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ONTARIO GEOLOGICAL SURVEY

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Peat and Peatland Evaluation of the Parry Sound Area

Volume I

by

Monenco Ontario Ltd.

1984

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Ontario Geological Survey

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FOREWORD

The Peatland Inventory Project is a component of the Hydrocarbon Energy Resources Program (HERP) funded by the Ontario Ministry of Treasury and Economics under the Board of Industrial Leadership and Development (BILD) Program. The inventory of the peat and peatland resources of Ontario is intended to provide information on possible fuel peat deposits as a means of encouraging increased energy self-sufficiency in Ontario. The Inventory will also provide information on the resources of horticultural peat in the province. As well, data on the distribution, frequency and types of peatlands in the study areas will assist the Ministry and other agencies in land use planning and disposition.

This report is one of a series of peat and peatland resource reports planned for study areas across Ontario. In 1983-84, seven areas were designated as study areas and contracted for investigation; Rainy River (30,000 ha of peatland), Ignace (24,000 ha), Foleyet (7,600 ha), New Liskeard (11,000 ha), Parry Sound (4,000 ha), Ottawa-Brockville (18,000 ha), and Kingston-Belleville (14,000 ha). Within these areas, 64 of the largest and most accessible peatlands were investigated at a relatively detailed level. In these deposits, contractors were directed to conduct core sampling on grids of about 100 x 500 m, in order to produce detailed stratigraphic profiles of peat humification (decomposition) and peat materials, site mapping of deposit contours and elevations, and data on peat volumes, drainage and resource potential. Another 100 deposits were studied at a reconnaissance level. Field methods and data analysis were standardised through a common set of fieldwork and mapping guidelines prepared by the Ontario Geological Survey, and regional overview of peatland distribution was obtained by corroborative reconnaissances and satellite image interpetation by the Ontario Centre for Remote Sensing.

About 55 peat cores from sites studied in detail were submitted to O.G.S. for laboratory analysis. These cores were subsampled on the basis of humification levels and peat type, and are being analysed for various parameters which include developmental and peat chemistry measures, such as moisture content, bulk density, absorptive value, acidity, fibre content, ash content and calorific value. Elemental

analyses include carbon, nitrogen and oxygen, calcium, potassium, phosphorus, aluminum, copper, zinc and others. In addition, elements which might be potential by-products of gasification and other potential pollutants are analysed, such as sulphur, lead, arsenic and mercury. These analyses will be released in subsequent Open File Reports.

Although these inventory reports have been accepted by the Ontario Geological Survey with confidence that they represent a competent and unbiased appraisal of peatland in the study areas, the responsibility for the data and figures rests with the consulting firm. The results of their study are presented here as received from the consultant.

V.G. Milne, Director
Ontario Geological Survey

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ABSTRACT

The present report is part of a comprehensive peat inventory program the Government of the Province of Ontario initiated in 1982 in order to assess the value of the peat resources of the Province as an alternative fuel and also for its many other uses. This report covers the peatlands in the Parry Sound Area surveyed in 1983 for the Ontario Geological Survey, by Monenco Ontario Limited together with Peat Consultants, Canada, Ltd.

The study area covers most of the Ministry of Natural Resources' Parry Sound District and small parts of Bracebridge District. It is located between 45° to 46°N latitude and 79° 30' to 81°W longitude or expressed in UTM coordinates it is within the Zone 17, eastings 500,000 to 620,000 and northings from 4,980,000 to 5,090,000. The entire area covers about 13,000 km^2 of which about 4500 km^2 is occupied by Georgian Bay. The study area is located about 200 to 300 km north of Toronto. The study area is contained fully or in part on 1:250,000 mapsheets numbers 31E and 41H and 1:50,000 scale sheets number 31E-4 to 6, 11 to 14 and 41H-1, 8 to 10, 15 and 16. The study area is shown in Figures 1-1 and 1-2.

The field work was carried out between August and October of 1983. The report was prepared during the fall of 1983 and in the beginning of 1984.

A total of 9 deposits covering 1900 ha and containing 22.524 million m^3 of peat of which 13.708 million m^3 are humified peat, were studied in detail. In addition to this, 12 other deposits covering a total of 2,005 ha were subjected to reconnaissance study only.

The study area lies within the low boreal wetland region. All the deposits are basically bogs with either basin bog or flat bog characteristics or a combination of both. There are minor areas of floating bog encountered within a few deposits.

No typical fen-type wetlands were found although a number of graminoid/herb rich bogs showed minerotrophic characteristics and might be considered as transitional between bogs and fens.

Swamps were found in very limited quantities, usually only along the edges of the deposits and along drainage channels. In most cases, they were too small to be mapped.

No extensive marshes were observed at any of the survey sites. Due to beaver dams, secondary marshy conditions appear at the sites where the dams are constricting the flow of water. If the surface area of the ponded water was large enough, these areas were marked as ponds. Small marsh areas could be found along the edges of the deposit as well as along the drainage channels. However, due to scale of the mapping, they were not generally mapped because their percentage of coverage was insignificant in relation to the total area.

The most common peatland types were open graminoid, open lowshrub, treed graminoid, treed lowshrub and treed tallshrub bogs. In addition to these, limited areas of both coniferous and deciduous swamps were encountered. Thicket swamps were quite common but only as very narrow zones along the edges of the deposits and often not wide enough to be suitable for mapping as a unit.

The deposits studied in the area appear to be typical for the region as far as the vegetation is concerned. Only one deposit, Peatland 31E-19, showed a ribbed pattern resembling that of an eccentric raised bog and not typically found in this region.

The peat types commonly found consisted of thin, 10-50 cm, layers of sphagnum peats (S, SC, SCLn; dominant type listed first) on the surface of the deposits. Occasionally, they also were found at greater depths. Sedge peats were by far the most predominant peat types and formed the bulk of the peat especially at greater depths towards the base of the deposits. They also were mostly combinations of sedge with other constituants (C, CS, CSLn, CSLl). Only minor ocurrences of Eriophorum and brown moss peat were recorded.

The degree of humification was usually quite high. The unhumified peat was found almost exclusively as a thin (10-30cm) surficial layer. At greater depths, the degree of humification varied from H5-9, with H6-8 being the most common values. H4 peat was found in scattered lenses at varying depths.

As far as the degree of humification and the peat type are concerned, these deposits are best suited for fuel peat development. Generally speaking, because of their small size and irregular shape, their development potential is limited and should be considered either for a small-scale production or to be utilized as groups of sites.

The following table summaries the detailed survey sites regarding this peat volume and the possible development potential.

PEATLAND NUMBER	PEAT VOLUME, $x10^6m^3$		DEVELOPMENT POTENTIAL
	TOTAL	HUMIFIED PEAT (H4-10)	
31E-19	1.476	0.970	Horticultural, fuel small-scale
31E-24	7.821	5.308	Fuel, medium potential
31E-33	1.773	1.012	Fuel; low priority
31E-34A	2.048	1.419	Fuel; small-scale
31E-34B	2.652	1.787	Fuel; medium potential
31E-55	0.623	0.427	Fuel small-scale, medium potential
41H-11	4.101	1.775	Fuel, medium potential
41H-17	1.116	0.468	Fuel, low potential
41H-20	0.914	0.542	Fuel, very low potential
TOTAL	22.524	13.708	

Summary of Peat Volumes and Development Potential of Detailed Survey Sites.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the assistance of Dr. Peter Telford and Mr. John Riley of the Ontario Ministry of Natural Resources, Ontario Geological Survey for their advice and occasional technical input to the project. The Parry Sound District office of the Ministry of Natural Resources was particularly helpful in providing assistance during the field program.

The funding for this project was provided by the Board of Industrial Leadership and Development (BILD) Program. This report was prepared by Monenco's Peat Group: Dr. E.O. Korpijaakko (Project Manager), Messrs. S. S. Banovac, P.Eng. and J. K. Riley, specialist. Field assistance was also provided by Mr. J. R. Radforth, P.Eng., and Dr. N. W. Radforth carried out considerable work on plant identification and assisted with the airphoto interpretation.

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Peat and Peatland Evaluation of the Parry Sound Area

Volume 1

1983

By

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1.0 INTRODUCTION

1.1 OBJECTIVES

The present report is part of a comprehensive peat inventory program the Government of the Province of Ontario initiated in 1982 in order to assess the value of the peat resources of the Province as an alternative fuel and also for its many other uses. This report covers the peatlands in the Parry Sound Area surveyed by Monenco Ontario Limited in 1983 together with Peat Consultants, Canada, Ltd.

The main objectives of the study were:

i) "To carry out reconnaissance field ivestigations of all designated peatlands in order to assess and confirm which sites should be studied as detailed study sites.

ii) To carry out detailed field investigations of a designated number of peatlands, to evaluate the peat type and peat humification stratigraphy, peat volumes, elevations, drainage and surficial vegetation.

iii) To subdivide and map all designated peatlands on the basis of air photo interpretation and fieldwork into major types; i.e. bog, fen, swamp, marsh and open water, and to further subdivide these units into physiognomic groups".

The following chapters will describe in detail the methods and the result of the work carried out to obtain these objectives.

1.2 LOCATION OF THE STUDY AREA

The entire study area covers most of the Parry Sound District and small parts of Bracebridge District of the Ministry of Natural Resources. It is located from 45° to 46°N latitude and 79° 30' to 81°W longitude or expressed in the UTM coordinates it is within the Zone 17, eastings 500,000 to 620,000 and northings from 4,980,000 to 5,090,000. The entire area covers about 13,000 km^2 of which about 4500 km^2 is occupied by Georgian Bay. The study area is located about 200 to 300 km north of

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FIGURE 1-1

ONTARIO GEOLOGICAL SURVEY

PEATLAND INVENTORY PROJECT

KEYMAP OF ONTARIO
SHOWING PARRY SOUND STUDY AREA

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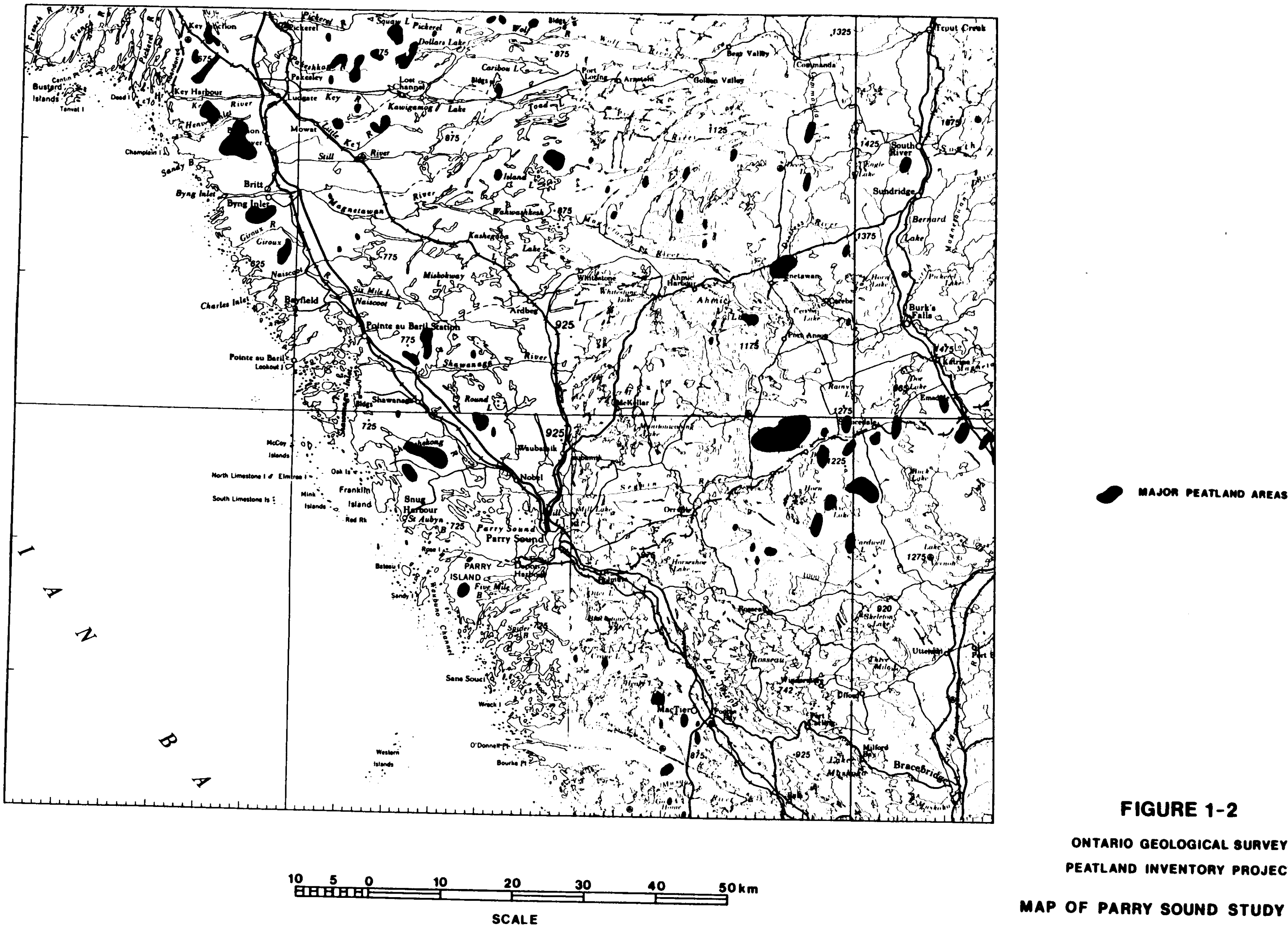

