lanes	Route No.
hard surface, heavy duty	3 or more lanes	2 lanes
hard surface, medium duty	3 or more lanes	Not less than 14 ft. wide
loose surface, graded and drained	3 or more lanes	Poor condition
Other Roads		
Private Road		
Trail		
Railway, double track	Station	
.. single track	Stop	Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
.. Provincial		
.. County		
.. Reservation, Indian		
.. Military, Nat. or Prov. Parks, etc.		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station	△	
Boundary or Survey Monument	○	
Bench Mark	BM 357.1	
Spot Height, (in feet)	-389	
House, Barn	■	
Buildings	■	
Mill or Factory, small	■ S	
School	■ S	
Church	+	
.. with conspicuous Tower or Spire	⊕	
Post Office	P	
Telephone Exchange	T	
Mine or Open Cut	X	
Cemetery or Churchyard	[C] [C]	
Quarry	⊖	
Sand or Gravel Pit	⊖	
Cliff	⊖	
Cutting	⊖	
Embankment, Dump, etc.	⊖	
Lighthouse	⊖	
Wharf or Pier	⊖	
Foreshore Flats	⊖	
Swamp or Marsh	⊖	
Lake or Slough, non permanent	⊖	
Glacier or Snowfield	⊖	
Stream, intermittent	⊖	
Contours, elevation	200	
.. depression	250 300	
Wooded Areas, heavy	250	
.. .. light	250	



Scale 1:50,000





(Photo Courtesy Dept. of Lands and Forests, Ontario)

MAPLE VALLEY BOG

2. Maple Valley Bog

Location

The Maple Valley Bog covers an irregular area in the south central part of Osprey township, Grey County, and the north part of Melancthon township, Dufferin County. It lies 50 miles N. W. of Toronto.

Two open areas in this bog were examined. These are referred to as Areas A and B.

Area A is centred in Lots 33 to 35, 3,000 feet south of the north boundary of Concession I S, Osprey township.

Area B lies 2,500 feet to the N. E. of Area A.

Access

Areas A and B are reached by proceeding west from Highway 24 approximately 1 mile north of Maple Valley. This concession road terminates at the west end of Area B, which can be conveniently examined from the road. The north end of Area A is reached by proceeding west on foot along the concession line for 2,000 feet and then south for 1,000 feet.

Area

While the Maple Valley Bog covers an irregular area encompassed in a rectangle 4 miles by 2 miles, there are only 2 sections free of heavy tree cover:

A has an area of 480 acres

B has an area of 70 acres

Total 550 acres

Topography and Drainage

The north central portion of Area A is raised slightly above the immediate surroundings and also slightly above Area B. The drainage is north from the southwest end of Area A by a creek which eventually flows into the Mad River.

Cover

The raised portion of Area A supports a scattered growth of low birch and poplar on wood moss. The lower portion is covered with sphagnum moss and labrador tea. A sparse growth of small spruce is present.

Area B is covered with sphagnum moss, labrador tea and scattered spruce trees.

Depth

Testing in five different places indicates Area A to have a depth of 8.5 to 12 feet, and the bottom to be clay.

Testing in two different places indicates Area B to have a depth of 12.5 to 16 feet and the bottom to be clay.

Nature of Peat

The sampling indicates that in Area A the raw moss extends to a depth of from 3 inches to 1 foot. Beneath this is a layer of 6 to 8 feet of well humified peat, followed by a layer of up

to 6 feet of less humified material. The bottom layer of less humified material is absent when the depth of the bog is less than 6 feet. Sample columns are given below:

<u>Area 3</u> <u>Depth,</u> <u>Feet</u>	<u>Area 4</u> <u>Depth,</u> <u>Feet</u>	<u>Area 6</u> <u>Depth,</u> <u>Feet</u>	<u>Area 7</u> <u>Depth,</u> <u>Feet</u>
0-0.5 Surface growth	0-1 Surface growth	0-0.6 Sphagnum moss and labrador tea	0-1 Labrador tea and sphagnum
	1-6 Humified peat		
0.5-8.5 Well humified peat	6-12 Slightly humified peat	0.6-2 Humified sphagnum peat	1-6 Humified peat
8.5 Dry	12 Clay	2 Point of rejection due to mass of roots	

Laboratory tests gave the following results:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen, %</u>	<u>pH</u>
6	0-0.6	27.1	9.3	0.96	5-6

In Area B the layering is similar, although the thicknesses vary. The two sample columns collected are compared below:

<u>Area 1</u>	<u>Area 2</u>
<u>Depth,</u> <u>Feet</u>	<u>De_ith,</u> <u>Feet</u>
0-1 Raw moss	0-1 Raw moss
1-6 Humified peat	1-13.6 Humified peat
6-12.5 Less humified peat	13.6-16 Less humified peat

The results of laboratory tests are given below:

<u>Sample</u> <u>Area</u>	<u>Depth,</u> <u>Feet</u>	<u>Absorptive Value</u> <u>at 25% Moisture</u> <u>(Times own weight)</u>	<u>Ash,</u> <u>%</u> <u>Dry</u>	<u>Nitrogen,</u> <u>%</u>	<u>pH</u>
1	1-6	4.7	6.8	1.95	5
	6-12.5	8.5	6.1	2.14	5-6
2	13.6-16	4.4	47.8	1.00	5

Comments

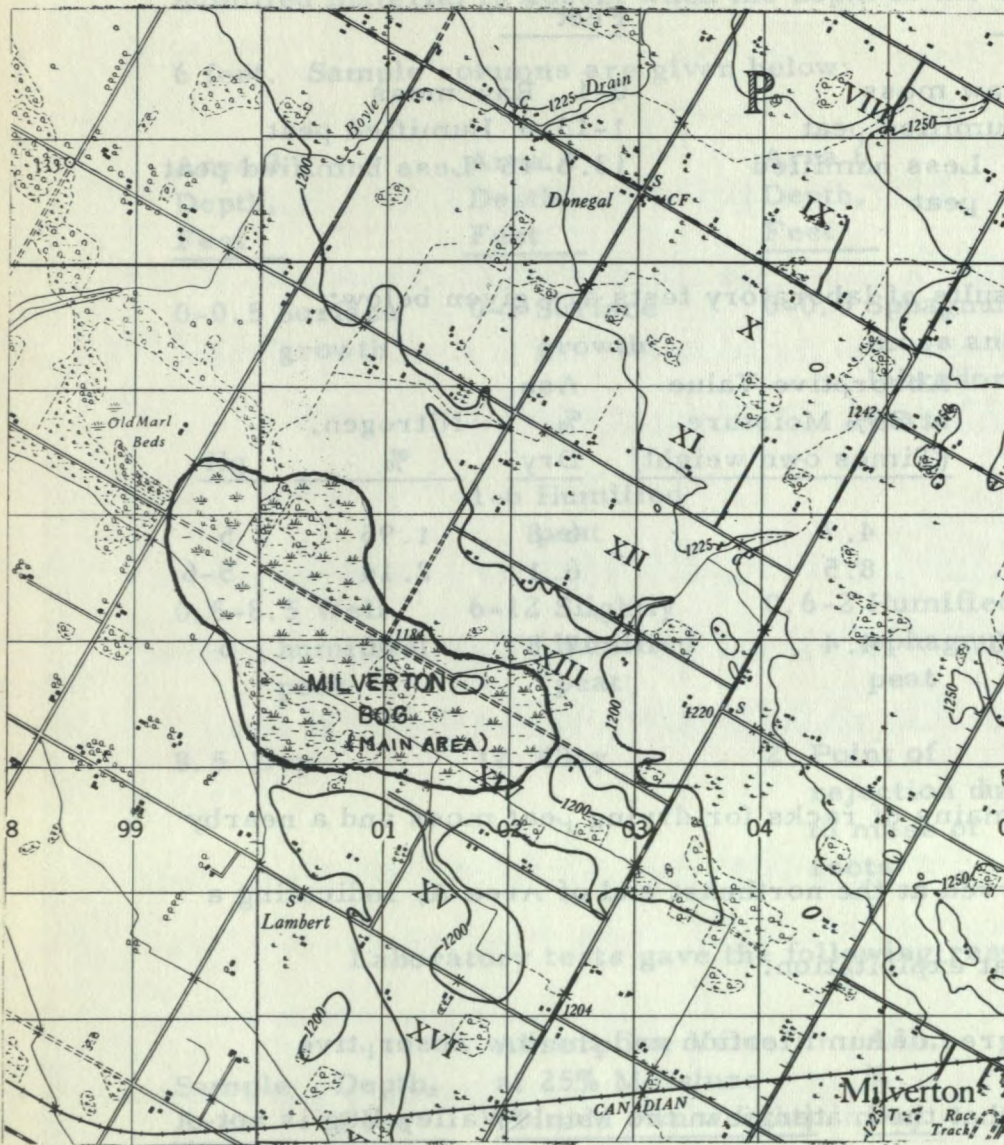
The remains of racks for drying peat moss and a nearby trench were observed at the northeast end of Area A, indicating a previous attempt at exploitation.

The degree of humification and the low absorptive capacity indicate that the material in the Maple Valley Bog is not of good enough quality to be used for horticultural peat moss.

SEAFORTH
40^P/₁₁ EAST HALF

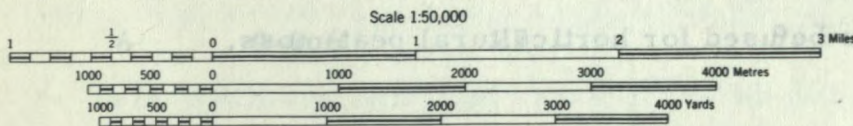
CONESTOGO
40^P/₁₀ WEST HALF

DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT



REFERENCE

Roads:	3 or more lanes	Part completed
hard surface, heavy duty	2 lanes	Route No.
hard surface, heavy duty	3 or more lanes	2 lanes
hard surface, medium duty	3 or more lanes	Not less
loose surface, graded and drained	than 14 ft wide	
Other Roads		Poor condition
Private Road		
Trail	Station	
Railway, double track	Stop	Siding
single track		
abandoned		
narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
Provincial		
County		
Reservation, Indian,		
Military, Nat. or Prov. Parks, etc.		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station		
Boundary or Survey Monument		
Bench Mark	BM	679.1
Spot Elevation, (in feet)		548
House, Barn		
Buildings		
Mill or Factory, small, Saw Mill, etc.	SM	
School	S	
Church		
with conspicuous Tower or Spire		
Post Office	P	
Telephone Exchange	T	
Mine or Open Cut		
Cemetery or Churchyard	C	CC
Quarry		
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore Flats	Sand	Mud
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation	175	200
depression	175	200
Wooded Areas, heavy		
light		

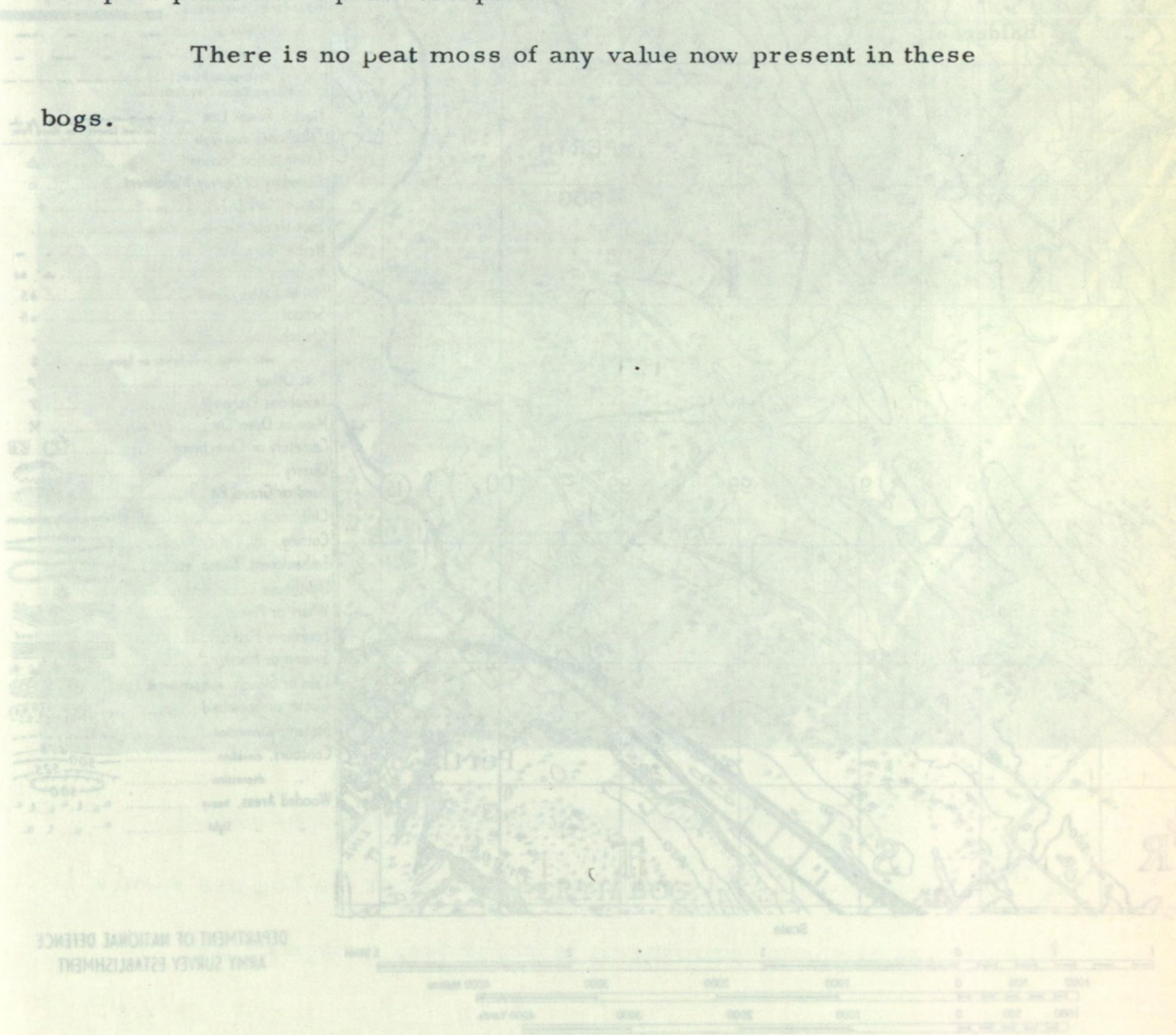


In Area B the layering is similar, although the thicknesses vary. The two sample columns collected are compared below:

3. Milverton Bogs

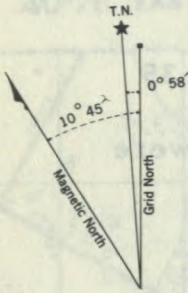
Two bog areas 2 to 5 miles west of Milverton in Lots 35 to 70, Concessions XI to XVIII, Elma township, Perth County, were visited. Extensive drainage has resulted in these bogs being cultivated and used as pasture. The soil contains considerable humified peat. In Lot 40, Concession XIII, can be seen the remains of a peat plant and a peat stockpile.

There is no peat moss of any value now present in these bogs.

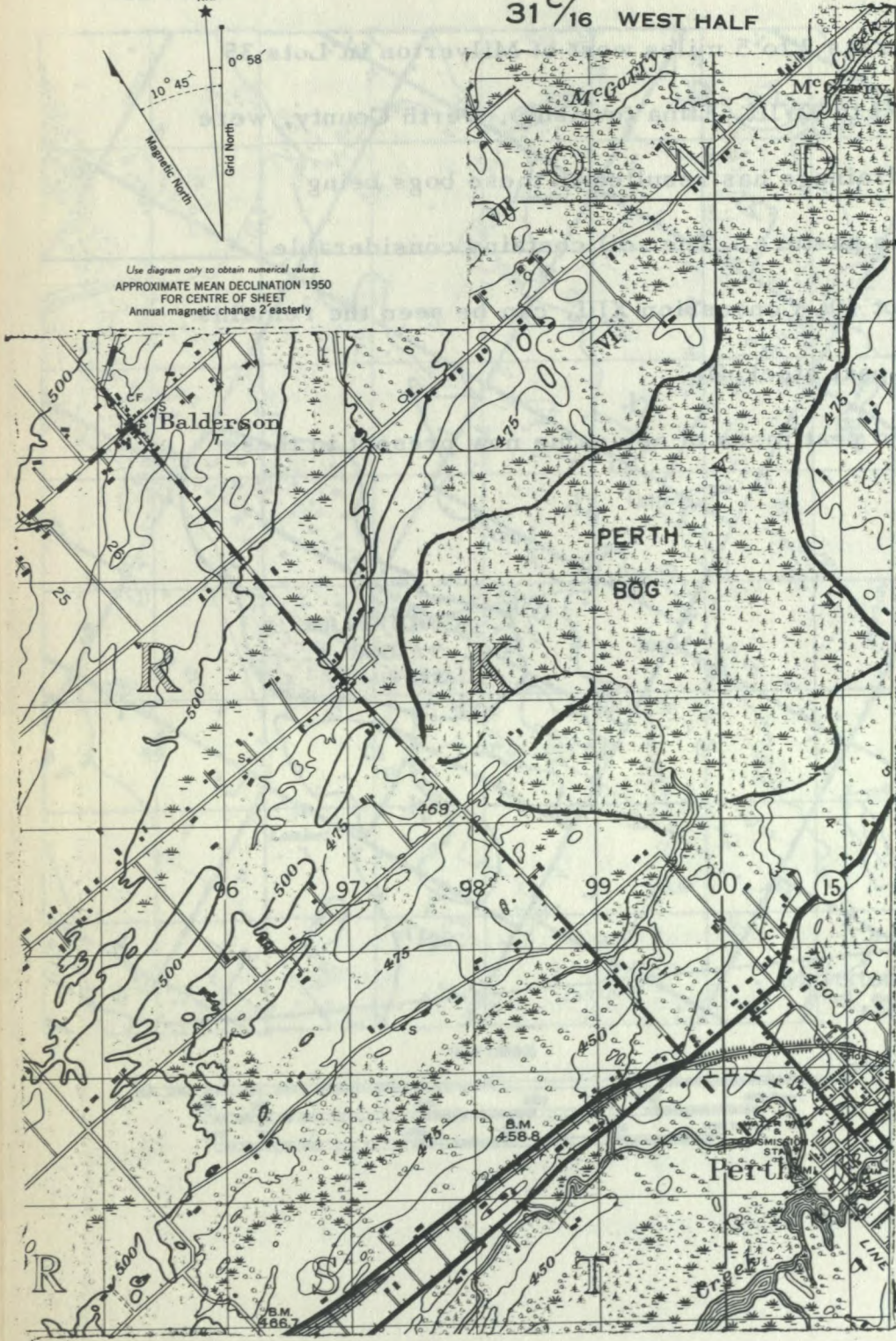


PERTH

31^C/16 WEST HALF

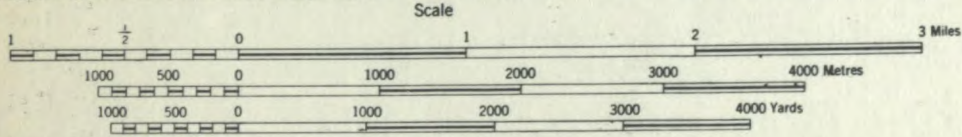


Use diagram only to obtain numerical values.
APPROXIMATE MEAN DECLINATION 1950
FOR CENTRE OF SHEET
Annual magnetic change 2 easterly



REFERENCE

Roads;	3 or more lanes	Part completed
hard surface, heavy duty	2 lanes	Route No. 12
hard surface, heavy duty	3 or more lanes	2 lanes
hard surface, medium duty	3 or more lanes	Not less than 14 ft. wide
loose surface, graded and drained	3 or more lanes	Poor condition
Other Roads		
Private Road		
Trail		
Railway, double track	Station	
.. single track	Stop	Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
.. Provincial		
.. County		
.. Reservation, Indian		
.. Military, Nat. or Prov. Parks, etc.		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station		
Boundary or Survey Monument		
Bench Mark		
Spot Height, (in feet)		
House, Barn		
Buildings		
Mill or Factory, small		
School		
Church		
.. with conspicuous Tower or Spire		
Post Office		
Telephone Exchange		
Mine or Open Cut		
Cemetery or Churchyard		
Quarry		
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore-Flats		
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation	475	500
.. depression	525	500
Wooded Areas, heavy		
.. light		

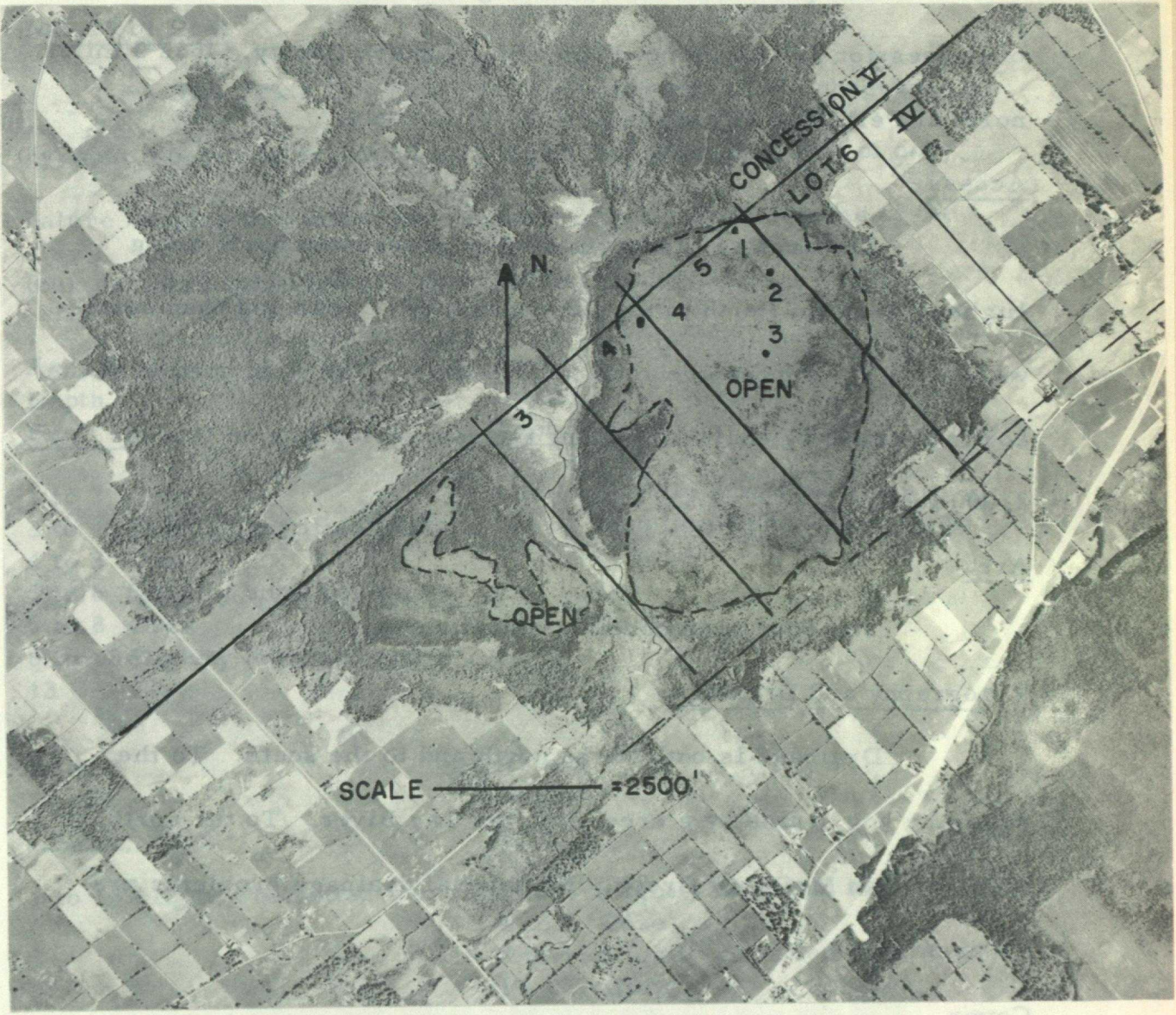


DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

Depth

Perth Bog

The portion of the Perth Bog examined lies in Lots 3 to 6
located east of the Perth Bog. The Perth Bog is located
in the Perth Bog.



Most of the Perth Bog is covered by a thick
growth of deciduous trees throughout the bog are spruce
and clumps of spruce growing on islands of sphagnum and
hyacinth moss.

PERTH BOG

4. Perth Bog

Location

The portion of the Perth Bog examined lies in Lots 3 to 6 of Concession IV, Drummond township, Lanark County. It is 3 miles north of Perth and 175 miles E. N. E. of Toronto.

Access

The area is easily reached by proceeding north along Highway 15 from Perth to the Concession IV-V road and then southwest along the concession road for 3/4 mile. The open portion of the bog is reached by continuing along the concession line on foot for 2,000 feet.

Area

The open area consists of 363 acres.

Topography and Drainage

Drainage is both to the north and to the south. To the south the bog drains by a creek into the Tay River. To the north, it drains into McGarry Creek. No unusual drainage problems are apparent.

Cover

Most of the Perth Bog is open and fringed by a thick growth of deciduous trees. Scattered throughout the bog are spruce and clumps of spruce growing on labrador tea, sphagnum and hypnum moss.

Depth

Tests at three different places indicate that the bog is 12 to 15 feet deep and rests on a clay bottom.

Nature of Peat

The Perth Bog consists of slightly humified sphagnum and hypnum mosses interbedded with highly humified material of oozy nature varying in width from 1 inch to 2 feet. The columns of the four samples collected are shown below:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>	<u>Area 2</u> <u>Depth,</u> <u>Feet</u>
1 to 3 Ooze	1 to 6 Slightly humified moss
3 to 4 Slightly humified moss	with interbeds 1 inch thick
4 to 5 Ooze	of ooze
5 to 6 Slightly humified moss	6 to 12 Ooze
6 to 8 Ooze	12 Clay
8 to 13 Slightly humified moss	
13 Clay	
<u>Area 3</u> <u>Depth,</u> <u>Feet</u>	<u>Area 4</u> <u>Depth,</u> <u>Feet</u>
1 to 13 Slightly humified moss	1 to 4 Slightly humified moss
	4 to 8 Ooze
	8 to 15 Slightly humified moss
	15 Clay

The results of laboratory tests are given below:

<u>Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen, %</u>	<u>pH</u>
1	3-6	11.3	3.5	1.7	5-6
2	1-6)				
3	1-6)	13.7	5.2	1.7	5-6

Comments

A description of the Perth Bog is given in Bulletin No. 1 of the Mines Branch, Canada Department of Mines, 1909. The present investigation confirms the results of the previous, more extensive sampling.

Previous to 1908 a peat plant was erected in this bog at the southeast corner of Lot 1, Concession IV, Drummond township. Apparently little peat was manufactured, and the plant had been closed down several years previous to 1908. At that time the bog was investigated as a source of fuel peat and was regarded as of only fair quality for this purpose, since the peat was not sufficiently humified and the fuel produced would be comparatively light.

This bog can be considered as a possible source of horticulture peat moss although the moss is not of the highest quality.

5. Cranberry Lake Bog

Location

The portion examined in lots 17 to 19 of Concessions IV and V, Walford township, Grenville County, extends from 2200 feet north to 2-1/4 miles north of Cranberry Lake. Ottawa lies 40 miles to the north and Toronto 190 miles to the W. S. W.

Access

The Cranberry Lake Bog is reached by proceeding south from Merrickville for 5 miles and thence west along a branch road for 1,000 feet. This road crosses through the bog. The C. P. R. station at Jasper lies 5 miles by road to the west.

Area

The Cranberry Lake Bog is part of a chain of bogs extending south from the Rideau River near Merrickville for 10 miles. The open area examined comprises 450 acres.

Topography and Drainage

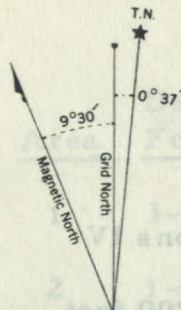
The general drainage from the bog area is north into the Rideau River. Creeks on the east and west sides of the bog can also be utilized for drainage. A length of 4,600 feet along the west side of the bog, north of the road, has been ditched.

Cover

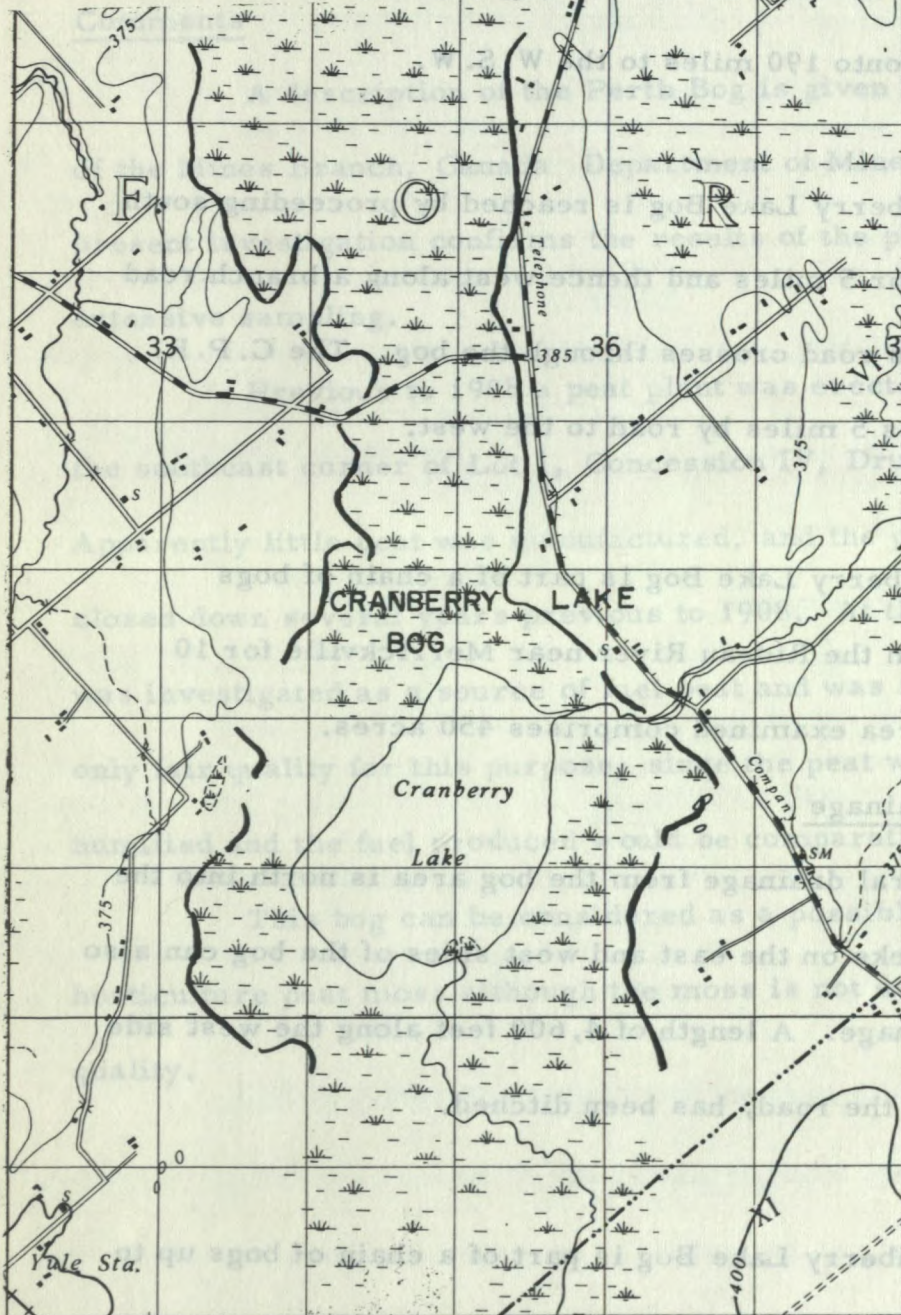
The Cranberry Lake Bog is part of a chain of bogs up to 1.5 miles wide and, as previously mentioned, 10 miles long. This

MERRICKVILLE

31^B/13 WEST

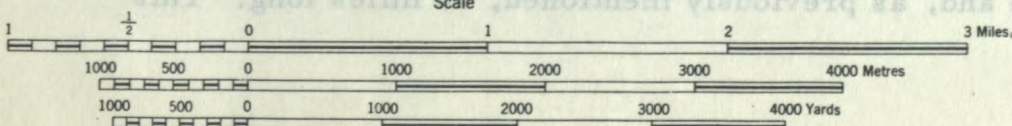


Use diagram only to obtain numerical values.
APPROXIMATE MEAN DECLINATION 1950
FOR CENTRE OF SHEET
Annual magnetic change 1.5" easterly

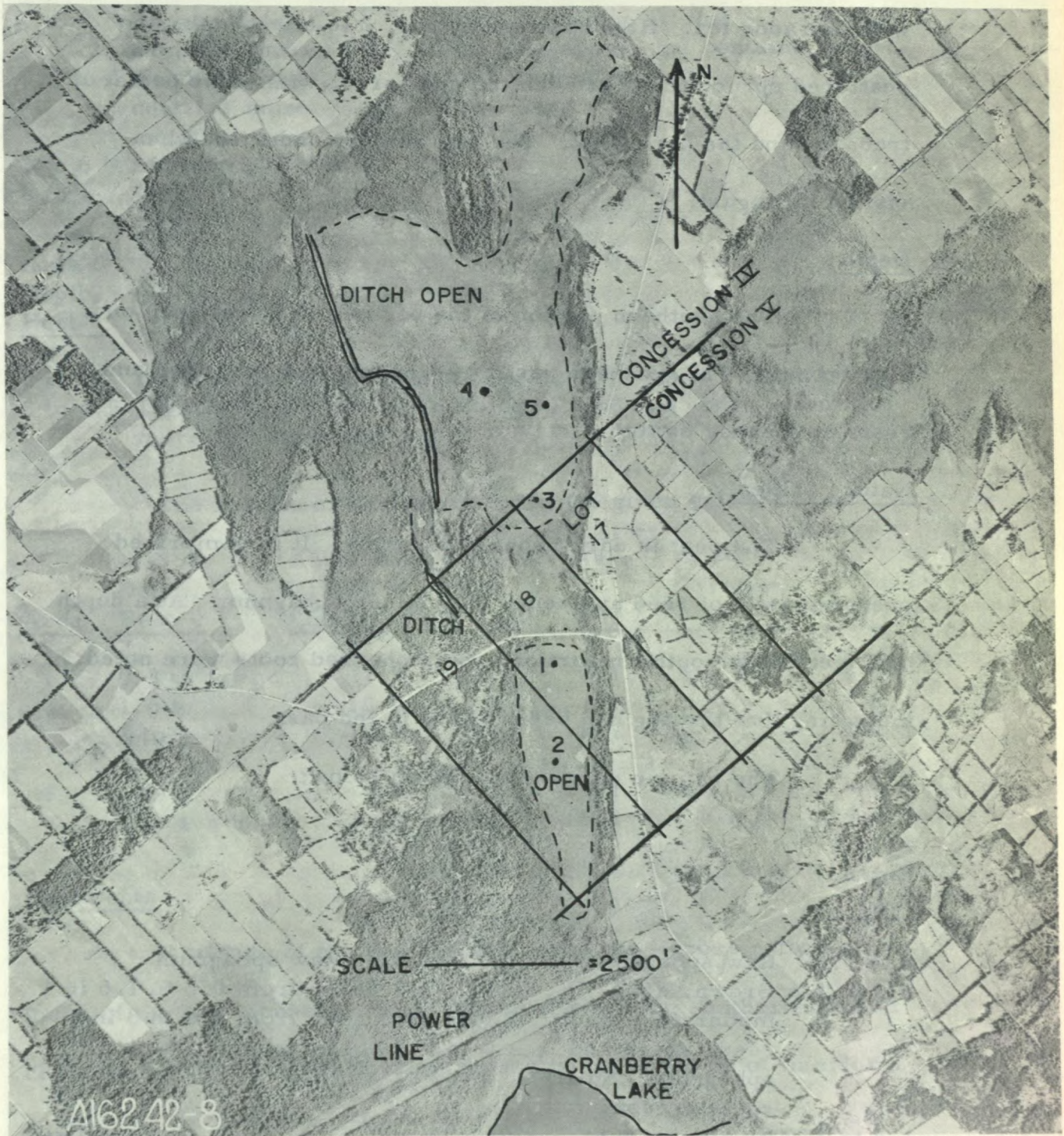


REFERENCE

- Roads:
- hard surface, heavy duty 3 or more lanes Part completed
 - hard surface, heavy duty 2 lanes Route No. 12
 - hard surface, medium duty 3 or more lanes 2 lanes
 - loose surface, graded and drained 3 or more lanes Not less than 14 ft. wide
- Other Roads
- Private Road Poor condition
 - Trail Station
- Railway, double track Stop Siding
- single track Station
 - abandoned Station
 - narrow gauge or electric Station
- Bridge, underpass or overpass
- Boundaries, International
- Provincial
 - County
 - Reservation, Indian
 - Military, Nat. or Prov. Parks, etc.
- Electric Power Line
- on Steel Towers
 - on Wood Poles
- Telephone, trunk route
- Triangulation Station
- Boundary or Survey Monument
- Bench Mark
- BM 679.1
 - Spot Elevation, (in feet) 548
- House, Barn
- Buildings
- Mill or Factory, small, Saw Mill, etc. SM
 - School S
 - Church +
 - with conspicuous Tower or Spire +
- Post Office P
- Telephone Exchange T
- Mine or Open Cut X
- Cemetery or Churchyard
- Quarry
- Sand or Gravel Pit
- Cliff
- Cutting
- Embankment, Dump, etc.
- Lighthouse
- Wharf or Pier
- Foreshore Flats
- Sand
 - Mud
- Swamp or Marsh
- Lake or Slough, non permanent
- Glacier or Snowfield
- Stream, intermittent
- Contours, elevation
- 475
 - 500
 - 525
 - 500 depression
- Wooded Areas, heavy
- light



Area consists of 4 bars
Depth, 2 ft
mixture of sphagnum moss, wood fibres and ericophorum overgrowth



A16242-3

Local farmers say none of the bogs in this area have been
exploited in the past (not all in past)

CRANBERRY LAKE BOG

Clay

area supports a heavy tree growth. The open area consists of a mixture of sphagnum moss, wood moss and eriophorum overgrown with labrador tea. Broad-leaved bushes, 2 to 6 feet high, and scattered spruce trees grow in the open area, with some poplar trees around the periphery. The bog was dry underfoot when visited in August.