FIGURE 1-2

ONTARIO GEOLOGICAL SURVEY

PEATLAND INVENTORY PROJECT

MAP OF PARRY SOUND STUDY AREA

Toronto. The study area is contained fully or in part on 1:250,000 mapsheets numbers 31E and 41H and 1:50,000 scale sheets number 31E-4 to 6, 11 to 14 and 41H-1, 8 to 10, 15 and 16. The study area is depicted in Figures 1-1 and 1-2.

1.3 GEOLOGY AND GEOMORPHOLOGY

The study area lies entirely within the Precambrian Shield. More precisely, it is located in an area known geologically as the Grenville Province. The age of this complex is not known with certainty but it is believed to be in the order of 800 to 1100 million years. Generally, this complex is composed of granitized sedimentary gneisses associated with large amounts of crystalline limestone and some lava. During the Middle and Late Precambrian era, a zone of abundant volcanic rock and limestone was deposited northeast of Parry Sound in the study area. During the Late Precambrian the area was subjected to strong regional metamorphism and often to block faulting and shifting resulting in a broken topography. (Dept. of Mines, and Technical Surveys 1963; Putman 1963; Putnam and Putnam 1970; Hewitt 1978).

A more recent event that has affected the topography and the surficial deposits in this area was the Wisconsinan glaciation which further re-shaped the land (Flint 1957). During the Pleistocene epoch the shield underwent continental glaciation. Multiple glaciation has presumably taken place; there is evidence on the Shield of glacial and interglacial periods preceding the final Wisconsinan ice age. During deglaciation a succession of huge freshwater lakes formed along the receding ice front. The most significant of them in the study area was Lake Algonquin. In the early phases of ice retreat, most of the study area still was covered by ice and the rest by Lake Algonquin. During the latter phases of Lake Algonquin, while the study area still was inundated, the ice retreated north of the study area by about 11,800 yBP. By about 10900 yBP, Lake Algonquin occupied the present Georgian Bay configuration in the study area which, at least partly, was dry land.

The subsequent Lake Hough and Lake Stanley fluctuations consequently further affected the area (10,000-7,500 yBP), occasionally inundating it although mostly their levels remained below the modern shoreline position in the study area except at the lowest lying periods. In fact the elevation of Lake Stanley may occasionally have been as low as 60 m. Consequently, most of the study area may have been available for vegetation and possibly paludification since 11,000 yBP.

As a result of the glacial history, the study area is relatively flat and low, as far as the relief is concerned. In this area, which has been termed physiographically "Rock Knob Uplands" (Putnam 1963), the elevations reach only slightly over 300 m a.s.l. The terrain otherwise is quite rugged and full of small depressions. Due to this kind of topography, the drainage patterns are rather disjointed and a large numbers of small lakes and ponds are present.

This kind of terrain formed by the effect of glaciation has been conducive to the formation of confined peatlands since the water is retained in the depressions enhancing the formation of peat. As a result, the study area has a large number of small peat deposits with a few larger ones occupying flatter areas. These deposits are often contiguous and form a network of shallow peatlands with eutrophic characteristics in contrast to the extensive unconfined deposits found in the east and further north. Thus, as far as peatland formation is concerned, the rough relief has favoured the formation of confined deposits formed in poorly drained depressions with abundant water available for hydrophilic vegetation. The glacial and glaciolacustrine materials deposited in these Shield basins vary considerably, but do not appear to have influenced peatland formation in the area nearly as much as the confining shield topography. This also contrasts with the greater influence of substrate type on the formation of larger, unconfined peatlands elsewhere in the province.

1.4 CLIMATE

The climate of Southern Ontario is generally characterized by warm summers, mild winters and a long growing season with usually reliable rainfall. Southern Ontario can be divided into a number of climatic regions. The study area lies within the Muskoka Climatic Region (Brown 1968).

The following description accounts for the main features of this region with reference to their significance to peatland development.

The sources for climatic data used include Atmospheric Environment, Department of Environment Canada, Canadian Normals, Volume 1, Temperatures 1941-1970; Volume 2, Precipitation, 1941-1970; Volume 3, Wind, 1955-1972; Volume 6, Frost, 1951-1980; Volume 7, Bright Sunshine, 1951-1980; and Daily Bright Sunshine 1941-1970 by B.T. Yorke and G.R. Kendall, CL1-6-72.

Also the comparative values used in the following chapters have been extracted from the above-listed literature references.

1.4.1 Temperature

The mean annual temperature for Muskoka Region is 6°C. (Brown 1968). However, as far as the peat industry is concerned, only the May to September mean daily average temperature is significant since this is the usual peat harvesting time for commercial mining operations. For Parry Sound this temperature is 16.0°C. It compares well with 16.1°C and 15.1°C for Shawinigan (P.Q.) and Chatham (N.B.) respectively; both are well established peat mining areas.

The mean daily maximum temperature, which is indicative of the temperature conditions available for the drying of peat in the field, in Parry Sound from May to September is 21.4°C or about the same as the 21.1°C for Chatham (N.B.) and 21.8°C for Shawinigan (P.Q.).

Thus as far as the temperatures are concerned this area should be favourable for peat mining.

1.4.2 Precipitation

The mean annual precipitation in the Muskoka Region is 990 mm. Of this figure, about 400 mm falls during the May to September season. This compares favourably with the values of (449 mm and 410 mm for Shawinigan (P.Q) and Chatham (N.B.) respectively. However, for a more precise understanding of the effect of rainfall on peat mining an analysis of both the daily distribution of rainfall and the frequency of rainless periods is needed as they affect the day-to-day operations directly. However, this kind of data is not always recorded routinely and is not readily available.

1.4.3 Sunshine

The number of bright sunshine hours indirectly indicates the suitability of the climate for peat mining in that while sunshine may not be required for good drying, it indicates the potential for it.

In Muskoka Region the total average of the May to September (incl.) period is about 1150 hrs compares favourably with 1050 and 1150 for areas in New Brunswick and Quebec respectively where peat is presently being mined. The high number of bright hours combined with low relative humidity indicates good drying conditions in the event that conventional dry peat mining were to be considered.

1.4.4 Frost Free Period

The average frost free period in Chatham and Shawinigan is 122 and 141 days respectively. In Muskoka Region it is 125 days and indicates that as far as frost is concerned peat industry should not have any serious problems in this region.

The main implication of a short frost free period is that in areas where this occurs, there is a possibility of encountering lingering frost in the ground. This in turn would

affect the equipment used for peat mining and consequently the mining method and the obtainable annual yield.

1.4.5 Wind

The drying of peat on the field is dependent on several factors combined. Even on the warmest and sunniest day the peat will dry only very slowly in the absence of wind. Nevertheless, only slight winds are required for peat to dry and high winds may be considered a detriment. In the Muskoka climatic region the average wind speeds in May to September vary from 11.7 to 14.2 km/hr. These speeds are ideal for drying peat, in that they are not too strong and will not cause any large losses of peat from the fields. The direction of the wind is significant and is taken into consideration only at the time of designing a mine plan.

The frequency of winds is of importance. The calm periods prevail only 3 to 5% of the time in this region during May to September period indicating that there are sufficient events of winds for the purposes of peat industry.

1.4.6 Other Climatic Factors

The aforementioned climatic factors form the core of those climatic characteristics affecting peat mining. There are other factors, less known to the public, which are important indicators for agriculture, forestry and also the peat industry namely, potential and actual evapotranspiration, water deficiency and the general water balance. These factors are partly combinations of the basic parameters and may often be more demonstrative of the climatic conditions as they relate to peat development activities rather than single factors such as e.g. temperature.

The annual evapotranspiration (actual and potential) actually gives a more representative image of the drying capability of wet peat in a given area than does a single factor since the drying depends on a combination of factors such as the wind, temperature and relative humidity.

The mean actual annual evapotranspiration in the Muskoka Region is 530 mm while the potential is 580 mm, resulting in a moisture deficiency of 50 mm. These values again compare favourably with those of 532 mm, 553 mm and 21 mm for Shawinigan and 500 mm, 540 mm and 44 mm for Chatham.

Premised on the assessment of the climatic factors, it would appear that the study area has a climate which is actually better suited for conventional dry peat mining than those of such established peat mining areas such as Chatham (N.B.) and the general region of Shawinigan (P.Q.).

1.5 VEGETATION

The study region is located in the Georgian Bay section of the Great Lakes - St. Lawrence Forest Regions (Rowe 1959). The upland forests are of a mixed nature where sugar maple (Acer saccharum) and beech (Fagus grandifolia) are predominant. With them are found basswood (Tilia americana), yellow birch (Betula alleghaniensis), hemlock (Tsuga canadensis), white pine (Pinus strobus), red maple (Acer rubrum) and white ash (Fraxinus americana). On sand flats and other coarse textured soils, white spruce (Picea glauca) is common. Hemlock appears to increase from inland towards Georgian Bay where along the rocky shores jack pine (Pinus banksiana), aspen (Populus tremuloides), red oak (Quercus rubra) and white birch (Betula papyrifera) are common. Black spruce (Picea mariana) and larch (Larix laricina) are found in wetter, more humid conditions associated with areas of peaty soils.

The soils in the study area are generally shallow. On the well-drained areas there are podzols and brown podzols. The former is most commonly formed under extensive red and white pine forests and the latter under mixed forests (Putnam 1963). Peaty soils are encountered on poorly drained flats, depressions and lake basins.

1.6 PEAT UTILIZATION

Presently there are no known large scale commercial peat operations in the study area. Near Parry Sound there is a small fuel peat test operation run by a private company for preliminary testing of the local peat as a possible fuel on a small scale basis.

2.0 METHODS

2.1 GENERAL

The peatland survey methods used will not be described in detail since they follow quite closely those recommended and described in the Ontario Geological Survey outline entitled "Specification for Peatland Inventory Projects, 1983". Only a brief outline of the principal steps and the type of equipment used will be given.

2.2 EQUIPMENT

2.2.1 Sampling

A standard Hiller auger (inside diameter 3 cm, length 50 cm) was used for the visual observations in the field. This auger is light in weight and penetrates easily even in quite dry and woody peat. Generally, it affords quick and relatively effortless drilling. Its disadvantages are inherent in its operation. To extract a sample, a flange attached to the sampling cylinder scoops the peat into the cylinder through rotation of the shaft. However, if the peat is very fibrous, has a low degree of humification, a high quantity of water and also large quantities of roots and woody material, this sampler tends to undersample the coarser and more fibrous material. Also, in very wet conditions it may not retain any peat at all. In addition, due to its structure, the cylinder allows water to escape and enter freely making the sampler unsuitable for extracting laboratory samples for analysis. The cutting flange also tends to macerate slightly the peat that enters the cylinder. Consequently, peat disturbed in this manner may be recorded with a higher-than-actual degree of humification.