Depth

The southern portion of the bog is 5 to 8 feet deep on a clay bottom. The northern part is 4-1/2 feet to 6 feet deep and rests on a sandy bottom.

Nature of Peat

The peat is dark brown and earthy. It is comprised predominantly of reed and sedge with minor sphagnum. At a depth of 2 feet in the southern portion, some charred roots were noted indicating that the bog had been burned in the past.

The sample columns are given below:

<u>Area 1</u>		<u>Area 2</u>	
<u>Depth,</u>		<u>Depth,</u>	
<u>Feet</u>		<u>Feet</u>	
0 to 0.3	Raw sphagnum	0.0 to 0.3	Raw sphagnum
0.3 to 1.6	Brown, dry, moderately earthy reed, sedge and sphagnum. Small roots present	0.3 to 0.66	As from 0.3 to 1.6 in 1
		0.66 to 3	As from 1.6 to 3 in 1
		3 to 5	As from 0.3 to 1.6 in 1
		5 to -	Clay
1.6 to 3	As above, but slightly more humified		
3 to 8	As from 0.3 to 1.6 but lighter brown		
8 to -	Clay		

Area 3
Depth,
Feet

0 to 0.5 Brown earthy
humified moss
0.5 to 2 As above, but
contains more
moisture
2 to 6 As from 3 to 8 in 1
6 to - Sand

Area 4
Depth,
Feet

0 to 3 Brown peaty soil
3 to 5 As above, but contains more
moisture
5 to - Sand

Area 5
Depth,
Feet

0 to 3 Dark brown earthy humified peat, 10% woody material
3 to 4.5 Lighter brown and more fibrous, reed and sedge - contains
more moisture than 0 to 3

The results of laboratory tests are given below:

<u>Area</u>	<u>Depth,</u> <u>Feet</u>	<u>Absorptive Value</u> <u>at 25% Moisture</u> <u>(Times own weight)</u>	<u>Ash,</u> <u>%</u> <u>Dry</u>	<u>Nitrogen,</u> <u>%</u>	<u>pH</u>
1	0.3 to 1.6	7.9	3.4	Av. 0.7	4-5
	1.6 to 3	10.9	1.9		4-5
	3 to 8	10.2	5.7		4-5
5	1 to 3	4.0	4.1	Av. 1.4	5-6
	3 to 4.5	11.3	5.1		5-6

Comments

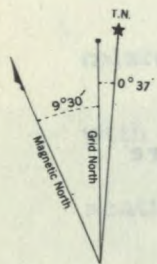
Drainage of the bog has destroyed the fibrous nature of much of the peat present. Some material from the southern portion could be used for horticultural purposes but it would be of inferior quality.

Local farmers say none of the bogs in this area have been exploited in the past; nor is there any current local production.

MERRICKVILLE

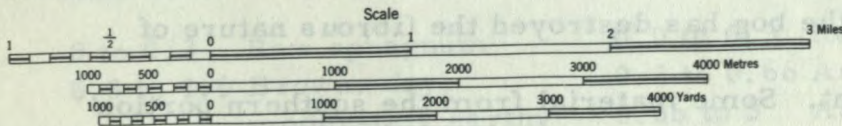
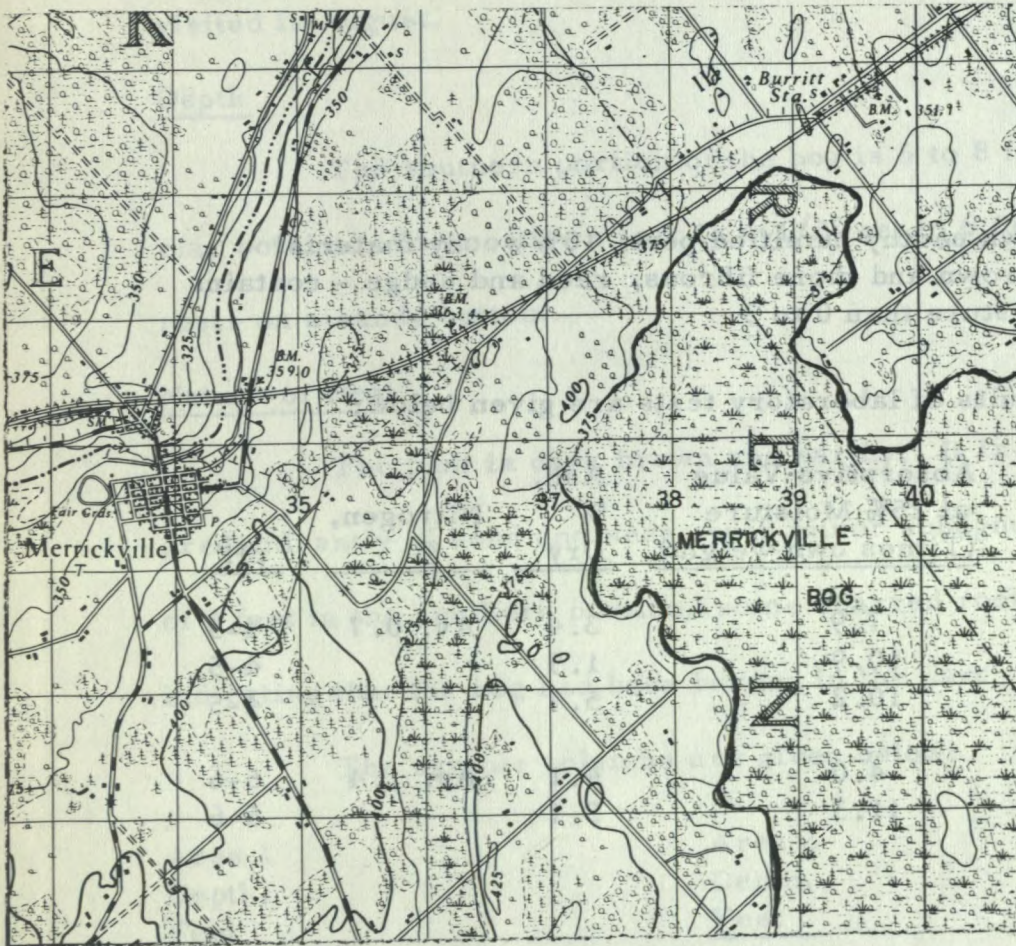
31^B/₁₃ WEST

REFERENCE



Use diagram only to obtain numerical values.
 APPROXIMATE MEAN DECLINATION 1950
 FOR CENTRE OF SHEET
 Annual magnetic change 1.5" easterly

Roads;		
hard surface, heavy duty	3 or more lanes	Part. completed
hard surface, heavy duty	2 lanes	Route No.
hard surface, medium duty	3 or more lanes	2 lanes
loose surface, graded and drained	3 or more lanes	Not less than 14 ft. wide
Other Roads		Poor condition
Private Road		
Trail		
Railway, double track		Station
.. single track		Stop Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
.. Provincial		
.. County		
.. Reservation, Indian, Military, Nat. or Prov. Parks, etc.		
Electric Power Line		on Steel Towers on Wood Poles
Telephone, trunk route		
Triangulation Station		
Boundary or Survey Monument		
Bench Mark		BM 679.1
Spot Elevation, (in feet)		548
House, Barn		
Buildings		
Mill or Factory, small, Saw Mill, etc.		SM
School		S
Church		
.. with conspicuous Tower or Spire		
Post Office		P
Telephone Exchange		T
Mine or Open Cut		
Cemetery or Churchyard		C CA
Quarry		
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore Flats		Sand Mud
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation		475 500 525
.. depression		500
Wooded Areas, heavy		a. t. a. f.
.. light		a. e. a.

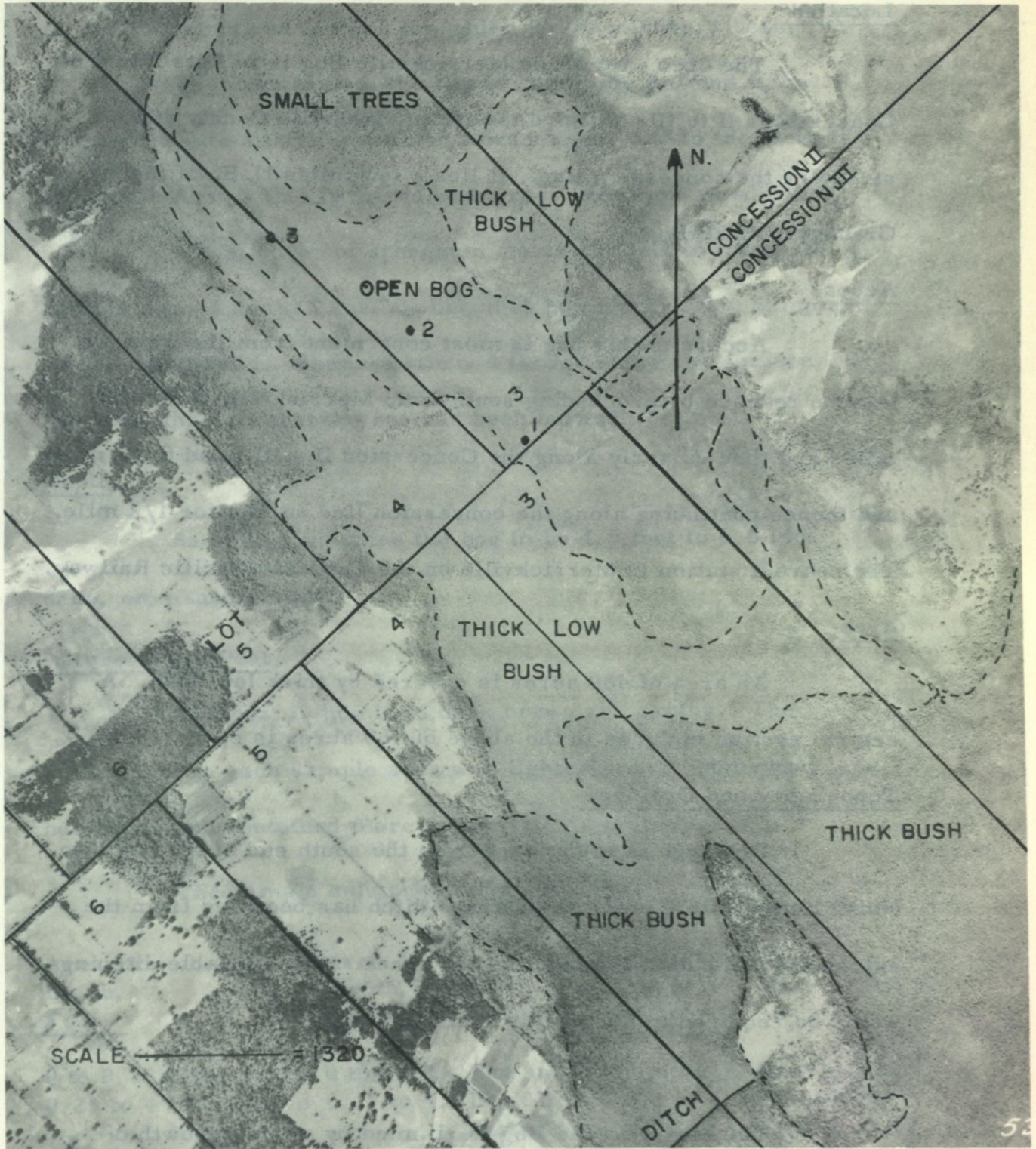


DEPARTMENT OF NATIONAL DEFENCE
 ARMY SURVEY ESTABLISHMENT

contain spruce.

Merrickville Bog

Separating the open area from the heavily treed area on



MERRICKVILLE BOG

6. Merrickville Bog

Location

The open part of the Merrickville Bog is in Lots 2 to 4 of Concessions II to III, Wolford township, Grenville County and straddles the concession line. It lies a few miles N. E. of the Cranberry Lake Bog.

Access

Access to this bog is most convenient from the west. It may be reached by proceeding south from Merrickville for 2-1/2 miles and then easterly along the Concession II - III Road for 2 miles and thence continuing along the concession line on foot for 1/2 mile. The nearest station is Merrickville on the Canadian Pacific Railway.

Area

An area of 480 acres is covered by thick low bush. A central section included in the above of 160 acres is open.

Topography and Drainage

Drainage is to the east from the south end of the bog into North Kemptville Creek. A drainage ditch has been dug from the extreme south end of the bog into the creek. Considerable ditching would be required to adequately drain this bog.

Cover

The Merrickville Bog is rimmed by a thick growth of deciduous trees. The southern, north and north-eastern parts

contain spruce.

Separating the open area from the heavily treed area on all but the north end is thick low alder and huckleberry bush.

The open area of the bog is relatively dry and firm. It is covered with a thick growth of labrador tea, and in the vicinity of Sample Area 1 this is mixed with grass, fern and wood moss.

A thin cover of sphagnum starts 200 feet to the north of Sample Area 1 and the surface becomes hummocky from Sample Area 2 northward. Charred sticks 4 inches below the surface in this area indicate that the bog had been burned.

Depth

Sampling indicates the bog to be 4.5 feet to 6.5 feet deep, on a sand bottom.

Nature of the Peat

The peat is humified dark brown and earthy. The bottom foot in each sample area was lighter brown, somewhat less humified, and contained more moisture.

The sample columns are given below:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>	<u>Area 2</u> <u>Depth,</u> <u>Feet</u>	<u>Area 3</u> <u>Depth,</u> <u>Feet</u>
0 to 0.25 Wood moss	0 to 0.17 Raw moss	0 to 0.1 Raw moss
0.25 to 4 Dark brown earthy humified peat	0.17 to 4.5 Dark brown earthy humified peat; some wood fibre present	0.1 to 4.5 Similar to area 2, 0.17 to 4.5

<u>Area 1 (cont'd)</u> <u>Depth,</u> <u>Feet</u>	<u>Area 2 (cont'd)</u> <u>Depth,</u> <u>Feet</u>	<u>Area 3 (cont'd)</u> <u>Depth,</u> <u>Feet</u>
4 to 5 Lighter brown, less humified but still earthy	4.5 Sand	4.5 to 6.5 Lighter brown, less humified and contains more moisture
5 Sand		

Results of laboratory tests were as follows:

<u>Sample</u> <u>Area</u>	<u>Depth,</u> <u>Feet</u>	<u>Absorptive Value</u> <u>at 25% Moisture</u> <u>(Times own weight)</u>	<u>Ash,</u> <u>%</u> <u>Dry</u>	<u>Nitrogen,</u> <u>%</u>	<u>pH</u>
1	0.5 to 4	8.6	4.4		5-6
3	4.5 to 6.5	12.7	9.3	1.9	5-6

Comments

Fire and gradual drainage have destroyed the fibrous nature of the peat in this portion of the bog. The area surrounding the small lake at the south end was not examined. It is possible that this area would yield more encouraging results.

A local resident does not know of any effort to recover peat from this bog. It is a popular place for gathering huckleberries.

7. Kemptville Bog

Location

The Kemptville Bog is in South Gower township, Grenville County. The portion examined is in Concession V at the west boundary of the township, 2-1/4 miles east of Kemptville and 30 miles south of Ottawa.

Access

Kemptville is on the Canadian Pacific Railway and the railway crosses the south-west end of the bog. Access is by proceeding south of Kemptville on Highway 16 to 1-1/4 miles, east for 1-1/4 miles, and then south to the railway. The open portion lies 3,300 feet east along the railway.

Area

The bog extends north-east from the railway for 2-1/4 miles and averages 1/2 mile in width.

Topography and Drainage

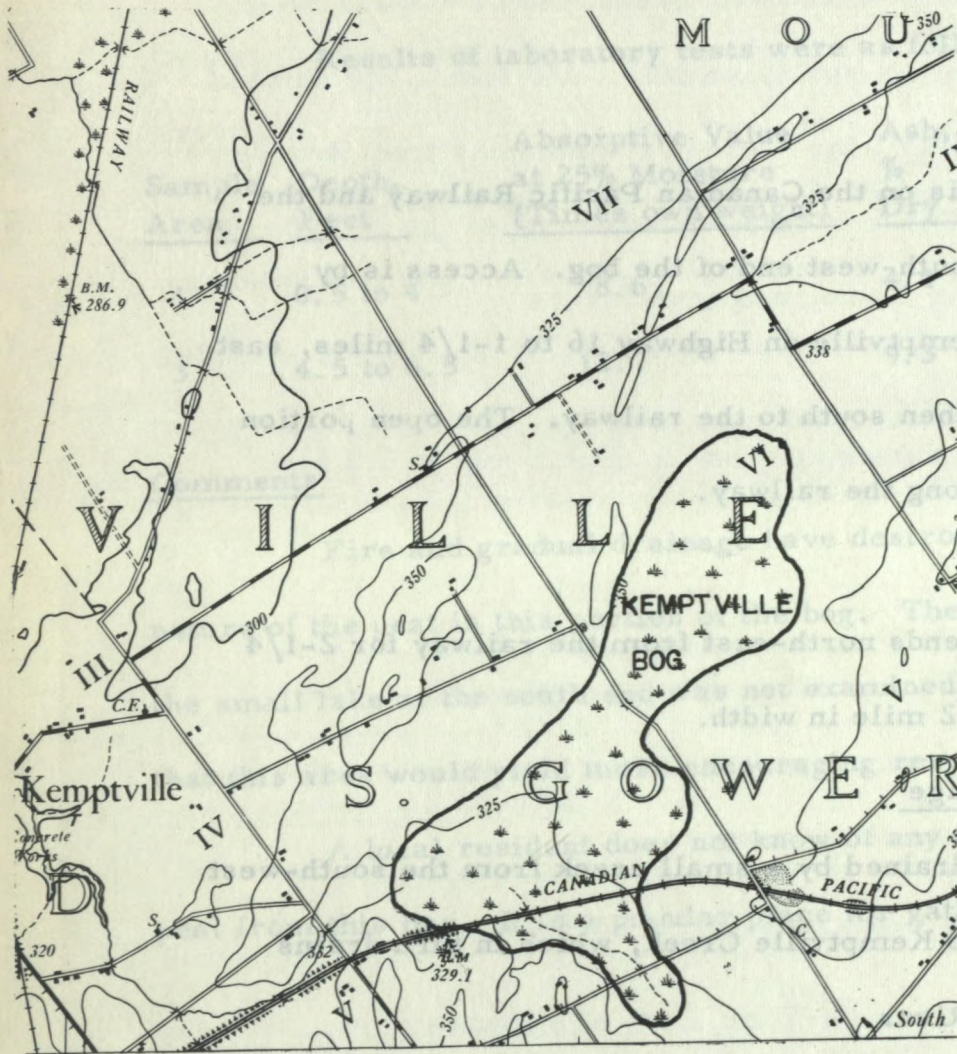
The bog is drained by a small creek from the south-west end west and north into Kemptville Creek, which in turn drains north into the Rideau River.

Cover

A thick growth of deciduous trees rims the edge of the bog in the south-west portion. The remainder of the bog is covered by dense alder bushes. Grass and sparse sphagnum are present.

KEMPTVILLE

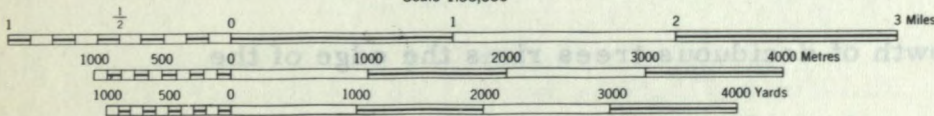
31⁹/₄ EAST



REFERENCE

Roads;		
hard surface, heavy duty	3 or more lanes	Part. completed
hard surface, heavy duty	2 lanes	Route No. 12
hard surface, medium duty	3 or more lanes	2 lanes
loose surface, graded and drained	3 or more lanes	Not less than 14 ft. wide
Other Roads		
Private Road		Poor condition
Trail		
Railway, double track		Station
.. single track		Stop Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundary, International		
.. Province or State		
.. County or District		
.. Township, Seignior or Parish		
.. Reservation, Indian		
.. Military, Nat. or Prov. Parks, etc.		
Electric Power Line		on Steel Towers on Wood Poles
Telephone, trunk route		
Triangulation Station		△
Boundary or Survey Monument		○
Bench Mark		↑ BM 679.1
Spot Elevation, (in feet)		• 548
House, Barn		■
Buildings		■
Mill or Factory, small, Saw Mill, etc.		♠ SM
School		• S
Church		✦
.. with conspicuous Tower or Spire		✦
Post Office		P
Telephone Exchange		T
Mine or Open Cut		X
Cemetery or Churchyard		C C
Quarry		⊖
Sand or Gravel Pit		⊖
Cliff		⊖
Cutting		⊖
Embankment, Dump, etc.		⊖
Lighthouse		⊖
Wharf or Pier		⊖
Foreshore Flats		Sand Mud
Swamp or Marsh		⊖
Lake or Slough, non permanent		⊖
Glacier or Snowfield		⊖ or ⊖
Stream, intermittent		⊖
Contours, elevation		175 200
.. depression		175 200
Wooded Areas, heavy		⊖
.. light		⊖

Scale 1:50,000



DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

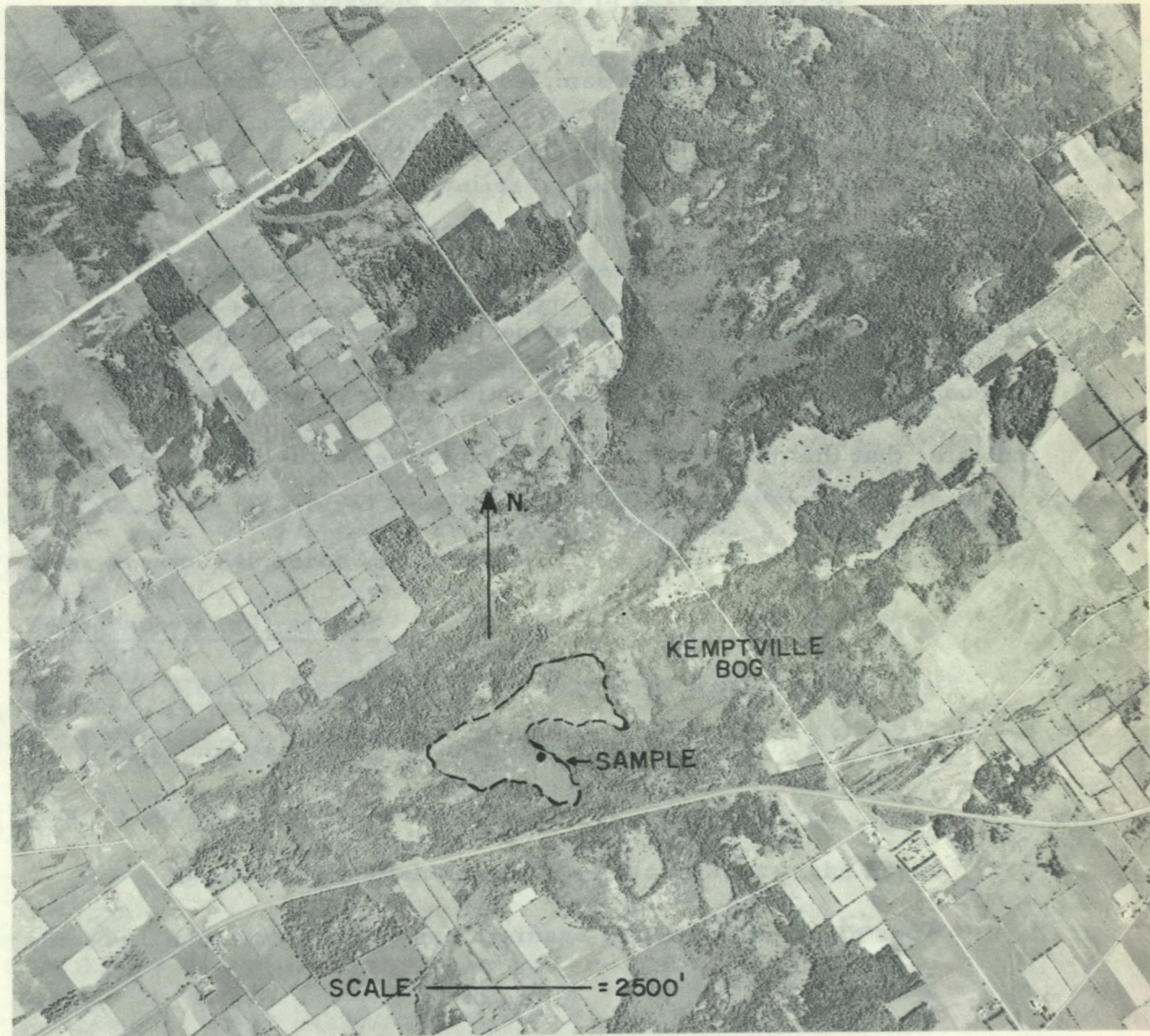
West Ogeche Bog

Depth

One sample was taken in the south-west central part.

Location

The depth was 3 feet and the bog is on a sand bottom.



Cover

Some wood moss but no sphagnum moss was observed on the surface of the area. **KEMPTVILLE BOG** clumps of birch, poplar, willow and shrubs are also present. The surface of the

Depth

One sample was taken in the south-west central part.

The depth was 3 feet and the bog is on a sand bottom.

Nature of the Peat

The bog in the area sampled consists of brownish-black, slightly moist peaty soil containing some reeds.

Comments

The material in the south-west portion of the Kemptville Bog is not suitable for horticultural peat moss. It would appear that this bog has gradually drained. Inspection of air photographs indicates that this bog becomes shallower to the north-east.

8. West Osgoode Bog

Location

The West Osgoode Bog occurs in Lots 25 to 29 of Concession V, Osgoode township, Carleton County. Osgoode Station, on the Canadian Pacific Railway, lies 5-1/2 miles to the south-west and Ottawa lies 20 miles to the north.

Access

The bog is readily accessible by road from Osgoode Station. Roads cross both the north and south ends of the bog.

Area

The bog covers an area of approximately 480 acres. A clear area of 240 acres lies in the southern part.

Topography and Drainage

Much of the country is swampy from West Osgoode north for 4 miles and east for 3 miles. The West Osgoode Bog is in the eastern portion of the swampy area.

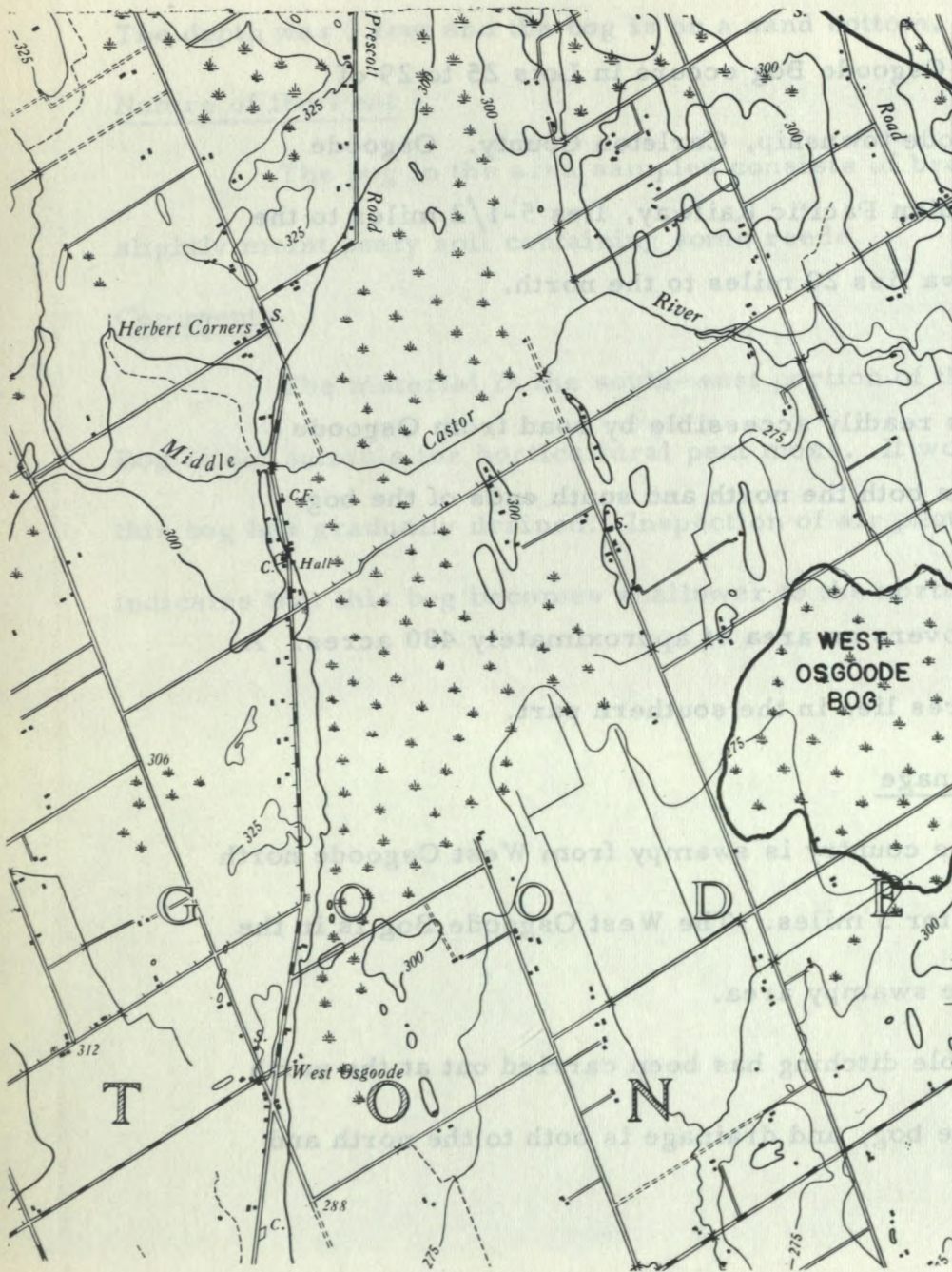
Considerable ditching has been carried out at the north and south edges of the bog, and drainage is both to the north and south.

Cover

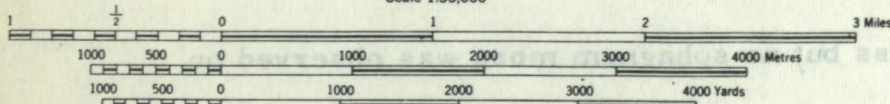
Some wood moss but no sphagnum moss was observed on the surface of the area sampled. Cotton grass, clumps of birch, poplar, willow and shrubs are also present. The surface of the

KEMPTVILLE

31^G/4 EAST



Scale 1:50,000



REFERENCE

Roads:	3 or more lanes	Part completed
hard surface, heavy duty	2 lanes	Route No.
hard surface, heavy duty	3 or more lanes	2 lanes
hard surface, medium duty	3 or more lanes	Not less than 14 ft. wide
loose surface, graded and drained		Poor condition
Other Roads		
Private Road		
Trail		
Railway, double track	Station	
.. single track	Stop	Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
.. Provincial		
.. County		
.. Township, Seignior or Parish		
.. Reservation, Indian		
.. Military, Nat. or Prov. Parks, etc.		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station		
Boundary or Survey Monument		
Bench Mark	BM	679.1
Spot Elevation, (in feet)		548
House, Barn		
Buildings		
Mill or Factory, small, Saw Mill, etc.		SM
School		S
Church		+
.. with conspicuous Tower or Spire		+
Post Office		P
Telephone Exchange		T
Mine or Open Cut		X
Cemetery or Churchyard		C C
Quarry		
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore Flats		
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation	175	200
.. depression	200	175
Wooded Areas, heavy		
.. light		

DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

The results of the laboratory analysis of the bog

Sample	Depth	Moisture	Organic	Sampling	Depth of Bog
1	0 to 2 feet deep	55%	10%	indicated the bog to be 2 to 3 feet deep	10
2					
3					
4					



WEST OSGOODE BOG

bog was burned three years previously.

Depth of Bog

Sampling indicated the bog to be 5 to 6 feet deep, on a clay bottom.

Nature of the Peat

The first 4.5 to 5 feet is dark brown, humified, locally woody and dry. The bottom layer of 1/2 to 1 foot is more moist, less humified, and locally fibrous.

The sample columns collected are given below:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>		<u>Area 2</u> <u>Depth,</u> <u>Feet</u>	
0 to 5.5	Dark brown humified dry peat	0 to 5	Dark brown humified dry
5.5 to 6	Medium brown, moderately humified fibrous wet peat	5 to 6	Medium brown moderately humified wet
6	Clay	6	Clay
<u>Area 3</u> <u>Depth,</u> <u>Feet</u>		<u>Area 4</u> <u>Depth,</u> <u>Feet</u>	
0 to 4.5	Humified dry woody material	0 to 2	Humified dry woody material
4.5 to 5	Moderately humified wet		Could not penetrate past 2 feet due to roots
5	Clay		

The results of the laboratory tests follow:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen, %</u>	<u>pH</u>
2	1 - 2	6.7	2.6	1.1	5-6

Comments

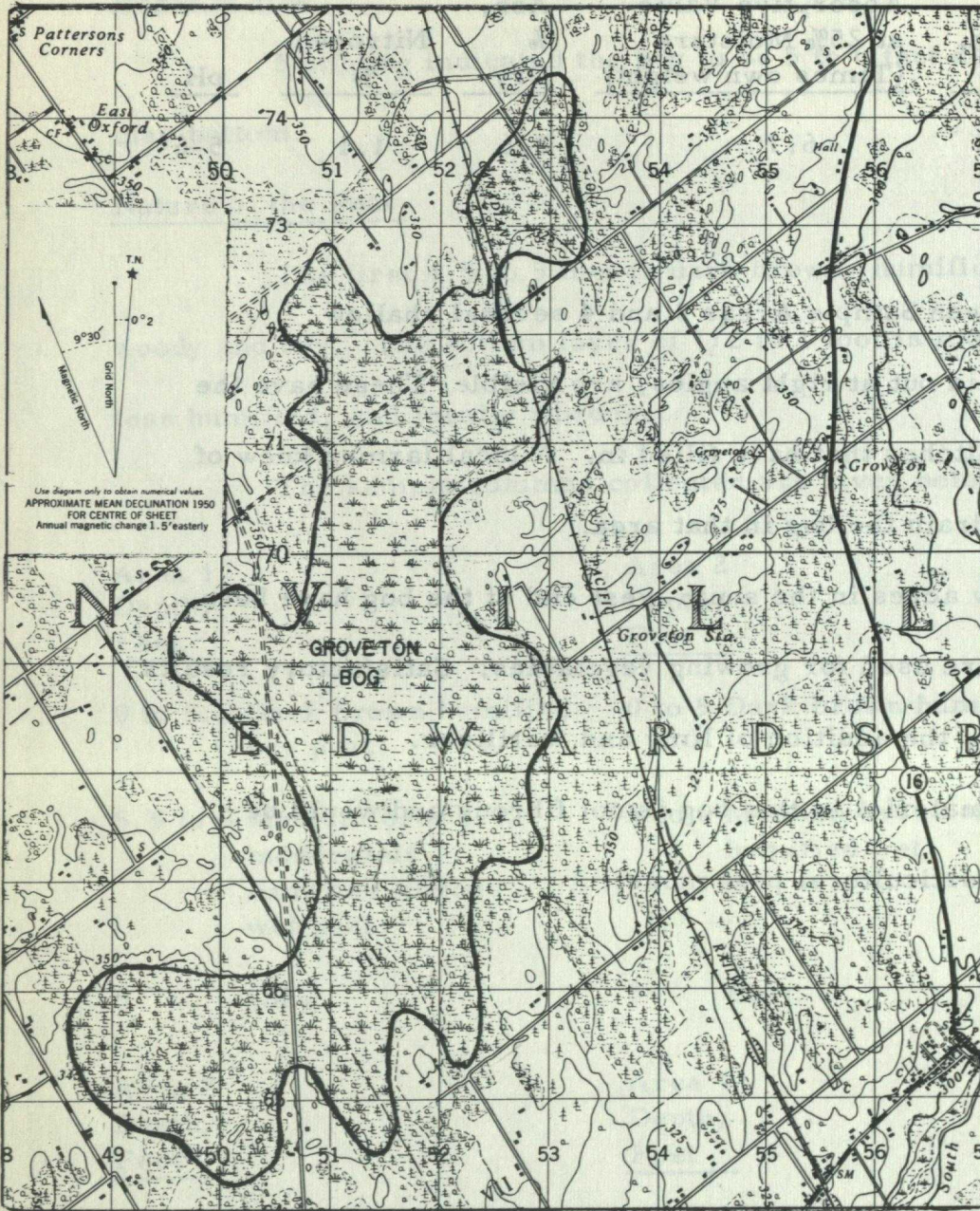
Between Sample Areas 3 and 4 several shallow depressions, laid out at right angles, are visible. These have the appearance of ditches that have filled in. A local farmer knew of no attempts to drain the bog in that area.