However, the Hiller auger was preferred over the Russian sampler which has often proven to be too difficult to operate except in soft peats with little wood or fibre. The Russian sampler would be more suitable for extracting samples for

laboratory analysis except in the cases where the samples have to be highly uncontaminated, since it too allows for some water contamination during the sampling.

For obtaining core samples for laboratory analysis a piston sampler was used. It is not well-suited for frequent and quick visual observation due its high weight and slow operating procedure. However, for analytical sampling it is excellent. It can cut through wood and fibrous peat and can retain wet samples and also mineral soils as long as they are not too hard. The samples are virtually undisturbed and uncontaminated and thus suitable for precise laboratory analysis and for research purposes such as e.g. pollen analyses and geotechnical research.

2.2.2 Mapping and Grid Placement

The grid placement was based on plans designed from aerial photographs in the office. For the line directions, handheld liquid filled transits were used. These transits are readable to 0.25° and surpass the precision required by the level of accuracy of these surveys.

The distances between sampling points were measured with a hipchain (topofil). Comparisons of the precision of hipchain measurements to those made by another survey crew earlier using a steel cable tape were conducted on several portions of survey lines on Bear Lake Bog. It was found that over 50 m sections, only about $\pm$ 40 cm variances occurred. For the purposes of this level of survey the hipchain is precise enough and due to its light weight and ease of operation (it requires only one person), it is an ideal instrument for making distance measurements in this type of work.

The survey lines and all the survey points were marked with numbered flagging tapes. Experience has shown that these tapes can be located up to 2-3 years later in the field. No lines were cut since an electronic cable level, which does not require a line of sight, was used.

The levelling was carried out with a GDD electronic chain level supplied by its Canadian manufacturer. This level utilizes

a liquid filled plastic tubing with sensors at the ends to measure the difference in the elevation between the sensors and does not require a line of site as would a transit - rod system. The chain level is especially well-suited for use in areas where the surface vegetation hampers the visibility. It is also very practical in the hot weather conditions when heat makes it difficult to use the transit and rod.

The precision achieved with the "chain level" is within millimeters. For the present operation the readings and calculations were taken in centimeters and the results given at a 0.1 m precision.

2.3 AIRPHOTO INTERPRETATION AND MAP DRAFTING, OFFICE EQUIPMENT AND PLANT IDENTIFICATION

Airphoto interpretation in the office was carried out by using two types of scanning mirror stereoscopes: an Old Delft with a magnification capacity from 1 1/2 to 9 and a Sokkisha with a magnification capacity of 1 1/2 to 3.

The major part of the map and profile drafting was carried out by using CAD (computer assisted drafting) equipment with programs modified for peatland mapping and profile drafting.

The plant species identification was done on samples collected in the field. For identification purposes standard and dissecting microscopes were used together with the literature references listed below. The literature used in the plant identification work is listed in the list of references and is comprised of the publications by Anderson (1959), Cabb (1956), Conard (1956), Crabtree (1924), Crum (1983), Dixon (1954), Fernald (1950), Grout (1928-1940), House (1918), Hulten (1950 and 1968), Ireland and Cain (1975), Montgomery (1962), Peterson and McKenny (1968), Petrides (1972), Savile (1962), Soper and Heimburger (1982), Walshe (1980), Wiggins and Thomas (1962), and Wherry (1948).

The surface water pH was measured with composite pH papers (ColorpHast Indicator Sticks) and occasionally with a portable pH meter on water samples taken in 250 ml bottles from 10-15 cm below the water table.

2.4 ACCESS

Access to all of the studied deposits was gained either on foot or by car. In some cases considerable distances had to be covered on foot. One peatland in particular, No. 41H-12, was replaced as a study site because there was no feasible surface access to it. The access, size and shape of the deposit (small and irregular) did not justify the expense a helicopter rental.

No problems with the private owners were encountered in accessing private land. The Ministry of Natural Resources offices both in Parry Sound and Bracebridge were contacted to obtain information on aspects such as the land ownership and environmental concerns that may exist concerning individual deposits. The MNR staff at these offices were most helpful in providing land use and land tenure maps for the study area.

3.0 METHODS

3.1 DATA ANALYSIS AND PRESENTATION

The peatland maps and profiles were produced by using CAD equipment and computer programs modified for the requirements of the peat inventory. The CAD equipment consists of a large digitizing table, a video display and a printer capable of giving a large variety of printout types. The system is linked to a mainframe computer and utilizes commercial surface graphics application programs. Initially, the bog outlines were manually digitized and fed into the computer to be printed later at a 1:10,000 scale. The digitizing was carried out by using the original outlines on the airphotos and base maps provided by OGS. The digitizing was done with a cursor and continuous digitizing, giving a smooth outline. In order to add the field data to the map, the data was put into a program file by an operator who tabled the information directly from the data sheets. After this, once the proper command was given, all maps with all the required information, including peat isopachs and volumes were obtained.

The peat profiles were produced directly from the field data sheets. Initially, only the surface and bottom lines were directly drawn on the draft copy along with all the degrees of humification and peat type for each interval on each profile. The lines joining various peat types and degrees of humification were done manually on the draft copies and then transferred through the video display - digitizer system to the computer's memory for the subsequent printing of the final copies. The integration of data on peat type cannot be done automatically as it requires personal judgement based on experience and knowledge of the characteristics of the deposits. This procedure is not programmable except in rare cases where the deposit is very homogeneous and orderly without any complicated stratigraphical changes.

All of the volumes were calculated by using the recommended "donut" method. This method is designed to avoid over-estimating

peat volumes which is common if only the total area of a peatland is multiplied by the total average peat thickness derived from the data point thickness values. In the donut method, the area with less than 1 m of peat is assumed to be 0.5 thick on average. The rest of the deposit is divided into sections delineated by peat isopachs spaced at one meter intervals. The peat volume for each section encompassed by different zones is calculated by multiplying their areas by their individual average thickness. The total peat volume for the entire deposit is the sum of the volumes of these sections. This methods avoids emphasizing the thicker areas in calculating the average thickness of the deposit and thus, gives a more reliable volume estimate. The name "donut" method is derived from the fact that isopach zones are within each other and thus can be visualized as donuts except the one with the greatest thickness which is the central one. Ooze strata were excluded from the volume calculations.

Other calculations, such as the degree of humification were calculated pursuant to the standard method as outlined in the Ontario Geological Survey's project specifications (O.G.S. 1983).

4.0 RESULTS

The following summarizes briefly the introductory chapter and the data describing the deposits reported in detail in chapters five and six. The purpose of this summary chapter is to bring together the salient data on the Parry Sound District Peatland Inventory in order to help the reader more readily to visualize the overall characteristics and user potential of the peat resources in this area.

4.1 STUDY AREAS

The entire study area is located in the Precambrian Shield region which, as far as its major features are concerned, is quite flat. However, the small scale relief is quite uneven and rugged, and characterized by a high frequency of occurrence of depressions, ice-gouged basins, and rivers and brook valleys located often in faults. The absolute elevations in most cases are only slightly over 300 m a.m.s.l. However, local variations are abrupt and the terrain appears quite hilly and has been physiographically termed Rock Knob Uplands (Putnam 1963).

Because of this general small-scale roughness, the natural drainage systems are disjointed and "aimless", consisting of large numbers of lakes, ponds and inter-connecting stream, creeks and brooks. As a result of this and the relatively continental climate, peat has developed only in lower-lying depression where water is abundant.

Due to the lack of large and extensive flatlands, the only geomorpholopical type of peatland encountered during the field investigations was basin bog. A few deposits which have started as pure basin bog have overfilled their small original basins and spread over to the adjacent ones and become a continuous network of small deposits. For example, Peatland No. 31E-24 (Bear Lake Bog) lying in a flatter area than most other deposits of Parry Sound District, shows evidence of this kind of development. However, reviewed from the air (airphotos) it still is located in a general depression and still is a basin bog.

A number of deposits which are located along stream valleys are often narrow and long with wide sections in locations where there may have once been small ponds connected by the stream. Peatland 31E-3 is an example of a deposit formed in this manner. It still is basically a basin bog. However, it could be classified as a stream valley bog or by some other term to be decided upon later as an addendum to the present type of classification.

Climatically, the study area is in the Muskoka Climatic Region (Brown 1968). In general this climate is characterized by warm summers, relatively mild winters and a long growing season with usually reliable rainfall. The mean annual precipitation is 990 mm, which is enough for good growth over the year.

The actual and potential evapotranspiration values give the area about a 50 mm moisture deficiency annually. However, due to the imperviousness of the ground and the ponding of the water into poorly drained depressions, peat can and is accumulating even today. In the recent past (over the last 11,500 years) there has been a series of climatic changes with corresponding changes in the paludification process. While there are no great changes in the peatland types, patterns or vegetation across the area presently, there have been a number of changes during the past caused by the climatic changes, and changes in the drainage conditions. Overall, the peat strata indicate that most deposits have started by filling in of small ponds and lakes by peatland vegetation. Also it is apparent that open fen conditions with sedge as a predominant constituent have possibly been more common in the past than today. However, to draw any more conclusions at this stage is outside the scope of this work and also would require considerable research including C14 dating and pollen analysis.

Overall, as far as the vegetation is concerned, the number of significant physiognomic groups present is limited. In total only nine groups were listed. Of these only three (open graminoid bog, open lowshrub bog and treed lowshrub bog) covered more than 20% of the area of detailed survey sites, and only two

(open graminoid bog and treed lowshrub bog) more than 20% of the area of the reconnaissance sites (Refer Table 2, Summary Table).

Physiognomic types such as conifer swamp, hardwood swamp and thicket swamp were common, but occur in narrow zones or small localized areas and rarely reached proportions that could be mapped at the required 1:10,000 scale.

No proper fens were found. Some graminoid bog types were fen-like in appearance but, on the basis of vegetation and surface water pH values, they were bogs. No large marshes were found. A number of deposits were partially covered by ponded water created by beaver damming and had an appearance of a marsh. However, the surrounding terrain did not indicate any marshy continuum and these areas have thus been considered as shallow water. In fact, on Peatland 31E-30, airphotos showed this deposit to be covered by about 47 ha of open water. The field visit established that it was dry and covered by an open graminoid bog type vegetation. The flooding had subsided once the beaver had abandoned the area during the interim.

All the deposits studied, with the exception of Peatland 31E-19, had a very thin unhumified surficial peat layer. In most cases it was only about 20 cm on average. The rest of the peat, had a higher degree of humification ranging mostly from H5 to H9, with H6-8 being the most prevalent.

As a whole, no large variations in peat type were discovered. In most cases, the surface peats were characterized by a relatively thin layer of sphagnum peat, often only about 0.5 m on average. Occasional concentrations and lenses of sphagnum peat were found irregularly scattered amongst other peat in the studied deposits that were investigated.

In general, the common peat types were sphagnum, sedge, sphagnum-sedge, sedge-sphagnum, sphagnum-sedge-shrub, sphagnum-sedge-wood, sedge-sphagnum-shrub and sedge-sphagnum-wood. A very limited quantity of peat with some Eriophorum was also found. Only a few minor lenses of brown moss peat were encountered.

Thus, as far as the peat type and the degree of humification are concerned, these deposits have only limited horticultural and more universal fuel peat development potential.

Peat thicknesses varied across the study area to a certain extent. The overall average thickness varied from 1.2 m to 3.3 m. There appears to be no extensive areas of thick peats. Rather, the higher thicknesses are located in limited pockets as one would expect from confined basin bogs. There is no clear correlation between the peat thickness and the peat types although open bogs (average thickness 2.5 m) and treed bogs (average thickness 2.7 m) were found to be deeper than the conifer swamps (2.4 m), hardwood swamps (1.7 m) and thicket swamps (1.1 m). The latter types are normally associated with more variable seasonal water level changes, greater peat decomposition during summer droughts and greater site minerotrophy. The relatively high thickness value of 2.4 m for conifer swamp on Peatland 31E-19 is questionable in that this swamp is secondary and may have been created by beaver dam - related flooding of a treed bog.

The study area is located in its entirety within economical hauling distances of a number of communities which could use peat as a fuel. In most cases each investigated deposit is within 40-60 km of any such a community. Some of the deposits are up to 90 km away from larger communities such as Parry Sound and this might pose some problems concerning the transportation costs. However, this is also dependent on the quantity of the material to be hauled and thus quite variable.

4.2 DETAILED STUDY SITES

A total of nine deposits covering 1,900 ha were studied in detail. The results are summarized in the Summary Table (Table 2). Of this total area 739 ha had a peat layer of 1 m more in thickness. There were 553 detailed survey points established. This number includes all the sites on which any field work was done., e.g., it includes those sites where only the peat thickness was measured as well as the end of the survey lines at the edge of the mineral terrain. The survey points were distributed along a total of 48 survey lines.

The total volume of peat contained in the deposits surveyed in detail is 22,524 million m^3. Of this, 13,708 million m^3 are well humified peat (H4+). The remaining 8.816 million m^3 are horticultural peat and mostly located between the 0 and 1 m isopachs and as a thin (10-50 cm) layer on the rest of the deposits.

All of the deposits were basin bogs and only Peatland 31E-24 showed clearly signs of having spread outside the original basin. Also, Peatland 41H-11 showed some signs of primary paludification beyond its original boundaries.

These deposits are also characterized by irregular shape. This is due to the broken topography characteristic of the Precambrian Shield in which the study area is found. The peat has accumulated in the depressions which rarely occupy large uniform areas and as a result, the deposits reflect the character of underlying topography. Due to their irregular shape, it would be difficult to design and implement an efficient mine plan for these deposits. In fact, as far as the surface area is concerned, only Peatlands 31E-24 and 41H-11 have any substantial mining area available, having 235 ha and 137 ha respectively more than 1 m in thickness. This limit is usually regarded as the minimum for a mineable deposit. It is set by the equipment charactertistics. For example, a sod cutter, depending on the model, requries 30-80 cm of peat. Also, usually the first 30-50 cm of the deposit is not fuel peat and thus not usable. In addition to this, another 30-50 cm are usually left on the ground to facilitate the reclamation of a mined out area. As well, the ash content of this basal layer is generally too high for fuel purposes. As a result of these losses little or nothing of the initial peat layers is left for use. In the case of milled peat mining, a 1 m thickness, however, is quite satisfactory. For horticultural peat mining, especially, a shallow peat can be used. However, if the mine plan calls for a longer mine life, then the area proposed for mining should have a minimum of 2 m of peat. This requirement further limits the use of the studied detail sites for any large scale operation.

The surface vegetation covering the deposits surveyed in detail was relatively uniform. The most common physiognomic group was open graminoid bog, which covers 27% of the total area and was found on all deposits except Peatland 31E-19. The highest proportion of open graminoid bog cover was 51% found on Peatland 31E-55. It was characterized quite commonly by Carex oligosperma which was the most common sedge species. Also Carex rostrata was common along with Eriophorum spissum and E. virginicum. In most cases there were scattered trees up to 7-8% coverage present, the most common species being Larix laricina. The predominant shrub species were Chamaedaphne calyculata, Ledum groenlandicum, Andromeda glaucophylla and Kalmia polifolia which were found on almost all deposits of this type.

Moss species varied, however, the most common were Sphagnum magellanicum, S. papillosum, and S. rubellum, S. nemoreum and S. cuspidatum.

The overall average peat thickness for open graminoid bog cover was 2.3 m (cf. Table 2). It varied from the maximum of 2.9 m in Peatland 31E-34A down to 1.2 m in Peatland 41H-11.

Open lowshrub bog was found on all but three deposits. It was absent from Peatlands 31E-33, 41H-11 and 41H-20. It covered 21% of the total area surveyed. As far as the species composition is concerned it was very similiar to that of open graminoid bog. Of the sedge species, Carex oligosperma was the most predominant one. Carex trisperma and C. paupercula were quite common, too. Scattered trees (Larix laricina) were very frequent as in OgB type. The shrubs were the characterizing species. In addition to the ones mentioned earlier, Nemopanthus mucronata should be added. With respect to mosses, Sphagnum fuscum would have to be added to the list as a very common species.

The overall peat thickness was 2.8 m. It varied from a low of 1.2 m in Peatland 41H-17 to a high of 4.6 m in Peatland 31E-19. The highest proportion of open lowshrub bog (60%) was found on Peatland 31E-34B.

The treed lowshrub bog physiognomic group was found to cover the largest area., i.e. 29% of the total area surveyed. On Peatland 31E-33, it covered 82% of the surface. It was missing from Peatlands 31E-34A, 31E-55, and 41H-20.

The treed component of this group was characterized by Larix laricina in most cases. Picea mariana was common also. Occasionally a few Pinus strobus and P. banksiana specimens were found.

Shrubs dominated the understorey and included all the listed species above as the most common ones. The moss species were basically the same as previously listed.

The average peat thickness varied from a low of 1.6 m on Peatland 41H-17 to a high of 3.7 m on Peatland 31E-24. The overall average was 2.6 m.

Treed graminoid bog was found on only three deposits. i.e., on 31E-24 (17.5% coverage, average thickness 4.3 m), 41H-11 (16% coverage, average thickness 1.2 m) and 41H-17 (6% coverage, thickness 2.9 m; one point only). The average coverage was 18% and the thickness 2.8 m.

The species list is approximately what has been listed earlier. The main difference between this and open graminoid bog is a higher tree coverage. The high percentage of graminoid (sedge) cover gives a park-like appearance.

Other physiognomic groups present were TtsB (4% coverage of the total area), found only on Peatland 31E-33 and 31E-34A. It differed from TlsB mainly because of the high percentage of tall shrubs such as Nemopanthus mucronata.

Physiognomic groups such as conifer swamp and hardwood swamp were found only in minor quantities and covered only 0.3 and 0.4% respectively of the total area.

Open water covered 0.3% of the total area. Most of it was due to beaver created flooding.

The vegetation analysis was based on a total of 49 full vegetation analysis points. The details of the comparative data are in the following summary table.

Further comments on the use potential have been given in section 4.4.

4.3 RECONNAISSANCE STUDY SITES

A total of twelve deposits covering 2,005 ha were subjected to reconnaissance study only. The results have been summarized in the Summary Table. Total survey points numbered 47. The total peat volume was estimated for all but Peatlands 31E-3 and 31E-47 which had only two and one survey points respectively. For the remaining peatlands, it was estimated that they contained 34,429 million m^3 of peat. This volume, which has been calculated by multiplying the average thickness (calculated from the measured thicknesses of each deposit) by the surface area of the deposit, must be considered as an inflated maximum and should not be used as a basis for anything but very approximate estimates.

All deposits surveyed on a reconnaissance level were basically confined basin bogs. A number (Peatlands 31E-3, -5, -10, -11, -30, -31 and -63) were located in stream valleys with an occasional wider bog areas connected by narrower bogs confined by the valley. Due to their configuration, they are mostly long and narrow and irregular in shape. As a result of this and the presence of a stream or a creek within the boundaries of the deposit, mining would be difficult on these deposits.

The physiognomic groups encountered were open graminoid bog, open lowshrub bog, treed graminoid bog, treed lowshrub bog, treed tallshrub bog, treed shrub-rich bog, conifer and thicket swamp and a mixture of open graminoid bog/open lowshrub bog on Peatland 31E-39. Open water was found to cover a total 47 ha of these deposits.

Only open graminoid bog and treed lowshrub bog covered more than 20% (22% and 20% respectively) of the total area of 2,005 ha.

On individual deposits, the cover percentage of each physiognomic group varied greatly. Open graminoid bog was found on Peatland 31E-5 (29 ha, 16%, no thickness measured), 31E-30 (90 ha, 58%, average thickness 1.5 m), 31E-31 (59 ha, 28%, average thickness 0.9 m), 31E-39 (4 ha, 5%, no thickness measured), 31E-49 (134 ha, 79%, average thickness 4.8 m), 31E-63

(58 ha, 48%, average thickness 1.6 m), and on 41H-14A (74 ha, 74%, average thickness 2.7 m).

The other physiognomic groups also were spread over a number of deposits with a varying percentage cover. Open lowshrub bog on six deposits varied from 17 % to 60%. Treed graminoid bog was found on three deposits varying from 6% to 22%. Treed lowshrub bog found on five deposits,ranged from 20 to 71%. The other types were less frequent.

The dominant plant species on the reconnaissance peatlands were about the same as for the detailed study deposits. The most common tree species were Larix laricina and Picea mariana. The shrubs included mainly Chamaedaphne calyculata, Ledum groenlandicum, and Nemopanthus mucronata. The most common sedge species were Carex oligosperma, C. paupercula, C. trisperma and C. rostrata. The mosses were mostly sphagna and included S. magellanicum, S. papillosum, S. nemoreum, S. rubellum and S. fuscum as the most common species.

The average peat thickness was measured only at a limited number of survey points and may not be conclusive without further field work. For the open graminoid bog and open lowshrub bog physiognomic groups, the average peat thicknesses were 2.3 m (n=15) and 1.8 m (n=9) respectively. The other types had only 1-6 points and have not been listed here but can be reviewed in the table that follows.

For the most part, the peat types found at reconnaissance site were similiar to those of the detailed sites. As with the detailed sites, a relatively thin sphagnum peat layer comprised the surficial peat layer while the remainder was dominated by sedge peat.

The degree of humification also was high and only a thin, 0-50 cm cap of unhumified peat was found on the surface in most cases.

4.4 PEAT RESOURCE POTENTIAL

The two main factors affecting the use potential of peat are market and resource potential.

4.4.1 Market Potential

Before resource potential is studied in detail, the market has to be identified in a preliminary sense. As far as Parry Sound District is concerned, potential users of fuel peat are e.g. wood product industries in the area, public buildings (hospitals, schools etc.) and perhaps private homes to mention a few. In order to assess the market for fuel peat in detail, a proper marketing study should be carried out.

4.4.2 Resource Potential

Concurrently with the market identification a preliminary identification of the resource has to be made. For this first step a quick look at maps and airphotos suffices. Once it has been established that a resource potential exists, a resource study is carried out to determined its real potential. Factors affecting the resource potential are:

i) Access

In Parry Sound District most peatlands can be accessed quite readily. All the investigated deposits are within a reasonable distance of a road network. In many cases, the roads actually come in contact with the deposit. (e.g. Peatlands 31E-55 and -63). In all the cases, the deposits are no more than 1-4 km from the nearest road passable by a car. Naturally, some minor road construction would be necessary but it is always required for the final access to the bog if development is considered.

The distance from the potential users is also within reasonable limits generally being less than 60 km. Only if the distances are measured to the nearest large communities such as Sudbury and Parry Sound, do the distances grow up to 90 km, which still is within an economic hauling distance depending on the quantities required.

ii) Area/Thickness/Volume

In order to carry out a properly planned mining operation a reasonable area is required. Using standard dry mining methods, a yearly production of 100-200 tonnes/ha (50% moisture content) is obtainable. From a power generating point of view, usually 20 ha of production at the above-mentioned rates is required to obtain 1 MW of generated power.