A few acres in the south-west end of the bog have been cultivated and are used for growing vegetables. Satisfactory results were obtained by the addition of lime and fertilizer.

The material in this bog is not fibrous and would be unsuitable for horticultural peat moss.

MERRICKVILLE

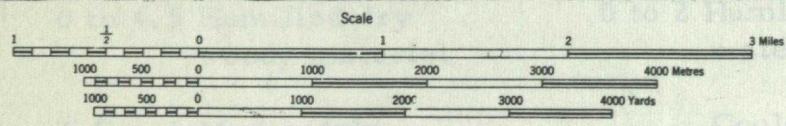
31^B/13 EAST



REFERENCE

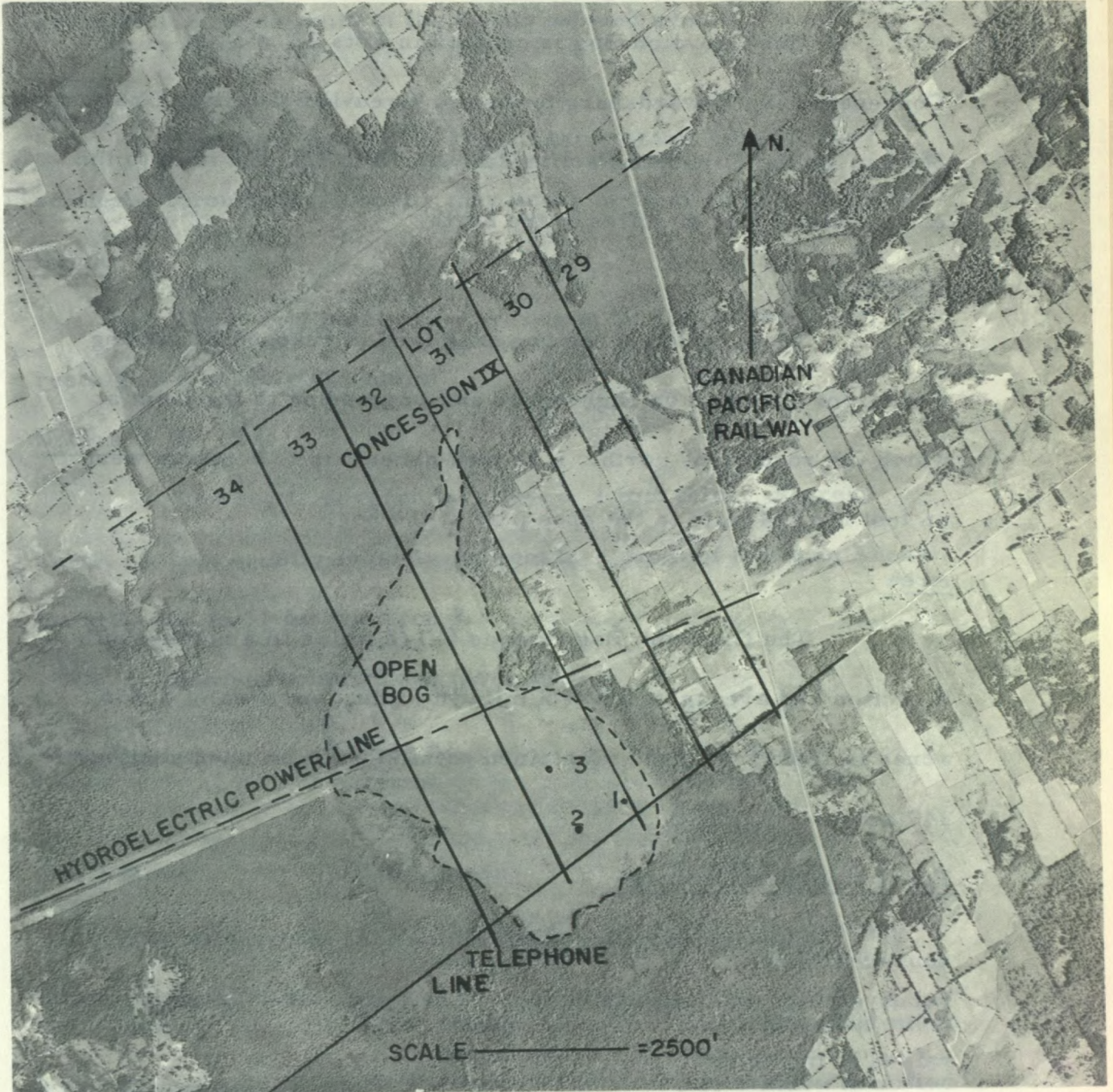
Roads:	3 or more lanes	Part. completed
hard surface, heavy duty	2 lanes	Route No.
hard surface, heavy duty	3 or more lanes	2 lanes
hard surface, medium duty	3 or more lanes	Not less than 14 ft. wide
loose surface, graded and drained	3 or more lanes	Poor condition
Other Roads:		
Private Road		
Trail		
Railway, double track	Station	
.. single track	Stop	Siding
.. abandoned		
.. narrow gauge or electric		
Bridge, underpass or overpass		
Boundaries, International		
.. Provincial		
.. County		
.. Reservation, Indian		
.. Military, Nat. or Prov. Parks, etc.		
Electric Power Line	on Steel Towers	on Wood Poles
Telephone, trunk route		
Triangulation Station		
Boundary or Survey Monument		
Bench Mark	BM	679.1
Spot Elevation, (in feet)		548
House, Barn		
Buildings		
Mill or Factory, small, Saw Mill, etc.	SM	
School	S	
Church		
.. with conspicuous Tower or Spire		
Post Office	P	
Telephone Exchange	T	
Mine or Open Cut		
Cemetery or Churchyard		
Quarry		
Sand or Gravel Pit		
Cliff		
Cutting		
Embankment, Dump, etc.		
Lighthouse		
Wharf or Pier		
Foreshore Flats	Small	Med.
Swamp or Marsh		
Lake or Slough, non permanent		
Glacier or Snowfield		
Stream, intermittent		
Contours, elevation	475	500 525
.. depression	500	
Wooded Areas, heavy	a. t. a. a.	
.. light	a. a. t. a.	

Use diagram only to obtain numerical values
 APPROXIMATE MEAN DECLINATION 1950
 FOR CENTRE OF SHEET
 Annual magnetic change 1.5' easterly



DEPARTMENT OF NATIONAL DEFENCE
 ARMY SURVEY ESTABLISHMENT

Drainage could be effected by the south end of the bog by ditching 1/2 mile west into Kemptonville Creek. This outlet location



A creek flows north out of the bog. This creek has been extended along the north-west side of the bog for several hundred feet by filling (muck)

GROVETON BOG

9 Sandy clay

9. Groveton Bog

Location

The Groveton Bog is centred in Lots 32 to 34 of Concession IX, Edwardsburg township, Grenville County. Groveton Station, on the Canadian Pacific Railway, lies $2/5$ of a mile to the east. Ottawa lies 40 miles to the north.

Access

That portion of the bog examined is reached by turning west from Groveton on Highway 16 and proceeding to the point at which the road turns north. It is then necessary to continue west on foot for $1/4$ mile to the open part of the bog.

Area

The Groveton Bog extends $6-1/2$ miles in a north-south direction and averages $4/5$ of a mile in width. An area of 1,536 acres is lightly wooded. Contained within this is an open section of 340 acres.

Topography and Drainage

The Groveton Bog at the time of the examination was relatively dry and firm under foot. The open area is slightly raised in the centre.

A creek flows north out of the bog. This creek has been extended along the north-west side of the bog for several hundred feet by ditching.

Drainage could also be developed at the south end of the bog by ditching 1/2 mile west into Kemptville Creek. This outlet would be 1.8 miles south of the lightly wooded area.

Cover

The open area of the bog contains small spruce trees scattered throughout. Locally they occur up to 20 to 50 feet apart.

Depth

Three test holes show the bog to be 9 to 11 feet deep, resting on a sandy clay bottom.

Nature of the Peat

The bog is covered by a layer, 1 foot thick, of green moss. A poor quality moss is present to a depth of 8 feet in Areas 1 and 2, and to 11 feet in Area 3.

Sample columns are given below:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>	<u>Area 2</u> <u>Depth,</u> <u>Feet</u>	<u>Area 3</u> <u>Depth,</u> <u>Feet</u>
0 to 1 Moss	0 to 1 Moss	0 to 1 Moss
1 to 4 Humified moss	1 to 3 Humified moss	1 to 2 Completely humified muck
4 to 8 Partly humified moss	3 to 8 Partly humified moss	2 to 3 Humified moss
8 to 9 Completely humified (muck)	8 to 9 Completely humified (muck)	3 to 6 More humified
9 Sandy clay		6 to 11 As above but brownier
	9 Sandy clay	11 Sandy clay

The results of laboratory tests are given below:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen %</u>	<u>pH</u>
1 to 3 grouped as 1 sample					
(1	4-8	14.8	6.1	2.8	5-6
(2	3-8				
(3	6-11				
3	1-2	12.4	6.0	--	--
3	2-6	8.9	3.9	2.8	5-6

Comments

A ditch 200 feet long, just north of the telephone line 300 feet from the east edge of the open area, was noted. It is possible that this could represent an attempt to test or exploit the moss.

The Groveton Bog is a potential source of peat moss that could be used locally. It is doubtful that the quality could compete favourably with currently operating bogs.

10. Harmony Church Bog

Location

Four miles west of Winchester in Lots 18 to 22, Concessions IX and X, Mountain township, Dundas County. Ottawa lies 25 miles to the northwest.

Access

The east end of the Harmony Church Bog is conveniently reached from Highway 31 by proceeding west along the gravel road which lies 3.3 miles north of Winchester for 1.6 miles and then south by a road which leads into the centre of the bog. Inkerman Station, on the Canadian Pacific Railway, lies 2-1/2 miles to the south.

Area

The air-photo study of the bog indicated that the only area of interest was the east end. A lobe of open swamp comprising 332 acres in this section was examined in four places.

Topography and Drainage

The Harmony Church Bog forms the head waters of the South Castor River which flows out of the north end of the bog. It has also been drained into the East Castor River by ditches along the east and south sides.

Cover

The surface is firm, dry and hummocky with tall grass,

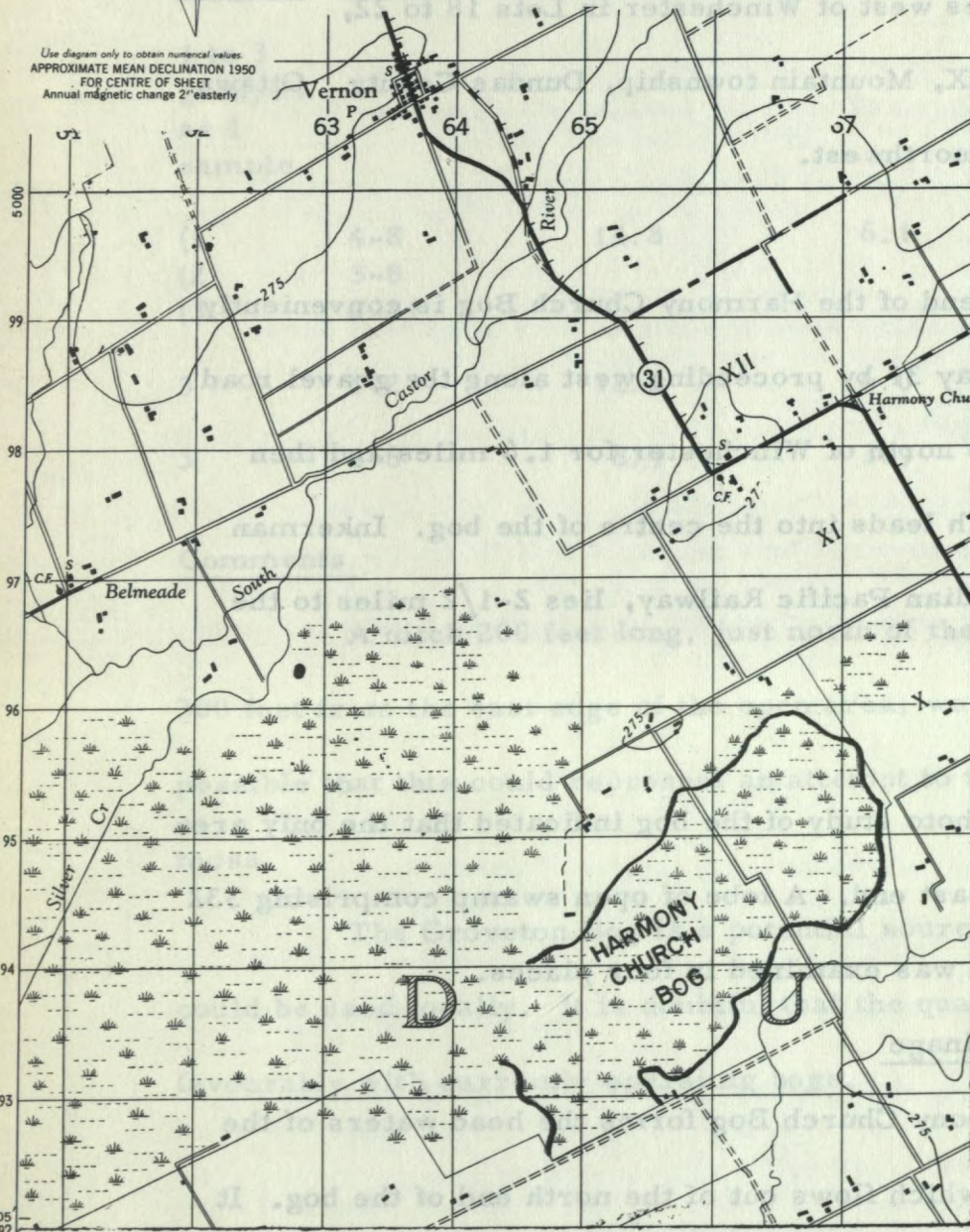
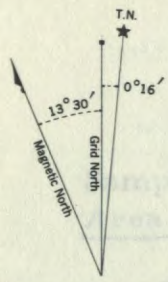
WINCHESTER

31^G/₃ WEST HALF

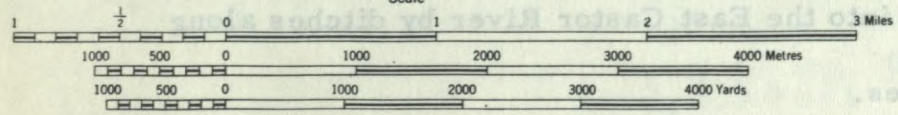
REFERENCE

- Roads:
- hard surface, all weather more than 2 lanes Part completed
 - hard surface, all weather 2 lanes Route No. 12 less than 2 lanes
 - loose surface, all weather more than 2 lanes All weather
 - loose surface, less than 2 lanes All weather Dry weather
- Cart Track, Footpath Trail Cart Track Footpath or Trail
- Special, Snow Road, etc.
- Railways:
- standard gauge, multiple track Station
 - standard gauge, single track Stop Siding
 - narrow gauge, multiple track on Road
 - narrow gauge, single track on Road
- Tramway on Road
- Bridge, underpass or overpass on Steel Towers on Wood Poles
- Boundary, International Province or State County or District Township, Seignior or Parish City or Town Reservation, Indian, Military, etc.
- Electric Power Line on Steel Towers on Wood Poles
- Telephone, trunk route Triangulation Station Boundary Mc Survey Mon.
- Bench Mark BM 679.1
- Spot Height, (in feet) 548
- House, Barn Mill or Factory, small, Saw Mill, etc. S.M.
- School Church with conspicuous Tower or Spire Post Office Telephone Exchange Mine or Open Cut Cemetery or Churchyard Quarry Sand or Gravel Pit Cliff Cutting Embankment, Dump, etc. Lighthouse Wharf or Pier Foreshore Flats Swamp or Marsh Lake or Slough, intermittent Glacier or Snowfield Stream, intermittent Irrigation Canal, Ditches Inundated Land Contours, elevation 200 175 depression 200 175 approximate 200 175 Relief, not indicated by Contours Wooded Areas, heavy light

Use diagram only to obtain numerical values:
APPROXIMATE MEAN DECLINATION 1950
FOR CENTRE OF SHEET
Annual magnetic change 2" easterly



Scale



DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

Cover

flowing plants, and bullrushes. It has been burned at sometime in
Area 3
Depth
the past.
Depth of Bog
The depth, as indicated by 4 samples, is 2 1/2 to 5 feet



24 to 60 No sample recovered
Clay 60

HARMONY CHURCH BOG

flowing plants, and bullrushes. It has been burned at sometime in the past.

Depth of Bog

The depth, as indicated by 4 samples, is 2-1/2 to 5 feet and the bottom is clay.

Nature of the Peat

The peat is humified, dry, fibrous, and sedge-like.

The sample columns taken are tabulated below:

<u>Area 1</u> <u>Depth,</u> <u>Inches</u>		<u>Area 2</u> <u>Depth,</u> <u>Inches</u>	
0 to 4	Carex and eriophorum	0 to 10	Carex and eriophorum slightly humified with woody material
4 to 5	Woody layer		
5 to 11	Dark brown, dry, humified and fibrous	10 to 30	As above, dry, moderately humified with considerable woody material
11 to 16	Medium brown, fibrous and slightly humified	30	Clay
16 to 24	Similar to 5 to 11		
24	Woody layer		
24 to 60	No sample recovered		
60	Clay		

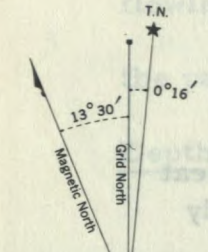
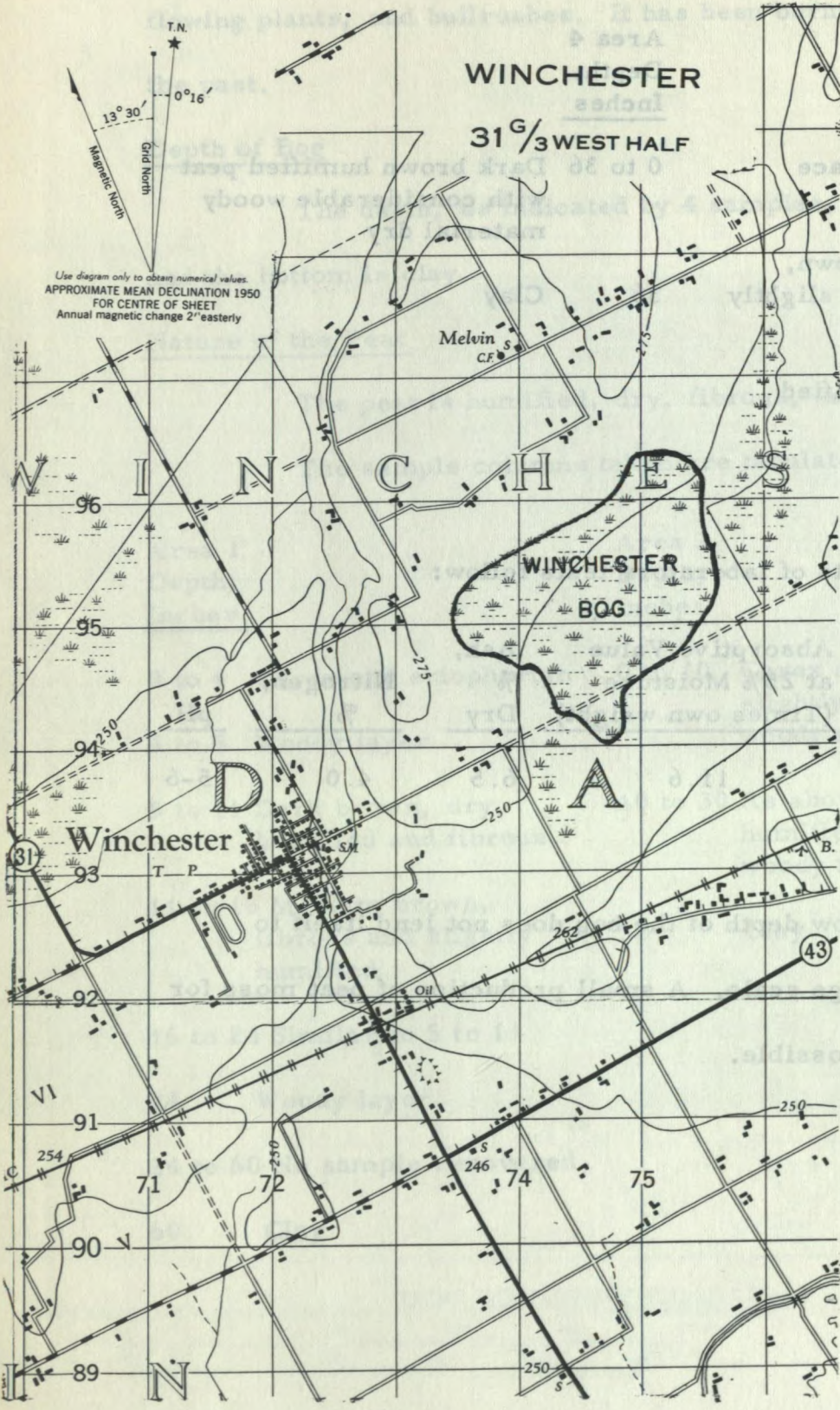
<u>Area 3</u> <u>Depth,</u> <u>Inches</u>		<u>Area 4</u> <u>Depth,</u> <u>Inches</u>	
0 to 8	Loamy surface growth	0 to 36	Dark brown humified peat with considerable woody material dry
8 to 16	Medium brown, fibrous and slightly humified	36	Clay
16 to 48	Woody humified dry		
48	Clay		

The results of laboratory tests follow:

<u>Sample</u> <u>Area</u>	<u>Depth,</u> <u>Inches</u>	<u>Absorptive Value</u> <u>at 25% Moisture</u> <u>(Times own weight)</u>	<u>Ash,</u> <u>%</u> <u>Dry</u>	<u>Nitrogen,</u> <u>%</u>	<u>pH</u>
1	11-16	11.6	6.5	4.0	5-6

General Comment

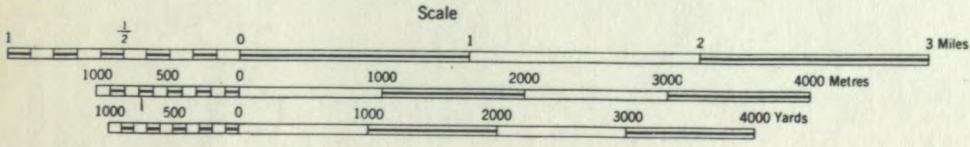
The shallow depth of the bog does not lend itself to exploitation on a large scale. A small production of peat moss for local use might be possible.



Use diagram only to obtain numerical values.
 APPROXIMATE MEAN DECLINATION 1950
 FOR CENTRE OF SHEET
 Annual magnetic change 2' easterly

REFERENCE

- Roads:
 hard surface, all weather more than 2 lanes Part completed
 hard surface, all weather 2 lanes Route No. 12 less than 2 lanes
 loose surface, all weather more than 2 lanes All weather
 loose surface, less than 2 lanes All weather Dry weather
 Cart Track, Footpath Trail Cart Track Footpath or Trail
 Special, Snow Road, etc.
 Railways:
 standard gauge, multiple track Station
 standard gauge, single track Stop Siding
 narrow gauge, multiple track
 narrow gauge, single track
 Tramway on Road
 Bridge, underpass or overpass
 Boundary, International
 .. Province or State
 .. County or District
 .. Township, Seignior or Parish
 .. City or Town
 .. Reservation, Indian, Military, etc.
 Electric Power Line on Steel Towers on Wood Poles
 Telephone, trunk route
 Triangulation Station Δ
 Boundary Mon. Survey Mon. □ ○
 Bench Mark B.M. 679.1
 Spot Height, (in feet) 548
 House, Barn
 Buildings
 Mill or Factory, small, Saw Mill, etc. S.M.
 School S
 Church
 .. with conspicuous Tower or Spire
 Post Office P
 Telephone Exchange T
 Mine or Open Cut B.
 Cemetery or Churchyard C CA
 Quarry
 Sand or Gravel Pit
 Cliff
 Cutting
 Embankment, Dump, etc.
 Lighthouse
 Wharf or Pier
 Foreshore Flats Sand Mud
 Swamp or Marsh
 Lake or Slough, intermittent
 Glacier or Snowfield
 Stream, intermittent
 Irrigation Canal, Ditches
 Inundated Land
 Contours, elevation 200 175
 .. depression 200 175
 .. approximate 200 175
 Relief, not indicated by Contours
 Wooded Areas, heavy
 .. light



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Nature of the bog Winchester Bog

The bog was first mapped in 1880. The location
 was determined by the fact that the bog is situated
 in the town of Winchester, Dukes County, Virginia.
 It is situated about 1.6 miles to the west and
 0.5 miles to the north-west of the town of
 Winchester.



Comments
 eriphorum and sphagnum moss supporting a growth of Labrador

This bog has been partly drained and burned. The bog

Depth of Bog
WINCHESTER BOG

The two samples taken from this bog indicate its depth
 to be between 7.5 and 8.5 feet. The bottom is a blue clay.
 marked.

11. Winchester Bog

Location

The Winchester Bog is located in Lots 8 to 10, Concession VII, Winchester township, Dundas County. The town of Winchester lies 1.6 miles to the west and Ottawa 35 miles to the north-west.

Access

A gravel road leads east from Winchester across the south edge of the bog. The nearest station is on the Canadian Pacific Railway 1 mile south of Winchester or 2.6 miles by road from the bog.

Area

The bog is open and covers an area of 390 acres.

Topography and Drainage

The Winchester Bog is slightly raised in the central part. The eastern end is ditched. The drainage is to the north into East Castor River.

Cover

The Winchester Bog is covered by a mixture of carex, eriophorum and sphagnum moss supporting a growth of labrador tea.

Depth of Bog

The two samples taken from this bog indicate its depth to be between 7.5 and 8.5 feet. The bottom is a blue clay.

Nature of the Peat

The peat from this bog is dark brown and woody. The first 4 to 5 feet are slightly humified and then the peat becomes well humified. The first 6 inches are comprised of raw moss. There is considerable eriophorum and carex and minor sphagnum.

Sample results are as follows:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>		<u>Area 2</u> <u>Depth,</u> <u>Feet</u>	
0 to 5	Slightly humified, somewhat woody	0 to 4	Slightly humified, somewhat woody
5 to 7.5	Brown, well humified	4 to 8.5	Brown, woody, well humified
7.5	Blue clay	8.5	Blue clay

The results of laboratory tests are as follows:

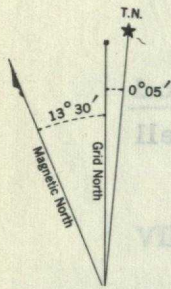
<u>Area</u>	<u>Depth,</u> <u>Feet</u>	<u>Absorptive Value</u> <u>at 25% Moisture</u> <u>(Times own weight)</u>	<u>Ash,</u> <u>%</u> <u>Dry</u>	<u>Nitrogen,</u> <u>%</u>	<u>pH</u>
1	0-2	13.5	3.4	3.2	5-6
1 and 2	2-5) 4-8.5)	7.6	13.4	1.8	5-6

Comments

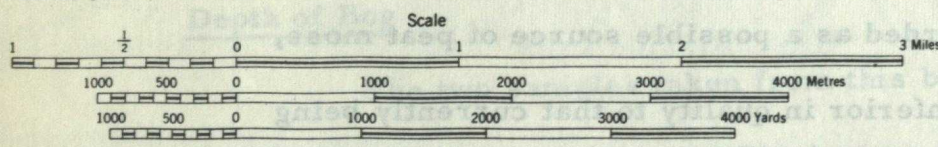
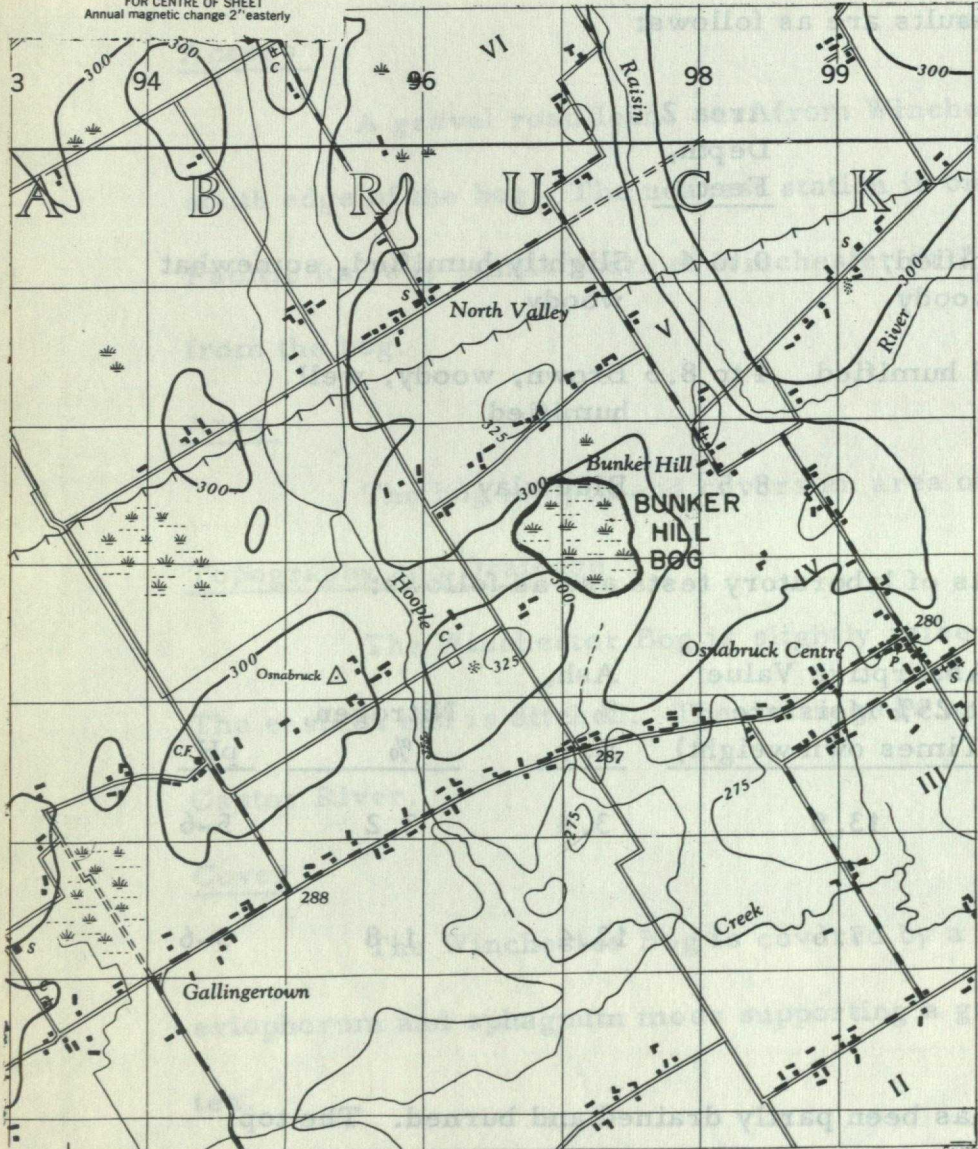
This bog has been partly drained and burned. The top 4 to 5 feet can be regarded as a possible source of peat moss, although the moss is inferior in quality to that currently being marketed.

WINCHESTER

31^G/₃ EAST HALF



Use diagram only to obtain numerical values.
 APPROXIMATE MEAN DECLINATION 1950
 FOR CENTRE OF SHEET
 Annual magnetic change 2" easterly



REFERENCE

Roads;	more than 2 lanes	Part completed
hard surface, all weather	.....	.....
hard surface, all weather	.....	.....
loose surface, all weather	.....	.....
loose surface, less than 2 lanes	.....	.....
Cart Track, Footpath Trail	.....	.....
Special, Snow Road, etc.	.....	.....
Railways;		
standard gauge, multiple track	.....	.....
standard gauge, single track	.....	.....
narrow gauge, multiple track	.....	.....
narrow gauge, single track	.....	.....
Tramway	.....	.....
Bridge, underpass or overpass	.....	.....
Boundary, International	.....	.....
.. Province or State	.....	.....
.. County or District	.....	.....
.. Township Seignior or Parish	.....	.....
.. City or Town	.....	.....
.. Reservation, Indian, Military, etc.	.....	.....
Electric Power Line	.....	.....
Telephone, trunk route	.....	.....
Triangulation Station	.....	.....
Boundary Mon. Survey Mon.	.....	.....
Bench Mark	.....	.....
Spot Height, (in feet)	.....	.....
House, Barn	.....	.....
Buildings	.....	.....
Mill or Factory, small, Saw Mill, etc.	.....	.....
School	.....	.....
Church	.....	.....
.. with conspicuous Tower or Spire	.....	.....
Post Office	.....	.....
Telephone Exchange	.....	.....
Mine or Open Cut	.....	.....
Cemetery or Churchyard	.....	.....
Quarry	.....	.....
Sand or Gravel Pit	.....	.....
Cliff	.....	.....
Cutting	.....	.....
Embankment, Dump, etc.	.....	.....
Lighthouse	.....	.....
Wharf or Pier	.....	.....
Foreshore Flats	.....	.....
Swamp or Marsh	.....	.....
Lake or Slough, intermittent	.....	.....
Glacier or Snowfield	.....	.....
Stream, intermittent	.....	.....
Irrigation Canal, Ditches	.....	.....
Inundated Land	.....	.....
Contours, elevation	.....	.....
.. depression	.....	.....
.. approximate
Relief, not indicated by Contours
Wooded Areas, heavy
.. light

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 ARMY SURVEY ESTABLISHMENT



BUNKER HILL BOG

Cover

A heavy growth of deciduous trees borders all but the

12. Bunker Hill Bog

Location

The Bunker Hill Bog is located in the south part of Lots 25 to 27, Concession V, and the north part of Lot 26, Concession IV, Osnabruck township, Stormont County. Ottawa lies 40 miles to the north-west.

Access

The bog may be reached by proceeding along the road north from Osnabruck Centre for 2 miles and then on foot west for 2,200 feet. Wales, on the Canadian National Railways, lies 6 miles to the south-east.

Area

The Bunker Hill Bog is approximately $3/4$ mile in diameter with a central open portion consisting of 127 acres.

Topography and Drainage

A ditch 2,900 feet long would be required to drain this bog west into a creek which flows south to join Hoople Creek. Hoople Creek flows into the St. Lawrence at Dickinson Landing, which has subsequently been flooded by the Seaway. From the south end of the bog, ditching of $1/2$ to $3/4$ of a mile would be required to drain the bog into Hoople Creek.

Cover

A heavy growth of deciduous trees borders all but the

north end of the bog, where there is a thick growth of low bush.

The open portion of the bog supports scattered spruce and a growth of labrador tea on carex and sphagnum moss.

Depth

From the indications of one test hole, the Bunker Hill Bog appears to be about 16 feet deep, resting on a stony clay bottom.

Nature of the Peat

The first foot consists of raw moss followed by 3 to 5 feet of humified moss and then 9 to 10 feet of slightly humified moss.