The thickness of the peat layer is also important. For machinery requirements, a minimum of 1 m of peat is required. For instance, some sod cutters reach down to 80 cm from the surface and care has to be taken not to hit the mineral soil with the cutters. As well, often the unhumified peat layer has been stripped (up to 50 cm on average). If an allowance is made for basal peat (up to 50 cm) no peat may be left for use for cutting sods. The milled method under these conditions, still can possibly be used for a limited time. In the final analysis, the main mining area should be 2 m or more in thickness, especially if a long term mine life is planned. In a regular operation about 10-15 cm of peat are removed annually.

iii) Peat Types, Degree of Humification, Peat Quality

These peatland characteristics affect the use potential. For fuel peat, a von post degree of H4+ in the case of sedge peat and H5+ in the case of sphagnum peat are needed. In the case of the investigated deposits, they all have a peat type/degree of humification combination well-suited for fuel peat development. Horticultural peat potential is very limited and actually is of little significance except in Peatland 31E-19 where deep enough layers of horticultural peat were present to allow a possible extraction program. In all the other deposits, the horticultural peat was found as a thin superficial layer not economically usable.

Peat quality is, as yet, unknown pending the results of laboratory analysis. The most important basic factor for fuel peat development is the ash content which, on a dry weight basis

never should exceed 25% and in fact should be less than 10% optimally. Other factors include calorific value, bulk density, and chemical composition of the peat, etc.

iv) Drainage

In order to develop a deposit for a dry mining method it has to be drained. As far as the drainability of the investigated deposits is concerned, they are all drainable by gravity. Within all of the deposits the gradient is almost non-existent, being mostly of the order of 0.1 - 0.3% and in many cases 0%. However, the deepening of the existing discharge outlets would allow drainage to be carried out by a properly designed plan of properly cut and located ditches. In many cases the non-existent gradient is caused by the beaver induced flooding as in the case of Peatland 41H-17.

v) Surface Vegetation

Pre-production activities associated with peatland development are influenced greatly by the type of surface vegetation present. The most important factor in this respect is the tree cover as the removal of trees is one of the first steps in the development of a peatland. As far as the tree cover is concerned, Peatlands 31E-3, -10, -11 show substantially large trees and dense enough cover to hamper the clearing. Peatland 31E-33 is covered for the most part by very sizeable trees (over 10 m high) especially in its southern portion and would be very difficult to clear. Peatland 31E-34A also has a sizeable tree cover and, partly because of this, is not very suitable for development. Peatland 31E-47 would be unusable due to its large sized trees including mature hemlocks, red maple and others in its southern portion.

Based on the above listing of factors, the detail survey sites can be arranged in an order of priority regarding their use potential. As a general comment it can be stated that none of them have large enough peat resources to support any sizeable

industry alone. For instance, to produce 1 MW of power, about 20 ha of production area is needed. Thus for instance, a 100 MW power station would require 2000 ha of production area, or more than has been studied in Parry Sound District. However, grouped together a number of deposits could support smaller requirements such as heating of hospitals or schools.

Since the size and peat thickness are the only parameters seriously affecting the use potential of the following deposits, they can be placed in order of priority accordingly. Peatland 31E-24 has the best potential for use, in that it has the largest mineable area (233 ha) and the large volume of mineable H4+ peat (5.308 million m^3). Other deposits with a reasonable potential are Peatland 41H-11 (137 ha mineable H4+ peat, 1.775 million m^3), Peatland 31E-34B (91 ha, 1.787 million m3), and Peatland 31E-34A (93 ha, 1.419 million m3) subject to the assessment the effect of heavy tree cover. The remaining deposits are of a lesser value due to their smaller size. They could be grouped together with each other and the above mentioned ones or used alone for mining peat for a small scale home heating or some other comparable use. None of them is large enough alone to support a full scale commercial equipment fleet and thus it would be unecomonical to use them alone for production without sharing the equipment between a number of deposits.

Of the reconnaissance sites, Peatland 31E-5, 31E-11, 31E-31 and 31E-49 are recommended for further detailed study as they have some use potential for fuel peat development. However, their study should be carried out only if a plan to develop full peat resources in Parry Sound District is instituted and if there is a need for more peat than is available in the deposits already studied in detail.

4.4.3 Inventory Summary

The peatlands of Parry Sound District are both on private and Crown Land. Some of the deposits have been designated as ecologically interesting. These aspects are summarized below in Table 1.

Peatland	Designation
31E-3	Commanda Creek: Brook trout waters. Mostly on Crown Land.
31E-5	Distress River: Brook trout waters. Mostly on private land.
31E-10	Lower Distress River: Pike spawning area. Mostly private land except a small area in the west
31E-11	Lower Distress River: Pike spawning areas. Mostly on Crown Land.
31E-19	A winter deer range. All on private land.
31E-24	No ecological plans. All on Crown Land.
31E-30	No ecological plans. Almost on all Crown Land.
31E-31	No special ecological plans. All on Crown Land.
31E-34A	No ecological plans. All private land.
31E-34B	Mostly in a moose concentration area. Partly on Crown Land, and partly on private land.
31E-39	Partly on a moose concentration area. All on Crown Land.
41H-11	Within the Northern Georgian Bay Recreational Resource. All on Crown Land.
41H-14A	A winter deer range. All on Crown Land.
41H-17	Northern part in a candidate park. Partly Crown Land, partly private land.
41H-19	No ecological plans. All on Crown Land.
41H-20	No ecological plans. All on Crown Land.

Table 1: Land Tenure and Some Biologically Sensitive Features Associated with Study Sites.

TABLE 2 PARRY SOUND PEATLAND INVENTORY SUMMARY

Areas Studied	Total Area of Designated Study Site (ha)	Total Peatland Area (ha)	Peatland Area with $\geq$ 1 m Peat (ha)	No. Sample Pts. (No. Transects)	Total Peat Volume (x $10^6 m^3$)	Volume Peat H4 + (x $10^6 m^3$)	Geomorphological Type	Peatland Classification					
								Peatland Type	Area (ha)	% of Total Peatland	Average Depth of Peat (m) (n)	No. of Samples Pts. with Full Veg. Record	No. of Physical Samples Collected
Detailed Sites													
31E-19	300	76	48	51(4)	1.476	0.970	Basin Bog	TlsB	54	71	3.0 (18)	2	1
								OlsB	16	21	4.6 (7)	2	1
								cS	6	8	2.7 (3)	-	-
31E-24	2500	616	233	106(7)	7.821	5.308	Basin Bog Partly becoming a flat bog	OgB	221	36	2.3 (39)	7	1
								OlsB	211	34.5	3.4 (25)	4	1
								TgB	121	19.5	4.3 (12)	3	1
								TlsB	63	10	3.7 (8)	1	-
31E-33	1200	198	56	29(3)	1.773	1.012	Basin Bog	TlsB	164	82	2.4 (11)	2	1
								TtsB	23	12	1.6 (13)	-	-
								OgB	11	6	Flooded, Depth not Measured	-	-
31E-34A	900	159	83	52(3)	2.048	1.419	Basin Bog	OlsB	95	60	2.6 (19)	4	2
								TtsB	56	35	2.2 (11)	1	-
								OgB	8	5	2.9 (11)	1	-
31E-34B	1600	173	91	80(7)	2.652	1.787	Basin Bog	TlsB	65	38	3.1 (11)	2	1
								OgB	62	36	2.8 (23)	3	2
								OlsB	40	23	2.2 (16)	-	-
								Open water*	6	3	-	-	-

TABLE 2 PARRY SOUND PEATLAND INVENTORY SUMMARY (CONTINUED)

Areas Studied	Total Area of Designated Study Site (ha)	Total Peatland Area (ha)	Peatland Area with ≥ 1 m Peat (ha)	No. Sample Pts. (No. Transects)	Total Peat Volume (x $10^6 m^3$)	Volume Peat H4 + (x $10^6 m^3$)	Geomorphological Type	Peatland Classification					No. of Physical Samples Collected
								Peatland Type	Area (ha)	% of Total Peatland	Average Depth of Peat (m) (n)	No of Samples Samples Pts. with Full Veg. Record	
31E-55	600	49	24	43(6)	0.623	0.427	Basin Bog	OgB	25	51	1.9 (13)	3	1
								OlsB	17	35	1.8 (11)	3	2
								hS	7	14	1.7 (5)	-	-
41H-11	2500	394	137	107(9)	4.101	1.775	Basin Bog	TgB	208	53	2.3(34)	3	2
								TlsB	121	31	2.3(33)	4	2
								OgB	65	16	1.2(3)	-	-
41H-17	800	153	29	41(5)	1.116	0.468	Basin Bog	TlsB	81	53	1.6(14)	3	1
								OgB	47	31	1.7(12)	2	1
								OlsB	15	10	1.2(4)	-	-
								TgB	10	6	2.5(1)	-	-
41H-20	900	82	38	44(4)	0.914	0.542	Basin Bog	OgB	82	100	2.1(27)	3	3
Total Detailed Sites	11300	1900	739	553(48)	22.524	13.708	-	OgB	521	27	2.3(128)	19	8
								OlsB	394	21	2.8 (82)	13	6
								TgB	339	18	2.8 (47)	6	4
								TlsB	548	29	2.6 (95)	4	5
								TtsB	79	4	1.9 (19)	1	-
								cS	6	0.3	2.7 (3)	-	-
								hS	7	0.4	1.7 (5)	-	-
								Open water*	6	0.3	-	-	-

TABLE 2 PARRY SOUND PEATLAND INVENTORY SUMMARY (CONTINUED)

Areas Studied	Total Area of Designated Study Site (ha)	Total Peatland Area (ha)	Peatland Area with $\geq$ 1 m Peat (ha)	No. Sample Pts. (No. Transects)	Total Peat Volume (x $10^6 m^3$)	Volume Peat H4 + (x $10^6 m^3$)	Geomorphological Type	Peatland Classification					No. of Physical Samples Collected
								Peatland Type	Area (ha)	% of Total Peatland	Average Depth of Peat (m) (n)	No of Samples Samples Pts. with Full Veg. Record	
Reconnaissance Sites 31E-3	2100	366	N/A	2	N/A	N/A	Basin Bog (partly confined to stream valley)	OlsB TlsB tS	102 260 4	28 71 1	0.0(1) 2.2(1) -	- - -	- - -
31E-5	900	184	N/A	4	3.864	N/A	Basin Bog (partly confined to stream valley)	OgB OlsB TsrB	29 110 45	16 60 24	- 2.1(4) -	- - -	- - -
31E-10	1000	187	N/A	3	2.992	N/A	Basin Bog (partly on a stream flood plain)	OlsB TsrB cS tS	32 97 16 42	17 52 8.5 22.5	0.7(1) - 0.9(1) 0.0(1)	- - -	- - -
31E-11	1000	159	N/A	4	4.681	N/A	Basin Bog (partly on a stream flood plain)	OlsB TlsB TtsB tS	2 52 96 9	1 32 60 7	- 3.6(2) 2.5(2) -	- - -	- - -
31E-30	1200	156	N/A	6	3.140	N/A	Basin Bog (southern portion in narrow channel)	OgB TgB TsrB	90 20 46	58 12.5 29.5	1.5(4) 1.7(1) 3.7(1)	- - -	- - -
31E-31	1200	209	N/A	4	3.135	N/A	Basin Bog (partly on stream flood plain)	OgB OlsB TgB TsrB	58 44 13 94	28 21 6 45	0.9(2) 2.1(2) - -	- - - -	- - - -

TABLE 2 PARRY SOUND PEATLAND INVENTORY SUMMARY (CONTINUED)

Areas Studied	Total Area of Designated Study Site (ha)	Total Peatland Area (ha)	Peatland Area with ≥ 1 m Peat (ha)	No. Sample Pts. (No. Transects)	Total Peat Volume (x $10^6 m^3$)	Volume Peat H4 + (x $10^6 m^3$)	Geomorphological Type	Peatland Classification					No. of Physical Samples Collected
								Peatland Type	Area (ha)	% of Total Peatland	Average Depth of Peat (m) (n)	No of Samples Samples Pts. with Full Veg. Record	
Reconnaissance Sites													
31E-39	600	76	N/A	5	1.600	N/A	Basin Bog	OgB/OlsB	47	62	3.2(4)	-	-
								OgB	4	5	-	-	-
								TlsB	23	30	4.2(1)	-	-
								tS	2	3	-		
31E-47	900	152	N/A	1	N/A	N/A	Basin Bog	ItsB	27	18	-	-	-
								cS	125	82	2.9(1)	-	-
31E-49	1600	186	N/A	4	7.254	N/A	Basin Bog	OgB	134	72	4.8(3)	-	-
								tS	47	25	1.1(1)	-	-
								Open water*	5	3			
31E-63	800	121	N/A	3	1.936	N/A	Basin Bog (Ancient stream valley)	OgB	58	48	1.6(3)	-	-
								TlsB	24	20	-	-	-
								Open water*	39	32	-	-	-
41H-14A	1200	100	N/A	4	2.775	N/A	Basin Bog	OgB	74	74	2.7(3)	-	-
								OlsB	23	23	3(1)	-	-
								open water*	3	3		-	-
41H-19	900	109	N/A	7	3.052	N/A	Basin Bog	TgB	24	22	2.8(3)	-	-
								TlsB	34	31	3.3(2)	-	-
								ItsB	51	47	2.5(2)	-	-

TABLE 2 PARRY SOUND PEATLAND INVENTORY SUMMARY (CONTINUED)

Areas Studied	Total Area of Designated Study Site (ha)	Total Peatland Area (ha)	Peatland Area with ≥ 1 m Peat (ha)	No. Sample Pts. (No. Transects)	Total Peat Volume (x $10^6 m^3$)	Volume Peat H4 + (x $10^6 m^3$)	Geomorphological Type	Peatland Classification					No. of Physical Samples Collected
								Peatland Type	Area (ha)	% of Total Peatland	Average Depth of Peat (m) (n)	No of Samples Samples Pts. with Full Veg. Record	
Total Reconnaissance Sites	13400	2005	N/A	47	(34.429)	N/A	-	OgB	447	22	2.3(15)	-	-
								OgB/OlsB	47	2	3.2 (4)	-	-
								OlsB	313	16	1.8 (9)	-	-
								TgB	57	3	2.5 (4)	-	-
								TlsB	393	20	3.4 (6)	-	-
								TtsB	174	9	2.5 (4)	-	-
								TsrB	282	14	3.7 (1)	-	-
								cS	141	7	1.9 (2)	-	-
								tS	104	5	0.6 (2)	-	-
								open water	47	2	-		
GRAND TOTALS	24700	3905	N/A	600	(56.953)	N/A	-	OgB	968	25	2.3(143)		
								OlsB	707	18	2.7 (91)		
								TgB	396	10	2.8 (51)		
								TlsB	941	24	2.6(101)		
								TtsB	253	6	2.0 (23)		
								TsrB	282	7	3.7 (1)		
								cS	147	4	2.4 (5)		
								hS	7	0.2	1.7 (5)		
								tS	104	3	0.6 (2)		
								open water	53	1.5	-		
								OgB/OlsB	47	1.3	3.2 (4)		

* Open water: These areas are heavily flooded by the beaver and actually may be covered by the same peatland vegetation type their immediate surroundings display.

(n) In the column depicting the average thickness of peat in physiognomic groups refers to the number of points used in calculations.

The total number of survey points includes also the ends of the lines and any other point at which some data such as e.g. only the thickness were recorded. It is larger than the sum of n's in the average thickness column.

The following paragraphs summarize the main aspects of each detailed peatland. The reader is referred to the table in the abstract and to Tables 1 and 2 for further inventory data.

.1 Peatland 31E-19

The total area of this deposit is 76 ha of which 48 ha are 1 m or greater in thickness.

The unhumified layer is an average 0.9 m thick. The total average thickness is 2.1 m and that of the area with 1 m or more of peat is 2.7 m.

The peat types on the surface are mostly sphagnum peats while sedge peats dominate the remainder of the peat layer.

The total peat volume is 1.476 million m^3 and that of humified peat (H 4+) is 0.970 million m^3. The area with 1 m or more of peat contains 1.316 million m^3 of peat.

This deposit has one drainage outlet which is located at its eastern end. Presently, it is blocked by a beaver dam.

Most of the deposit, 60%, has treed vegetation cover. The overall tree coverage is about 8%. As far as use potential is concerned, this is negligible.

The overall stump content, which is 2.3%, could cause occasional disruptions as far as mining is concerned.

This deposit has some small-scale potential both for horticultural and fuel peat use.

.2 Peatland 31E-24

The total area of this deposit is 616 ha of which 233 ha have a peat layer 1 m or more in thickness.

The unhumified layer is on average 0.3 m thick. The total average thickness of the deposit is 2.4 m and that of the area 1 m or greater in thickness is 3.0 m.

The surficial peat is sphagnum-dominated. At greater depths, the peat is sedge-dominated.

The total peat volume is 7,821 million m^3 and that of humified peat (H 4+) is 5.308 million m^3. The area containing a

peat layer 1 m or more in thickness contains 5.906 million m^3 of peat.

The drainage potential is moderately good. This deposit has several drainage outlets discharging into nearby streams.

Most of the deposit (about 70%) is open with less than 10% tree cover while about 30% has a tree cover greater than 10%.

As far as the use potential is concerned, this deposit has a medium potential for fuel peat development.

.3 Peatland 31E-33

The total area of this deposit is 198 ha of which 56 ha are 1 m or more in thickness.

The unhumified layer is on average 0.2 m thick. The total average thickness is 1.8 m and that of the area 1 m or more in thickness is 2.2 m.

In this deposit, the thin surface layer of sphagnum peat is underlain by layers of sedge-dominated peat as well as a mixture of sphagnum and woody sedge peat.

The total peat volume is 1.773 million m^3. The volume of humified peat (H 4+) is 1.012 million m^3. The area with 1 m or more of peat contains 1.605 million m^3 of peat.

About 90% of the deposit has tree cover. The overall tree coverage is 14%. The overall stump content is 3.0% or high enough to pose considerable problems for peat mining equipment.

Presently, a beaver dam is causing some flooding to occur at the southern end of this deposit. Nevertheless, the potential for good drainage exists. From its northern edge, this bog drops 5.5 m over 2900 m.

This peatland has no development potential for horticultural peat and only limited potential for fuel peat.

.4 Peatland 31E-34A

The total area of this deposit is 150 ha of which 83 ha are 1 m or greater in thickness.

The average thickness of the unhumified layer is 0.3 m. The total average thickness is 1.8 m and that of the area 1 m or greater in thickness is 2.2 m.

This deposit's surface layer is dominated by sphagnum peat. Sphagnum-dominated peat occasionally can be found down to a depth of 2.5 m in this bog. The remainder of the peat layer is sedge-dominated with shrub remnants as a widely spread constituent.

The total peat volume is 2.048 million m^3 of which 1.419 million m^3 is humified peat (H 4+). The area with 1 m or more of peat contains 1.668 million m^3 of peat.

This deposit is drained by a stream discharging to the northwest. The peatland surface is relatively featureless and consequently, in order to be able to drain the deposit successfully, the above-mentioned stream would have to be deepened.

About 35% of the area of this deposit has a treed vegetation cover. The rest is open with a tree cover of less than 10%. The overall tree cover is 6.5%. The stump content is 2.2%, a level at which peat mining can be undertaken without serious problems.

This peatland has a low small-scale fuel peat development potential but, no horticultural peat development potential.

.5 Peatland 31E-34B

The total area of this deposit is 173 ha of which 91 ha are more than 1 m in thickness.

The average thickness of the unhumified peat layer is 0.3 m. The total average thickness is 2.2 m and that of the area 1 m greater in thickness is 2.8 m.

Sphagnum peats dominate the surface layer of the deposit while sedge peats dominate the lower layers.

The total peat volume is 2.652 million m^3 and that of humified peat (H 4+) is 1.787 million m^3. The area with 1 m or more of peat contains 2.242 million m^3 of peat.

The surface of this deposit is almost flat with virtually no gradient. There are two drainage outlets. One is located at the northwestern end of the bog and offers good drainage into nearby Meadow Lake and the other one, blocked by a beaver dam, is located at the southern end of the deposit.

About 38% of the deposit has a treed vegetation cover and the rest is open. The overall tree cover is 3.5%. The stump content is 2.1%.

This deposit has a medium potential for small-scale fuel peat development.

.6 Peatland 31E-55

The total area of this deposit is 49 ha of which 24 are 1 m or greater in thickness.

The average thickness of the humified peat layer is 0.4 m. The total average thickness is 1.4 m and that of the area with 1 m or more of peat is 2.2 m.

There are no significant gradients on this deposit. There is one drainage channel at the southern end of the deposit which is presently constricted by a beaver dam.

Only about 14% of the area is tree-covered vegetation. The remainder of the deposit is open and is devoid of any trees. The overall stump content is 1.9%.

The peat types in the southern part of the bog, from the surface down to the base, are sedge-dominated while in the northern part there is a layer of sphagnum peat up to 2 m thick on the surface underlain by sedge peats.

The total peat volume is 0.623 million m^3 of which 0.427 million m^3 are humified peat (H 4+). The area with 1 m or more of peat contains 0.499 million m^3.

This deposit has a medium potential for small-scale fuel peat development.

.7 Peatland 41H-11

The total area of this deposit is 394 ha of which 137 ha are 1 m or greater in thickness.

The average thickness of the unhumified peat layer is 0.3 m. The total average thickness is 1.6 m and that of the area with 1 m or more of peat is 2.1 m.

The total peat volume is 4.101 million m^3. This deposit contains 1.775 million m^3 of humified peat (H 4+). The area with 1 m or more peat contains 2.816 million m^3 of peat.

Sphagnum-dominated peats are found in a thin (0.5 m) layer near the surface. The rest of the peat layer is sedge-dominated.

This deposit is quite flat with no significant surface gradients. There are five drainage outlets which could provide relatively good drainage for the deposit if it were considered for utilization.

About 84% of the deposit has a treed vegetation cover. The overall tree cover is 10%. The stump content is 1.3%.

This deposit has a medium potential for fuel peat development.

.8 Peatland 41H-17

The total area of this deposit is 153 ha of which 29 ha are 1 m or more in thickness.

The average thickness of the unhumified peat layer is about 0.3 m. The total average thickness of peat is 1.2 m and that of the area with 1 m or more of peat is 1.9 m.

Sphagnum peat is found mostly on the surface while sedge peats are dominant at the greater depths.

The total peat volume is 1.116 million m^3 and that of humified peat (H 4+) is 0.468 million m^3. The area with 1 m or more peat contains 0.496 million m^3 of peat.

This deposit has no surface gradients and is almost totally flat. It can be drained through 5 drainage outlets which are blocked presently by beaver dams.

About 60% of the deposit has a treed vegetation cover. The overall stump content is 1.0%.

This deposit has a low fuel peat development potential and no horticultural peat potential.

.9 Peatland 41H-20

The total area of this deposit is 82 ha of which 38 ha are 1 m or greater in thickness.

The average thickness of the unhumified peat layer is 0.4 m. The overall average thickness is 1.4 m and that of the area 1 m or greater in thickness is 2.0 m.

There are only minor quantities of sphagnum peat in this deposit. The most common peat types are sedge-dominated.

The total peat volume is 0.914 million m^3 and that of humified peat (H 4+) is 0.542 million m^3. The area with 1 m or more of peat contains 0.694 million m^3 of peat.

This deposit is quite flat with no appreciable gradients. It is drainable via 4 natural drainage outlets presently blocked by beaver dams.

The entire deposit is open and the tree cover is 0%. The overall stump content is 1.5%.

This deposit has a very low fuel peat potential and no horticultural peat development potential at all.

Ministry of Natural Resources
Ontario

Hon. Alan W. Pope
Minister

John R. Sloan
Deputy Minister

ONTARIO GEOLOGICAL SURVEY

Open File Report 5488

Peat and Peatland Evaluation of the Parry Sound Area

Volume II

by

Monenco Ontario Ltd.