The first 4 feet of moss, which are inferior to the moss of deeper portions, gave the following:

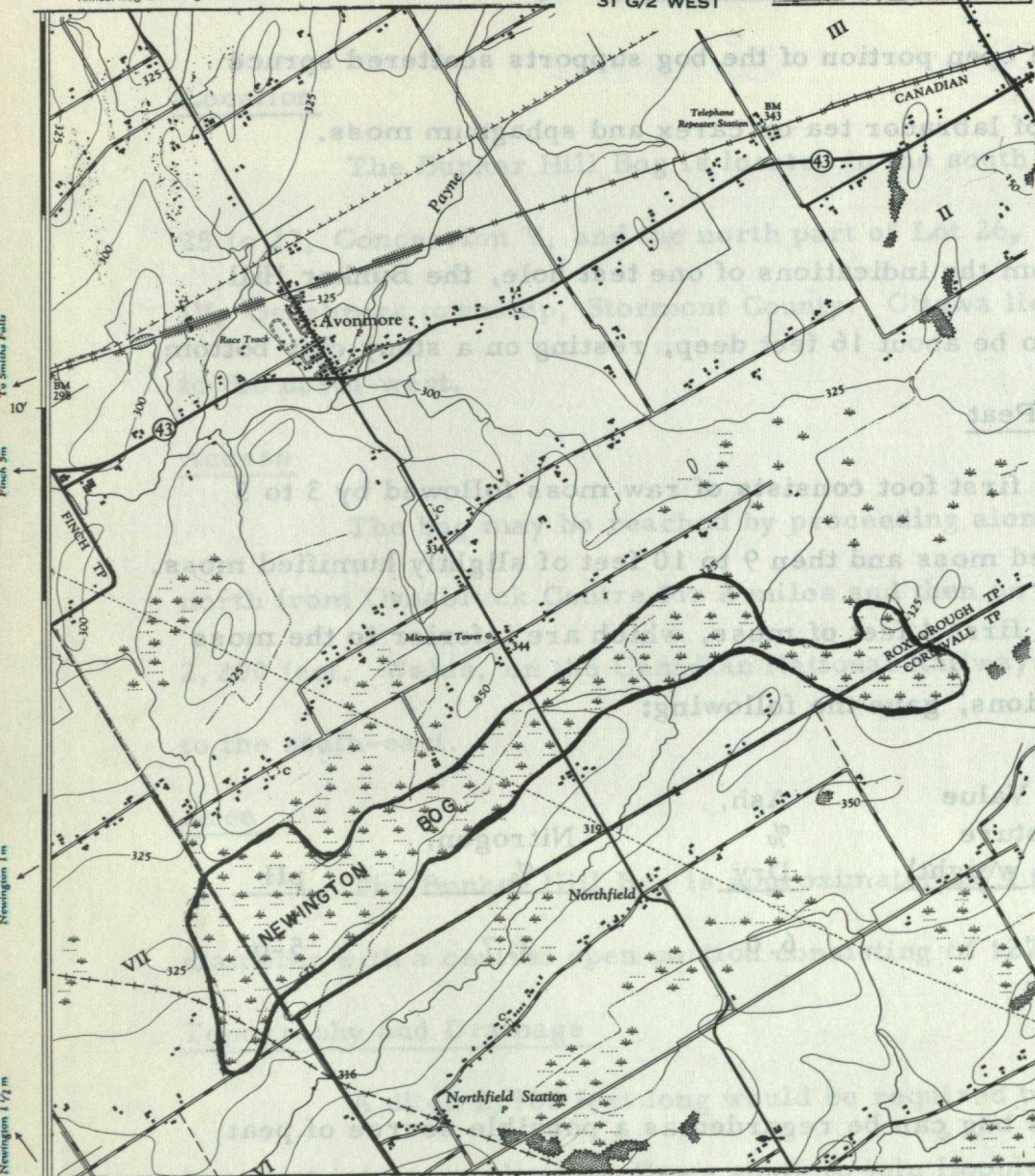
<u>Absorptive Value</u> at 25% Moisture (Times own weight)	<u>Ash,</u> % <u>Dry</u>	<u>Nitrogen,</u> % <u>.</u>	<u>pH</u>
12.4	6.0	1.7	5-6

Comments

This bog can be regarded as a possible source of peat moss, although the quality by present standards is somewhat indifferent.

CORNWALL
31 G/2 WEST

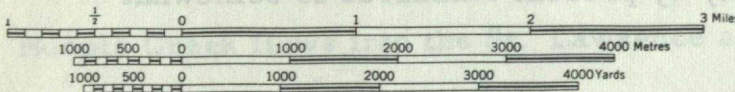
MAGNETIC DECLINATION 13°51' WEST
AT CENTRE OF MAP, 1959
Annual magnetic change 2.2' easterly



REFERENCE

Roads:	more than 2 lanes	Dual
hard surface, all weather.....		
hard surface, all weather.....	2 lanes	Less than 2
loose surface, all weather.....		
loose surface, all weather.....	2 lanes or more	
dry weather.....		
cart track; trail, or cut line.....	less than 2 lanes	
Railways:	Station	
normal gauge, multiple track.....		
normal gauge, single track.....		
abandoned or under construction		
underpass, overpass.....		
Tunnel; Drawbridge.....		
Power line; Telephone line.....		
Boundaries:		
international, with monument.....		
provincial.....		
county or district.....		
township or parish.....		
township or parish, unsurveyed.....		
city or town.....		
park, reserve, etc.....		
Horizontal control point, with elevation.....		582
Bench mark, with elevation.....		3025
Spot elevation; precise, approximate.....		4582, .757 ±
Historical site; Cemetery.....		
Mine or open cut; Quarry.....		
Sand or gravel pit.....		
House; Building.....		
School.....		
Church; Church with spire.....		
Post Office.....		
Radio Station.....		
Tower; Chimney.....		112' 4'
Well; Tank.....		
Cutting.....		
Embankment.....		
Cliff.....		
Contours:		
elevation.....		250, 225
depression.....		250, 200
approximate.....		250, 225
Foreshore flats.....		
Lighthouse.....		
Wharf or pier; Breakwater.....		
Levee or dyke.....		
Rocky reef.....		
Swamp or marsh.....		
Inundated land, seasonal.....		
Intermittent lake, stream.....		
Indefinite shoreline, stream.....		
Rapids, large, small; Bridge.....		
Ditch or flume.....		
Snowfield; Glacier.....		
Wooded area; unclassified, scrub.....		
Vineyard; Orchard.....		

SCALE

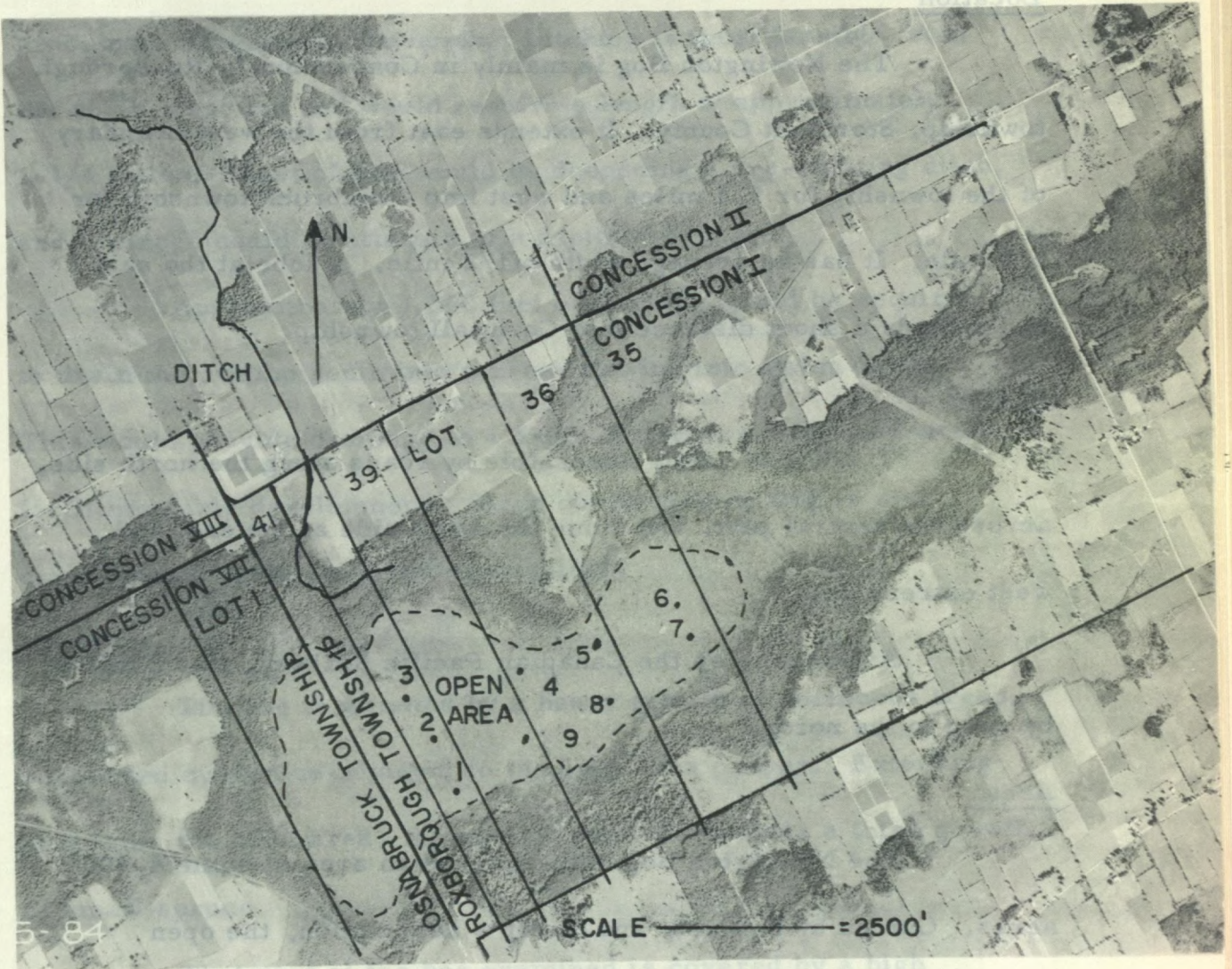


DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

Newington Bog

This bog has previously been described by Nyström and
Mention of material suitable for moss-litter in their
Ottawa River.

report instigated a re-examination.
the bog investigated and to consider this



western portion of 283 acres was examined. This portion was
described as containing moss-litter material.

NEWINGTON BOG

Nyström, Erik, and Aréq, S. A., "Investigation of the Peat Bogs
and Peat Industry of Canada, During the Season 1908-09", Can.
Dept. Mines, Mines Branch, Bull. No. 1, Rpt. No. 30; 1909.

13. Newington Bog

This bog has previously been described by Nystrom and Anrep.⁴ Mention of material suitable for moss-litter in their report instigated a re-examination.

Location

The Newington Bog is mainly in Concession 1, Roxborough township, Stormont County. It extends east from the west boundary of the township for 5.4 miles and west into Osnabruck township for 0.4 mile. It has an average width of 1/2 mile. A lobe at the east end extends a short distance into Cornwall township.

Access

The bog is easily accessible by roads along the north side, across the central part, and along the south side at the east and west extremities.

Avonmore, on the Canadian Pacific Railway, lies 2 miles by road to the north.

Area

The Newington Bog encompasses an area of some 4,400 acres. Guided by Nystrom and Anrep's description, the open western portion of 283 acres was examined. This portion was described as containing the least humified material.

⁴ Nystrom, Erik, and Anrep, S. A., "Investigation of the Peat Bogs and Peat Industry of Canada, During the Season 1908-09", Can. Dept. Mines, Mines Branch, Bull. No. 1, Rpt. No. 30; 1909.

Topography and Drainage

The Newington Bog lies along the height of land separating drainage to the south into the St. Lawrence and to the north into the Ottawa River.

With reference to the portion of the bog investigated, the gradient is steepest to the north. Ditching is most feasible from the north-west end and would require a length of approximately 1-1/4 miles. Most of this would be deepening a pre-existing ditch, and drainage could be attained to a depth of 20 feet.

Approximately 3,500 feet of ditching would be required to drain the swamp south into a creek flowing into Palen Creek. This would provide drainage to a depth of perhaps 5 feet and would facilitate early development. Since the Newington Bog is wet, considerable drainage would be required.

Cover

The bog is rimmed by a heavy growth of deciduous trees, succeeded by spruce adjacent to the open area proper. Extending east from the open area, the central portion supports a thick growth of small spruce.

That part of the bog examined is covered by a high proportion of sphagnum moss supporting a heavy growth of labrador tea with a few pitcher plants and some eriophorum.

Depth of Bog

The bog was not tested below a depth of 22 feet*.

Nystrom and Anrep's results indicate the depth in this area to be 20 to 26 feet.

Nature of Peat

Nine areas were sampled, along a length of 4,500 feet and across a width of 1,500 feet.

Unhumified to slightly humified material is present in these areas to the bottom of the sampled section, which varied from 12 to 22 feet. The top 10 to 14 feet consist of unhumified moss. In the case of Areas 1, 6 and 9, the top 6 to 12 feet of moss would not core in the sampler, a sign of unhumified material. The remaining material is slightly humified. Water squeezed from the wet moss came out clear and the hands were left clean. This was the only instance of such being the case with respect to the bogs examined.

The moss is mainly sphagnum, with minor eriophorum and carex.

A 5-foot sample was taken in the vicinity of Sample Area 1, with a post-hole digger, to determine whether there were any important variations in this upper portion.

* The depth at Area 2 where bottom was not reached.

Water absorption was high and ash content low for each 0.5-foot sample. The moss dried to a tough elastic matt of medium brown colour. Some layers up to 3 to 4 inches containing some carex and/or eriophorum are present in the top 2 to 3 feet, but in insufficient quantities to adversely affect the quality of the moss.

Sample columns for the different areas tested are as follows:

Sample From Post-Hole Digger

Depth,
Feet

- 0 to 2 Light brown, unhumified, sphagnum with minor reeds and fine root-filaments, the latter concentrated between 0.3 and 0.5
- 2 to 4.5 A little darker in colour, slightly humified, fewer reeds and sparse fine roots
- 4.5 to 5 Light brown sphagnum, some reeds

Samples Collected by Sampler

<u>Sample Area 1</u>	<u>Sample Area 2</u>	<u>Sample Area 3</u>
<u>Depth, Feet</u>	<u>Depth, Feet</u>	<u>Depth, Feet</u>
0 to 10 No recovery	0 to 12 Relatively unhumified sphagnum moss	0 to 12 Relatively unhumified sphagnum
10 to 12 Slightly humified sphagnum moss	12 to 22 Slightly humified sphagnum moss in a divided oozy state, some larger remnants	12 to 14 Slightly more humified

<u>Sample Area 4</u>	<u>Sample Area 5</u>	<u>Sample Area 6</u>
<u>Depth, Feet</u>	<u>Depth, Feet</u>	<u>Depth, Feet</u>
0 to 9 Relatively unhumified sphagnum	0 to 10 Relatively unhumified sphagnum	0 to 6 No recovery
9 to 12 Slightly more humified, slimy	10 to 14 Slightly more humified	6 to 14 Relatively unhumified sphagnum
		14 to 18 Oozy material
<u>Sample Area 7</u>	<u>Sample Area 8</u>	<u>Sample Area 9</u>
<u>Depth, Feet</u>	<u>Depth, Feet</u>	<u>Depth, Feet</u>
0 to 14 Relatively unhumified sphagnum	0 to 14 Relatively unhumified sphagnum	0 to 12 No recovery

The results of laboratory tests are as follows:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>Nitrogen %</u>	<u>pH</u>
1 (shovel sample)	0.5 to 2	25.6	2.0	0	5-6
2	0.3 to 0.8	24.5	2.5	0.6	5-6
	0.8 to 2	27.4	2.5	1.1	5-6
3*	12 to 14	21.4	3.1	1.2	5-6
4	0 to 9)	16.2	3.1	1.1	5-6
5	0 to 10)				
6	6 to 14)				

* Sample air-dried before analysis.

The results of tests on the 5-foot sample taken with the post hole digger are as follows:*

0.5 to 1	31.0	1.5		
1 to 1.5	32.3	1.9		
1.5 to 2	39.0	2.0	Ave.	Ave.
2 to 2.5	24.8	1.9	2.0	5-6
2.5 to 3	30.6	1.2		
3 to 3.5	31.5	1.0		
3.5 to 4	22.7	1.2		
4 to 4.5	23.9	1.0		
4.5 to 5	27.2	1.4		

Comments

This bog contains a good quality horticultural peat moss. In the area surveyed there are at least 600,000 tons to a depth of 20 feet. To determine how far east the good quality material extends, requires additional sampling.

The first recorded effort to produce from the Newington Bog was by the Dominion Peat Products Company Ltd., of Brantford, Ontario, previous to 1909. The plan was to produce peat for fuel. The method of treating the peat was unsatisfactory and no appreciable production was obtained.⁴

* The results from the samples collected with the post-hole digger in Area 1 are higher in absorptive capacity than those collected with the shovel and higher than theoretically possible (Leverin) for sphagnum moss. In view of this discrepancy the results should be used with caution. This discrepancy is being further investigated.

⁴ Nystrom, Erik, and Anrep, S. A., "Investigation of the Peat Bogs and Peat Industry of Canada, During the Season 1908-09"; Can. Dept. Mines, Mines Branch, Bull. No. 1, Rpt. No. 30; 1909.

The Cornwall Peat Company was formed previous to 1926

but it is not known to what extent this company operated.⁵

A Mr. Workman attempted to harvest peat moss from a barge at the north side of the bog in 1936 and again from the south-west end in 1937. His efforts did not meet with success.⁶

A Mr. Bell, associated with peat operations in British Columbia, is reported to have optioned a portion of the swamp for 3 years about 1956 but the option was allowed to lapse.⁶

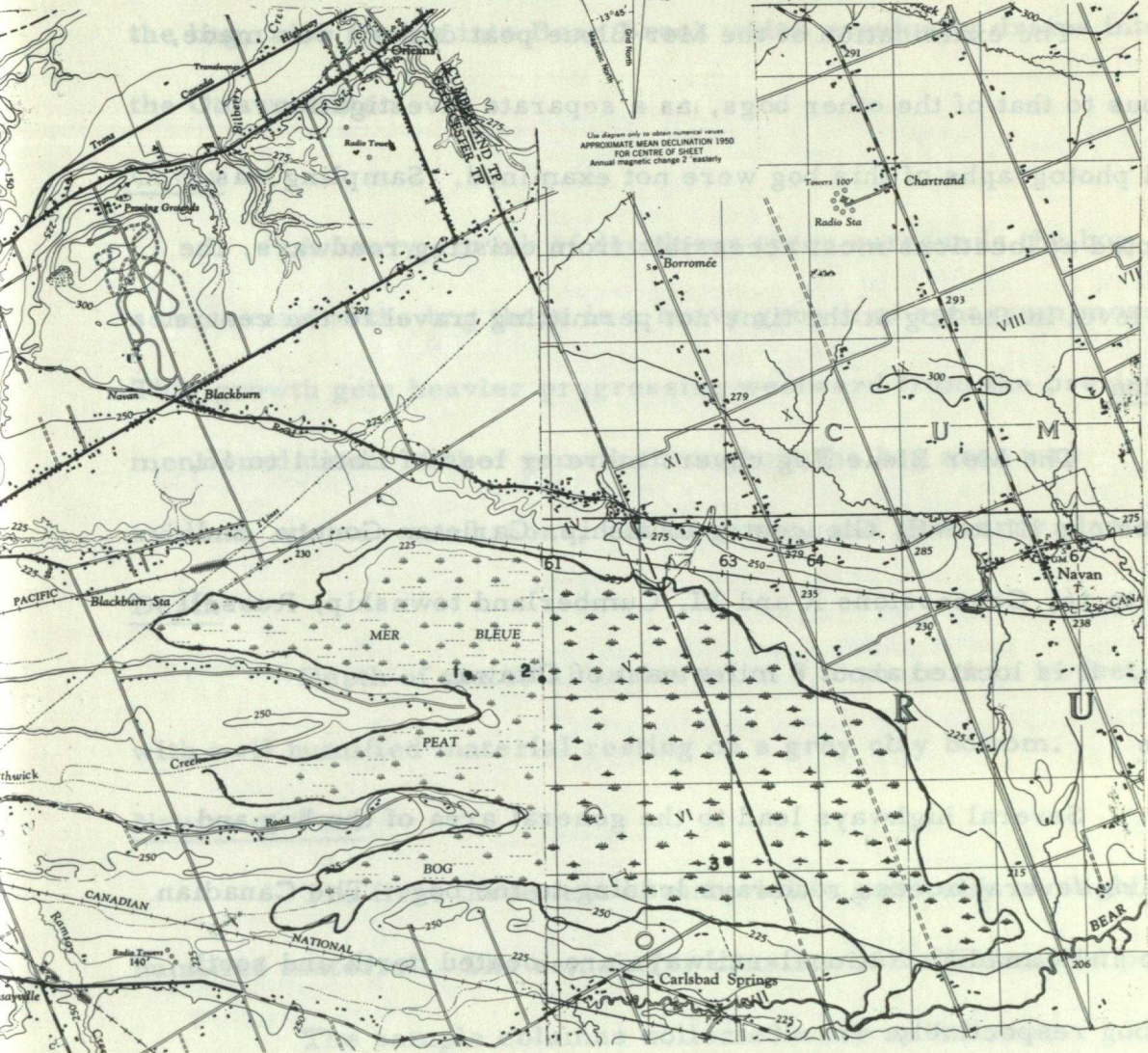


⁵ Haanel, B. F., "Final Report of the Peat Committee", Can. Dept. Mines, Mines Branch, Rpt. No. 641; 1926.

⁶ Personal communication, Robert Eamer, Stormont township, Ontario.

OTTAWA
31 G/5 EAST

RUSSELL
31 G/6 WEST HALF

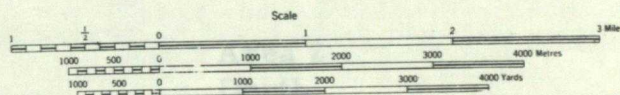


Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION 1950
FOR CENTRE OF SHEET
Annual magnetic change 2' westerly

REFERENCE

- Roads:
 - hard surface, all weather: more than 2 lanes
 - hard surface, all weather: 2 lanes
 - loose surface, all weather: more than 2 lanes
 - loose surface, less than 2 lanes: All weather
 - loose surface, less than 2 lanes: Dry weather
- Cart Track, Footpath, Trail: Cart track
- Special, Snow Road, etc.: Snow Road, etc.
- Railways:
 - standard gauge, multiple track: Standard gauge, multiple track
 - standard gauge, single track: Standard gauge, single track
 - arrow gauge, multiple track: Arrow gauge, multiple track
 - arrow gauge, single track: Arrow gauge, single track
 - abandoned, or under construction: Abandoned, or under construction
- Bridge, underpass or overpass: Bridge, underpass or overpass
- Boundary, International: International boundary
- Province or State: Province or State
- County or District: County or District
- Township, Seignior or Parish: Township, Seignior or Parish
- City or Town: City or Town
- Reservation, Indian, Military, etc.: Reservation, Indian, Military, etc.
- Electric Power Line: Electric Power Line
- Telephone, trunk route: Telephone, trunk route
- Triangulation Station: Triangulation Station
- Boundary Mon. Survey Mon.: Boundary Mon. Survey Mon.
- Bench Mark: Bench Mark
- Spot Elevation, (in feet): Spot Elevation, (in feet)
- House, Barn: House, Barn
- Buildings: Buildings
- Mill or Factory, small, Saw Mill, etc.: Mill or Factory, small, Saw Mill, etc.
- School: School
- Church: Church
- Post Office: Post Office
- Telephone Exchange: Telephone Exchange
- Mine or Open Cut: Mine or Open Cut
- Cemetery or Churchyard: Cemetery or Churchyard
- Quarry: Quarry
- Sand or Gravel Pit: Sand or Gravel Pit
- Cliff: Cliff
- Cutting: Cutting
- Embankment, Dump, etc.: Embankment, Dump, etc.
- Lighthouse: Lighthouse
- Wharf or Pier: Wharf or Pier
- Foreshore Flats: Foreshore Flats
- Swamp or Marsh: Swamp or Marsh
- Lake or Slough, intermittent: Lake or Slough, intermittent
- Glacier or Snowfield: Glacier or Snowfield
- Stream, intermittent: Stream, intermittent
- Irrigation Canal, Ditches: Irrigation Canal, Ditches
- Inundated Land: Inundated Land
- Contours, elevation: Contours, elevation
- depression: depression
- approximate: approximate
- Relief, not indicated by Contours: Relief, not indicated by Contours
- Wooded Areas, heavy: Wooded Areas, heavy
- light: light

DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT



14. Mer Bleue Bog

The examination of the Mer Bleue peat deposit was made, previous to that of the other bogs, as a separate investigation.

Aerial photographs of this bog were not examined. Sampling was conducted at locations most accessible from existing roadways, the water level in the bog at the time not permitting travel to the centre.

Location

The Mer Bleue Bog covers more or less of Lots 1 to 16, Concessions III to VII, Gloucester township, Carleton County, and Lots 9 to 16, Concessions X and XI, Cumberland township, Russell County. It is located about 8 miles east of Ottawa.

Access

Several highways lead to the general area of the bog and there are several access roadways leading to the bog. The Canadian Pacific and Canadian National railways are located north and south of the bog respectively.

Area

This bog is estimated to cover about 5,000 acres with some wooded areas. Areas examined are indicated on the accompanying map.

Topography and Drainage

A ditch crosses the eastern portion of the bog along the Gloucester and Cumberland townships boundary and thence to the

Bear Brook. A second ditch, along the north and east extremes of the bog, also drains into Bear Brook which eventually drains into the Ottawa River.

Cover

A heavy growth of deciduous trees surrounds the bog. In some areas of the bog there is a heavy growth of sphagnum moss. This growth gets heavier progressing westward from the previously mentioned ditch. Other growth throughout the bog area was evident, such as wood moss, cotton grass, and blueberry plants.

Depth

Depth of material varies from 9 to more than 14 feet, with well humified material resting on a grey clay bottom.

Nature of Peat

The first three feet of material is generally of slightly humified material. The remainder consists of well humified peat.

The sample columns collected were as follows:

<u>Area 1</u> <u>Depth,</u> <u>Feet</u>		<u>Area 2</u> <u>Depth,</u> <u>Feet</u>	
0-2	Light brown, fibrous, slightly humified	0-3	Light brown, slightly humified, fibrous
2-9	Dark brown, jelly-like non-fibrous	3-14	Dark brown, jelly-like, non-fibrous

Area 3
Depth,
Feet

- 0-1 Unhumified sphagnum moss, very light brown
- 1-2.5 Slightly humified, fibrous, darker than top
- 2.5-14 Dark brown, very well humified, jelly-like, non-fibrous

The results of the laboratory tests follow:

<u>Sample Area</u>	<u>Depth, Feet</u>	<u>Absorptive Value at 25% Moisture (Times own weight)</u>	<u>Ash, % Dry</u>	<u>pH</u>
1	0-2	25.4	1.9	6
	2-9	12.9	4.3	6
2	0-1	25.1	2.8	6
3	0-1	26.0	3.2	6
	1-2.5	16.3	2.0	6

Comments

Information obtained from local residents indicated that the bog was operated on a small scale several years ago. This was mainly for live moss, sold to Ottawa florists for packing purposes. In the areas examined moss of acceptable quality occurred only to a depth of 2.5 to 3 feet. As indicated earlier, at the time of investigation the level of water in the bog made the centre areas inaccessible; therefore it is not known whether or not moss of acceptable quality is present at greater depth in these areas.

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APPENDIX

Brief Descriptions From Literature*, Maps and Aerial Photographs of Other Known Bogs of The Southern Part of Ontario

1. Brant County (Ref: Maps and Air Photo)

Just west of Brantford in Oakland township is a bog area located in Concessions I to VI at the west boundary of the township. This bog area is heavily wooded except at the north tip which has some open areas containing shrub growth. There is a drainage ditch at the north-east end of the bog. The open part covers an area of approximately 80 to 100 acres.

2. Bruce County (Ref: Maps and Air Photo)

There is a bog just west of Walkerton, in lots 10 to 32 of Concessions I to X, Greenock township. This bog is heavily wooded.

3. Carleton County (Ref: A1 and A2, also Maps and Air Photo)

The Richmond Bog is situated 2-1/2 miles south of Richmond village in Goulbourn and Marlborough townships. It covers approximately 5500 acres. This bog is heavily wooded, shallow, and consists mainly of humified carex and eriophorum. Drainage of this bog would be expensive.

Some 50 miles from Brockville in Marlborough, Goulbourn and Huntley townships are several bogs most of which are too

* See literature references at end of Appendix.

small and/or heavily wooded to be of interest.

4. Dufferin County (Ref: A1 and A2, also Maps and Air Photos)

The Luther Bog is situated 7 miles west of Grand Valley and straddles the West Luther and East Luther townships line, Dufferin and Wellington counties. It is located in Concessions IV to IX in East Luther and IV to XIII in West Luther. A portion of the bog in East and West Luther is free of trees, except for bushes. The remainder of the bog is heavily overgrown with trees. The moss consists principally of sphagnum with minor carex in the north and north-east. The quantity of moss available is variously estimated as from 80,000 tons to 5,582,000 tons. The absorptive capacity of dry material is 11.7 to 16 times its own weight and the ash content from 3.6 per cent to 4.5 per cent. This bog is now flooded and expensive to drain.

The Amaranth Bog is located in Lots 16 to 19, Concession IX, Amaranth township. It is four miles west of Crombie Station on the Canadian Pacific Railway. There are two bogs, one consisting of 500 acres of which 200 acres are workable peat land. There is a smaller bog of 400 acres which is largely overgrown. The growth is sphagnum intermixed with hypnum. A layer of well humified peat moss is underlain by a stratum of felty fibrous peat moss intermixed with finely divided granular humified peat. Marketable peat moss is obtainable to a depth of

6 feet. The open portion of the bog contains small shrub growth. In 1960 this bog was operated by Amaranth Peat Products of Shelbourne, Ontario. Mr. Walter Little was the operator. A dragline, bulldozer, and conveyors were used to harvest the peat moss. The peat moss was dried on the bog and on high ground. Four men were employed in this operation. Sedge and humified sedge peat moss was marketed from this bog, the former to farmers for top dressing and the latter to green-houses for making beds for plants. The Amaranth peat moss was sold only in bulk.

5. Dundas County (Ref: Maps and Air Photos)

North of Morrisburg on the west boundary of Williamsburg township, Range III, and north-east of Morrisburg on the east boundary of Williamsburg township, Ranges V and VI, are several bog areas. These for the most part are small, wooded and surrounded by cultivated fields.

6. Durham County (Ref: Maps and Air Photos)

In Cartwright and Manvers townships, just east of Lake Scugog, are three long narrow bogs seven to ten miles long locally interconnected near their northern end. These follow river channels and are narrow and heavily wooded.

7. Essex County (Ref: A2, also Maps and Air Photo)

The Pelee Bog occupies the tip of Point Pelee at the west end of Lake Erie. This bog is difficult to drain and consists mainly of marsh grass and humus.

8. Grenville County (Ref: Maps and Air Photos)

Within about 50 miles of Brockville in Wolford, Augusta, Edwardsburg, and Oxford townships are several bogs too small or heavily wooded to be of interest.

9. Grey County (Ref: A1, Maps and Air Photos)

In Concessions V to VIII, north part of Derby township, is a small, heavily wooded bog.

The Durham Bog is situated five miles north-east of Durham in Glenelg township. This bog is approximately 40 acres in area and consequently too small to be of interest.

10. Hastings County (Ref: A1)

The Tweed Bog is situated one mile south of Tweed in Lots 9 to 11 of Concessions VIII and IX, Hungerford township. It has an area of about 50 acres and an average depth of 4 to 8 feet. It is composed mainly of highly humified carex plants.

The Stoco Bog is in Lots 14 to 21 of Concessions VI to VIII, Hungerford township. This bog has a total area of approximately 1,027 acres but is heavily wooded.

11. Huron County (Ref: A2, Maps and Air Photo)

The Clinton Bog is in Lots 25 to 35 of Concessions III to V, Hullett township. The material is not suitable as peat moss but has high value as a plant food. The open area is small.

12. Kent County (Ref: A2, Maps and Air Photos)

The Rondeau Bog, on Rondeau Point, Harwich township,

near the west end of Lake Erie is difficult to drain and is covered mainly with marsh grass. This bog is similar to the Pelee Bog.

13. Lambton County (Ref: Maps and Air Photo)

In Bosanquet township, just north of Thetford adjacent to Lake Huron, is a flooded bog area extending from Lots 1 to 25, Concessions B and C. This bog would be difficult to drain.

14. Lanark County (Ref: Maps and Air Photos)

Near Brockville, in Beckwith, Drummond, Montague, and North Elmsley townships are several small and/or heavily wooded bogs.

15. Leeds County (Ref: A2 and Maps and Air Photos)

Near Brockville in Elizabethtown, Kitley, and South Elmsley townships are several bogs. The Brockville Bog in Elizabethtown township is heavily wooded. Drainage and cultivation of the surrounding fields has destroyed the fibrous nature of the peat.

16. Lennox and Addington County (Ref: A1)

The Clairview Bog is located four miles north of Erinsville Station on the Bay of Quinte Railway in Sheffield township. It covers more or less of Lots 12 to 16 of Concessions I to III. The area of the bog is estimated at 280 acres. It is composed mainly of carex plants and small quantities of hypnum and

sphagnum mosses. The surface is heavily wooded.

17. Northumberland County (Ref: Maps and Air Photos)

At Percy Beach, south of Campbellford, is a large crescent-shaped bog area along the Trent Canal. It lies in Lots 10 to 35 of Concessions VII to X, Murray township. This bog is very wet and covered with low bush. In the southern portion the bog is heavily wooded, with some small open areas. There are islands of cultivated ground within the bog.

18. Ontario County (Ref: A1 and A2, Maps and Air Photos)

Bog areas south of Lake Simcoe and east of the Holland Marsh (York County) occur in Georgina township (York County) and Scott township (Ontario County). These bogs occur mostly following creeks, and are narrow. They are heavily wooded except for small local areas of low bush.

The Marsh Hill Bog is situated one mile east of Uxbridge in Lots 27 to 31 and 33 of Concession VII, Uxbridge township. This bog has an area of 5100 acres of well humified peat moss which is mostly carex with some sphagnum and hypnum. The bog is difficult to drain and is almost entirely covered with a heavy tree growth.

The Sunderland Bog is situated about 1 mile north of Sunderland, Brock township, in Lots 9 to 13 of Concessions VI to IX. It has an area of about 580 acres. This bog is too shallow, too heavily wooded, and the material too highly

humified, to be of current interest.

19. Perth County (Ref: A2, also Maps and Air Photo)

The Brunner Bog is located a short distance north of Stratford in Lots 7 to 12 of Concessions IX to XIII, Ellice township. This bog consists mainly of hypnum moss. The top two to three feet is humified, lying on a four foot layer of relatively unhumified moss resting on clay. The drainage would be difficult.

20. Peterborough County (Ref: Maps and Air Photo)

A very heavily wooded bog is located in Lots 2 to 21 of Concessions IX to XI, Dummer township. It is just northwest of Havelock.

21. Prescott County (Ref: Maps and Air Photo).

The Moose Creek Bog lies two miles north of the town of Moose Creek in the southeast corner of Cambridge township. This bog extends at least two miles east into Plantagenet township. It is currently being developed for the market garden business.

22. Prince Edward County (Ref: Maps and Air Photo)

In the northern part of Hallowell and Hillier townships, just south of the Bay of Quinte, is an easterly trending bog about 14 miles long and one to two miles wide. This bog is too heavily wooded to be of current interest.

23. Victoria County (Ref: A1)

The Manilla Bog situated two miles west of Mariposa Station covers more or less of Lots 8 to 13 of Concessions VIII to X, Mariposa township. The area covered by the bog is estimated at 745 acres. This bog is highly humified and the first few feet are heavily interwoven with trees, logs and roots. The surface is heavily wooded. Carex plants are intermixed with sphagnum and hypnum. The bottom layers contain aquatic plants.

24. Waterloo County (Ref: A2, Maps and Air Photos)

There are two small and heavily wooded bogs east and west of Elmira, Woolwick township.

In North Dumfries township, just west of Galt, are two bog areas along the Canadian Pacific Railway.

The Branchton Bog is located in the south half of Lot 6 of Concession VII, North Dumfries township. It occupies an area of about 2 to 3 acres on the farm of Mr. Goldspink of Branchton, and is alongside a country road in a depression. This bog requires considerable pumping as there is no natural drainage outlet and it gets considerable run off water from the surrounding hills. The sphagnum moss present is of undetermined thickness and probably occurs in irregular patches intermixed with humified peat. Some small roots were noted in the moss as well as grasses and reeds. There are layers of

soil within the moss, necessitating careful excavation by hand shovel. The blocks break away along the soil layers and the soil falls off. The layers of soil were apparently deposited by water draining into the depression of the bog from the surrounding hills. The bog is presently operated by Mr. Goldspink and the moss is sold in bulk to the Ontario Agricultural College and to Manchester Peat Products Limited, Galt, who package it. Equipment consists of a small shredder, elevator for loading and a small tractor with a front end loader. Various ways of harvesting have been tried, including the use of a back hoe, without success mostly due to the soil in the moss.

25. Welland County (Ref: Maps and Air Photos)

A short distance northwest of Port Colborne in Lots 1 to 13, Concessions II to IV, Wainfleet township, and in Lots 27 to 33 of Concessions III and IV, Humberstone township, is a large peat bog. The area covered is approximately 4900 acres and it is estimated to contain about 4 million tons of peat material. The central portion of the bog is formed mainly of slightly humified sphagnum with small amounts of eriophorum and other plants. The surface of the bog is comparatively free from growing trees with the exception of some small areas in the central parts around the margin. The bog is currently being operated.

26. Wellington County (Ref: Maps and Air Photos)

In Puslinch township there are several scattered bogs all heavily tree covered.

27. Wentworth County (Ref: A1 and A2, also Maps and Air Photos)

In Beverley and West Flamborough townships there are numerous scattered bog areas all heavily tree covered. The most important of these, the Westover Bog or Beverley Bog lies four miles south of the Canadian Pacific Railway in Concession VIII of Beverley township. It contains an area of approximately 1400 acres of well humified carex peat moss. This bog was formerly worked by the Humus Company whereby a fertilizing product was produced by mixing muck with the underlying marl present in this area.

28. York County (Ref: A2 and Maps and Air Photos)

The Holland Marsh is located close to the town of Bradford on the Holland River which flows into the south arm of Lake Simcoe. This marsh has no value for peat moss but it demonstrates the appreciation in value of previously worthless organic terrain, when properly drained, for agricultural purposes. This is one of the most prosperous areas for market gardening in southeastern Ontario. Before drainage this marsh was essentially worthless and after being drained it was evaluated at \$100 an acre. No doubt today the value of the land would have increased much more. This marsh originally had a cover of unhumified moss.

Appendix References

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