1984

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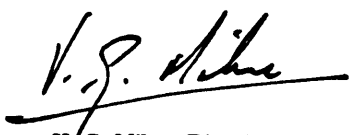

V. G. Milne, Director
Ontario Geological Survey

PEAT AND PEATLAND EVALUATION OF THE PARRY SOUND AREA

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Peat and Peatland Evaluation of the Parry Sound Area

Volume 2
Detailed Site Evaluations
31E-19, 24.

1983

By

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5.0 DETAILED SITE EVALUATIONS

5.1 GENERAL

The following chapters describe each deposit studied in detail. The data described herein form the basis for the summaries in Part 4. The detailed sites number 9 in total and include the Peatlands 31E-19, 31E-24, 31E-33, 31E-34A, 31E-34B, 31E-55, 41H-11, 41H-17 and 41H-20. The index map shows their general location.

5.2 PEATLAND 31E-19

Location

Peatland 31E-19 is located in Croft Township in Parry Sound District about 0.5 km south of Ahmic Lake and 5 km southwest of the community of Magnetawan. This deposit is located approximately at 17-6035053 in U.T.M. coordinates or 45° 37'N latitude and 79° 41'W longitude in geographic coordinates. (Airphotos: 77-4526 86-266, 267, 268).

Access

Peatland 31E-19 is highly accessible. From Ahmic Lake Road it can be entered from 2 locations. Two private roads running from Ahmic Lake adjacent to both ends of the deposit also provide excellent points of entry.

The deposit is within a reasonable distance of several nearby population centres and the wood products industries located in these communities. The distances, by road, have been summarized in the following table.

Names of Communities	Distance from Peatland 31E-19 (km)
Footes Bay	15 km
MacTier	26 km
Port Carling	39 km
Bala	40 km
Bracebridge	47 km
Parry Sound	50 km
Huntsville	63 km

Dates of Field Study

The detailed field study was conducted on September 14th, 15th, 16th and 19th, 1983. The surface levelling was performed on September 15 and 19.

Topography and Drainage

Peatland 31E-19 is situated in a depression surrounded by rock knob uplands on all sides. A sizeable elevation difference exists between the surrounding uplands and the surface on both the east and west sides of the peatland. The mineral terrain, mostly rocky, on both sides rises rather steeply from the edge of the deposit. This is illustrated by the steepness of the bottom contour and the resultant thick layers toward the edges of the deposit.

The surface of this deposit lies between 289.3 on 290.7 m a.s.l. Between B100E and B600E, the surface elevation changes very little - only 10 cm. Between B700E and the end of the baseline at B1650E, the elevation difference is one metre. The one metre drop actually occurs between B700E and B1400E and represents a slope slightly over 0.1%.

An examination of the elevations along the sidelines reveals that the surface rises gently from the north and south edges towards the centre. This surface feature is best illustrated along the northern stretch of the sideline located at B800E. Along this portion of the sideline, the surface rises 0.6 m over 280 m. This represents a slope of slightly over 0.2%.

Although the deposit is relatively flat, only one drainage problem was observed at the time the detailed survey was conducted. Presently, at the eastern end of the deposit a beaver dam is situated on a stream linking the deposit to Ahmic Lake. The pond which has been created as a result of the dam extends from B1400 all of the way to B1650E.

It would appear based on this airphoto interpretation that this stream is a suitable discharge system for the peatland.

Nevertheless, with only one major discharge channel this deposit may be susceptible to flooding during spring runoff events especially in its present condition with a beaver dam on the stream draining the eastern end of it.

It is important to note that several areas of this deposit exhibited patterns of ridges and flashets similar to that of a raised bog. These features were observed along the entire baseline at various stages of development. On the eastern edge, they were open and not passable on foot, while on the western part, they tended to be more moss covered with Rhynchospora fusca vegetation predominant. The ridges/rimpis are mostly parallel and at a 90° angle to the gradient. The ridges are continuous across the surface and may retard the movement of the surface waters along the main gradient which follows the long axis of the bog.

In Ontario the ridged pattern often indicates the presence of fen systems. However, on this deposit the pH values are indicative of bog conditions while the vegetation is in part indicative of fen and in part of bog conditions. It is possible that this is a transition between the two systems and that an earlier fen type system may still be reflected on the surface as a ridged pattern.

The underlying substrate is clay. West of B800E, the substrate is very unpredictable varying from rock, sand and silt to clay.

Area and Shape

This deposit has a surface area of 76 ha of which 48 ha contain a peat layer thicker than one metre. The area of greatest resource potential is located east of the mineral island located between B620E and B680E. More specifically, this area section is bounded by B700E and B1400E along the baseline and includes the two sidelines at B800E and B1200E. Within these boundaries, the enclosed area is 45 ha. West of the mineral island, thick peat layers are encountered at several survey sites, however, these deep peat layers are also scattered and thus no large contiguous deep area exists in the western section.

This deposit is almost rectangular in shape and oriented in along an east-west axis. It is a little over 1.6 km long and 650 m wide at its greatest dimensions. This deposit is devoid of any large embayments which makes it ideally suited for peat production in that almost all of its area could be put into production with an uncomplicated mine plan. There is one rocky mineral island of about 1.3 ha located between B620E and B680E.

Peatland Vegetation

This deposit supports bog vegetation. The two main physiognomic groups in this deposit are treed lowshrub bog and open lowshrub bog. A third one, worth of mention, is conifer swamp, which applies to the flooded eastern end of the bog. Their areas are summarized in Table 2 in connection with peat thickness. The main body of the bog along the base line shows an increasingly stronger string pattern where ridges and flashets alternate. The ridges have a tree cover and to indicate this feature, the modifier (R) is used to indicate treed ridge (ribbed) pattern on the peatland classification map. The third type is conifer swamp covering only 6 ha or 8% of the total area. This section is completely flooded due to beavers. Due to dieback in this section the tree cover is only 8% which in normal conditions would not qualify as a cS type where the minimum cover should be 30%.

The treed lowshrub bog is composed of very densely treed edge and of less densly treed central areas. It covers 54 ha or 71% of the entire area. The vegetation was analysed at the points B400E and L800E + 200N. In the former area the tree cover was only 2% while in the latter it was 16% showing the difference in the general vegetation. By definition the former is not treed. However, this section of the deposit has an initial ribbed pattern in which the treed sites are in dominance and it was judged that this portion is predominantly treed and thus was included in the treed part of the bog. It also had a low surface water pH of 3.8 in contrast to the open bog area which had a pH of 4.8. The ridge - flashet pattern in this physiognomic group is not as pronounced as it is in the open bog. The pattern appears around B200E and gets gradually more pronounced towards the southeast. The pH appears to get lower within the patterned area where it is generally less than 4 while in the less patterned area it is over 4 and in the beginning of the base line even 5.0 (BOE).

The hummock - hollow topography is shallow, the hummocks being in the range of 0 - 45 cm high. The depth of the water table between the hummocks is 0 - 10 cm and in the hummocks up 45 cm. The average range is around 15 - 20 cm. However, these measurements may not reflect year-round relationships because they were taken only one time during the year. The average tree cover in the entire deposit is 8.2% and within TlsB 10%. This type can be expressed as $T^{10}ls^{22}B$ indicating the average cover values of the main physiognomic group.

The open lowshrub bog, found east of the mineral terrain island displays very well developed string pattern of flashets partly covered by open water only or sedge - moss vegetation. It covers 15 ha or 20% of the total area (see Table 1). The ridges are usually 20 - 50 cm high and the coverage percentage ridges/flashets is about 50/50%. The depth to water in the ridges is up to 55 m but in the flashets commonly none. Surface water pH values varied when measured at two locations and were 4.0 and 4.8 respectively. There was no difference at these sites in the pH values in the hollows and the ridges.

The average tree cover was measured to be 2%. The canopy height varied from 2.5 to 4.5 m. The vegetation area analysed at B1000E and B1200E. The average dominance type is $O^{2}1s^{15}B$.

The small area of the conifer swamp at the eastern end of the deposit reaching from B1420 to the edge of the bog may one time have been a densely treed swamp but has become quote open partly due to extensive dieback caused by flooding. Thus the present $c^{8}S$ cover reflects only the trees still standing. Table 1 gives a summary of peatland classification data.

Survey Point	Classification	Dominance Type	Surface water pH	Avg. depth to water (cm)
B400E	$T^{11}1s^{20}B$	Picea mariana^{10} Chamaedaphne calyculata^{5} Sphagnum cuspidatum^{65}	3.8	8
B1000E	$O^{1}1s^{28}B$	Chamaedaphne calyculata^{20} Sphagnum magellanicum^{30} Sphagnum cuspidatum^{30}	4.0	20
B1200E	$O^{1}G^{15}B$	Rhynchospora fusca^{10} Sphagnum magellanicum^{40} Sphagnum cuspidatum^{40}	4.8	9
L800E+200N	$T^{16}1s^{29}B$	Larix laricina^{15} Chamaedaphne calyculata^{15} Carex trisperma^{10} Sphagnum magellanicum^{50}	4.8	19

Table 1. Summary of Peatland Classification Data (31E-19).

Peat Thickness

The peat thickness of Peatland 31E-19 can be discussed in terms of the layers on either side of the mineral island which is located on the baseline roughly between B620E and B680E.

West of the mineral island, peat layer thickness varies from 0.5 m near BOE to 4.6 m at B500E. At two of the fourteen sites established west of the island the thickness is greater than 4 m while at four it exceeds 3 m. Between L200E + 200N and

L200E + 200S the peat thickness ranges between 2.7 and 3.6 m and averages 3.3 m. This deposit has a thick surface layer of unhumified peat. West of the mineral island this surface layer fluctuates between 0.7 m and 1.3 m diminishing towards the edge.

On the east side of the mineral island the peat thickness varies considerably from as little as 1.4 m at B1500E to 6.1 m at B1000E. More specifically, five sites have a peat layer thickness greater than 5 m and one is greater that 6 m. At eleven sites the peat layer thickness is greater than 3 m and at seven it is in excess of 4 m. Along the baseline between B700E and B1600E, the thicknesses are of the order of 1.4 m to 6.1 m. Similarly, sites along the sideline established at B800E the thickness ranges from 2.9 to 5.2 m. The thickness along the sideline at B1200E is more constant varying between 2.7 m and 3.5 m.

The surface layer thickness vary from 0.3 m to 1.6 m. On average, on the surface layer thickness on the east side of the island is slightly over 1.0 m.

As a whole, the total average peat thickness is 2.1 m. In the area containing a peat layer of a thickness equal to or greater than one metre the average is 2.7 m.

The average peat layer thickness in each physiognomic group has been summarized in the following table:

Physiognomic Group	Area (ha)/%	Average Peat Depth (m)
TlsB	54/71	3.0
OlsB(R)	16/21	4.6
cS(F)	6/8	2.7

Table 2. Distribution of Physiognomic Groups.

This table shows that the open lowshrub bog peatland type covers about 16 ha of the centre of the deposit and has the highest average peat layer thickness (4.6 m). In fact this area is composed of treed ridges and open flashets (rimpis).

The area (54 ha) covered by the TlsB type is 3.0 m deep on average.

The type marked as cS (F) is contained in the area flooded by the beaver dam. The open character may partly be attributed to the flooding and ensuing dieback of the original tree cover.

The area of greatest resource potential is mostly located in the area designated as OlsB(R) and to a lesser degree in the TlsB area immediately surrounding it.

Peat Types

A considerable layer of pure sphagnum peat can be found on the surface along the baseline between B400E and B1400E and along the transects L800E and L1200E. The thickness of pure sphagnum layer reaches up to 1.5 m. The peat is located, as was earlier mentioned, in the ridge/flashet open bog area of the deposit. This peat, and the surface characteristics indicate some ombrogenic properties; these parts of the bog also have slightly higher elevations in the middle as compared to the edges (c.f. transect profiles). Sphagnum peat is also found as lenses of sphagnum-sedge and sphagnum-wood peat at greater depth in a number of locations. In this report the dominant peat constituent is mentioned first and the others after it in a descending order of importance.

Sedge peat is the predominant peat type and is found below the surface with only minor sphagnum lenses along all the lines except in the location listed above where sphagnum peat lies on the surface. In these locations the deeper peats are sedge types.

As a rule the sedge is associated with shrub and sphagnum peat as minor components in most cases. Along the L800E transect, pure sedge peats are found at the edge of the deposit.

The peat is commonly underlain by ooze and the mineral soil substrate is mostly clay.

The variation in the peat types indicates that parts of the deposit have started as sedge fens (Transect L800E), and parts as shrub rich bogs (cf. location B500E). Large sections have developed uniformly at one time as graminoid bogs with some shrub cover as for instance, from B800E to B 1100E, sedge - sphagnum

peat is common. However, the scarcity of sphagnum also indicates that the fen conditions, even here, may have been more prominent. The thick ooze layers (up to 2.5 m) also indicate that this deposit may have started by the filling in of a pond by peatland vegetation.

The larger quantities of sphagnum near the surface may indicate ombrogenic conditions although other deposits in this region do not show this. The humified layer occupies 2.5 m of the total average of 3.4 m for the area south one meter or more of peat. The thick layer of unhumified peat might hamper the use of this deposit for fuel peat purposes. However, the uniformity of the humified layer which is devoid of detached unhumified lenses, its thickness and the dominance of sedge peats make it a good source of fuel peat.

The greatest concentrations of fuel peat are in the areas of the greatest peat layer thicknesses, especially from site B700E to B1400E and along the transects L800E and L1200E.

Peat Humification

The overall average degree of humification for this deposit is H 4.8. For the surficial unhumified layer it is H 1.4 and its average thickness is 0.9 m.

The unhumified peat is quite evenly distributed over the entire area of the deposit and it appears to taper off at the edges of the bog. Within the area where the peat is 1 m or more in thickness the surficial layer was actually measured and varied from 0 to 1.3 m in thickness and was thicker than in most other deposits in Parry Sound. As far as use is concerned, this relatively thick surface layer would hamper the use of humified peats, but it also would offer some horticultural potential.

Peat Volumes

Peat volume data has been summarized in the table below.

Peatland No.	Total Peatland Area (ha)	Total Peat Volume ($X10^6$ m^3)	Peat Volume in Area with > 1 m of peat ($X10^6$ m^3)	Humified Peat Volumes in area > 1m of peat (H4-10)($X10^6$ m^3)
31E-19	76 ha	1.476	1.316	0.970

Table 3. Distribution of Peat Volumes.

Table 3 indicates that the total volume of peat in this deposit is 1.476 million m^3. Of this a total of 0.970 million m^3 are well humified peats. The total peat volume of the area with one meter or more of peat is 1.316 million m^3.

These volumes were calculated by using the "donut" method and include only peat; ooze is excluded. However, due to the scale factor and the reading precision of the planimeter at a scale of 1:10,000 donuts of 1-3 m, 3-5 m and over 5 m were used. The humified peat volume was calculated for the area with 1 m or more of peat which is commonly regarded as the minimum for peat operations. However, to have a long term development potential, 2 m of peat is required. This area is in two sections, one in the western part of the deposit around points B100E to B250E and the other one in the east from about B450E as a narrow zone to B700E where it widens and stretches to B1450E. Due to the high peat thickness in the eastern section of the deposit, the bulk of the peat is located in the area from B700E to B1450E, while a smaller quantity only is in the western section. However, were this deposit taken into use, peat mining fields could be established at these sections separately for a small scale operation as the peat thickness and surface areas of 1 m of greater peat depth are suitable for such a purpose.

Potential for Fuel Peat or Horticultural Peat Development

Peatland 31E-19 has potential for both fuel and horticultural peat development. It should be noted that small-scale horticultural peat development is a possiblity for this peatland, however, a more detailed resource inventory would be required.

In assessing the horticultural peat development potential of the deposit, the volume of humified peat and thickness of the unhumified layer appear to indicate that a small scale operation may be a reasonable consideration. One area of concern may be stumps. During the performance of stump counts, the majority of stumps were encountered in the 0 to 1 m depth.

The average peat depth within the area greater than one metre in depth it is 2.7 m, with a fuel peat volume of 0.970 million m^3. This volume would be sufficient to support a small scale fuel peat operation.

Besides having a shape that would allow most of the deposit to be mined, tree cover is relatively light in the centre of the bog. The stump content west of the mineral island is 3.0%. This stump content might hamper peat mining on the west side. However, the area of greatest resource potential is located on the eastern side of the mineral island where the stump content is 1.8%, increasing its value for an operation. This is an important point in the development plan for this deposit; if a horticultural peat operation were undertaken followed by a fuel peat operation, minor equipment fleet changes would be required for the transition from a horticultural peat operation to a fuel peat operation. The tree cover of about 8.2% on average would not be any serious hindrence to development.

The present drainage problems do not appear to be serious and can be remedied largely by removing the beaver dam which is situated on the peatland's only discharge stream.

This deposit's potential for fuel peat development is further enhanced by the fact that it is well accessible and is within economic hauling distances of population centres and wood product industries.

The entire deposit lies on private (patented) land. Also, the Ministry of Natural Resources District Office has designated the area as a "Winter Deer Range".

Comments

This deposit has not been previously studied. It shows interesting surface pattern which differs from the others in Parry Sound District. Also the vegetation would merit a further more detailed floristic study due to its zonation into ridges and flashets indicative of ombrogenic conditions. This pattern of peatland formation is considerably south of the parts of Ontario where patterned peatlands are common.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.3 PEATLAND 31E-24; Bear Lake Bog

Location

This deposit is located in Monteith Township in Parry Sound District. It is about 38 km northeast of Parry Sound and about 12 km west of Sprucedale and 0.5 to 3 km northwest of Highway 518 and the village of Bear Lake.

The approximate geographical coordinates are 45° 28' N latitude and 79° 36' W longitude. The U.T.M. Coordinates are 17-6095036. (Airphotos: 77-4519, 46-48, 49, 50, 51, 52; 77-4520, 46-135, 136, 137; and 77-4520 85-171).

Access

This deposit can only be reached from Highway 518 which runs 0.5 to 1 km southeast from the southeastern edge of the bog. There are no other roads within a reasonable distance of the bog. The extreme southeastern corner is linked by an unmaintained forestry road and can only be travelled by a 4-wheel drive vehicle. The northern edges of the deposit extend up to 3 km northwest of the highway. By road, the deposit is about 34, 50 and 50 km from Burk's Falls, Huntsville and Parry Sound respectively. All these communities and several others in the area have industries that could be considered as possible users of fuel peat.

Dates of Field Study

The majority of this deposit was surveyed in detail in the summer of 1968 (Korpijaakko M, Korpijaakko M-L, and Korpijaakko E., and Radforth J.R.). Further field work was done October 6th and 7th and laboratory samples were extracted on October 7th, 1983.

Topography and Drainage

This deposit is located in a wide depression between rocky hills which are covered by only thin soil layers allowing a relatively unimpeded inflow of the water onto the bog after rainfall.

There are no large streams or brooks discharging onto the deposit. The depression occupied by the bog is drained mainly by small brooks from Fifteen Mile Lake located at the northeastern corner. These brooks discharge into the Manitouwabin River. Other brooks drain the deposit to the northeastern corner towards Magnetewan River. It is also drained to a lesser degree from its southern edge to Sequin River. All these rivers eventually discharge into Georgian Bay.

An inspection of the profiles and the elevation map reveals that the surface of the deposit generally slopes towards the northeastern corner where Fifteen Mile Lake is located. Individually, each transect shows a slight gradient from the southern end to the northern end. However, the extreme southern end of each line slopes slightly to the south. As a result,there appears to be a narrow zone, about 100 + 200 m wide, along the southern perimeter of the bog that is drained through the Seguin River channel, while the rest of the deposit is drained partly to the north and to the Magnetawan system and for the most parts towards Fifteen Mile Lake and through the Manitouwabin system.

The base line profile reveals also a depression around B400Wto 700W. The most prominent slopes are observed along Transect G400W where the surface drops from the south to the north about 1.7 m over a distance of 1800 m or about 0.1% to and along F-line where the slope is about 0.2%.

The inspection of airphotos as well as the field observation revealed that this bog, as almost all the deposits in Parry Sound District, has active beaver colonies around its perimeter. The beavers have built a number of dams at or near BOW, B300W + 420S and B300W + 620N, and at the northern side of the deposit partly or totally blocking the drainage. In the

event that this deposit were taken into use that requires drainage (dry mining) a thorough survey of the drainage channels is needed as well as the control of the beaver.

The entire deposit is actually composed of a number of sections and displays many mineral terrain "islands", giving the bog a broken appearance. The basal soil varies from rock and sand to silt and clay. The clay is found mostly in the deeper areas of the deposit, specifically around L300W + 300N and 400N, B100W, B200W, B700W and B800W, F500W, and G400W + 800N. These lower-lying pockets of clay are often associated with ooze indicating that once this area may have contained a number of small lakes. The clay could perhaps date back to early post-glacial time. Elsewhere, the subsoil is typically rocky or sandy. There are no surface ponds except those created by the beaver at the edges of the deposit.

Area and Shape

The total area of the deposit is 616 ha excluding islands which cover 128 ha within the perimeter. Of this, 233 ha contain a peat layer one metre or more in thickness.

The bog is very irregular in shape and contains a large number of rock outcrops and mineral islands. It is about 3 km long in the east-west and 3 km wide in the north-south directions. There are three major lobes. One, having an area of 1 m thickness (average thickness 2.1 m) of 60 ha is at the eastern portion of the deposit containing the transects L300W and L850W and the Base line B0 - B900W. This portion is very irregular in shape and broken up by a number of mineral terrain islands. The maximum peat thickness in this section is 3.0 m found at B300W. Elsewhere the thickness varies and is slightly over 2 m (20 ha). Considering the irregular shape and thickness of the peat, this section does not have a high user potential.

The second section is in the area covered by L1250W and B100W to 1700W. A large portion of this section is covered by a number of mineral islands especially so from B1400W. The peat thickness is higher than in the first section and is on average

3.4 m in about 55 ha of more than 1 m thickness. A maximum of 5.3 m is found at two locations (B1250W and B1300W + 800N). This section has a good resource potential as far as the thickness is concerned.

The largest and most uniform section is located in the western portion of the deposit and is covered by FO - F770W, G50W - transect and G400W transect, as well as the H line and the lobe where the reconnaissance sites T 1 - 3 are located. This section which covers about 118 ha with more than 1 m of peat (average thickness 3.2 m). The maximum thickness is about 5.0 metres on F-line (F300W). A considerable area has a peat thickness more than one metre. However, there are small rock outcrops even within this area making any mine planning complicated. As a whole this portion of the bog has the most to offer for peat mining as far as the size and shape are concerned.

Vegetation

This deposit is for the most part a flat bog although parts of it could be considered as basin bog since the maximum thickness is encountered near the centre of the deposit or in its discrete lobes.

This deposit is covered entirely by bog vegetation with no appreciable fens, swamps or marshes except at a few scattered locations along the edges where narrow zones of swampy areas are encountered. The peatland classification map shows the distribution of the various major physiognomic type which include the following types: open graminoid bog (OgB), open lowshrub bog (OlsB), treed lowshrub bog (TlsB), and treed graminoid bog (TgB). The open graminoid bog type covers 221 ha (36%), open lowshrub bog 211 ha (34.5%), treed lowshrub bog 63 ha (10%), and treed graminoid bog 121 ha (19.5%) of the total area.

The eastern section is covered mainly by Og ^{26}B type vegetation. The detailed plant study was done at sites B300W, B850W and L300W + 200S. The vegetation is very similar at each location. Common species to each site include Nemopanthus mucronata, Chamaedaphne calyculata, Vacciniumanqustifolium,

Eriophorum spissum, S. fuscum and S. magellanicum to mention a few. The percentage covered by graminoids/herbs are 29%, 21% and 30% respectively.

The peat thickness on average in this section is 1.8 m. The easternmost portion as well as the southern edge are somewhat flooded and soft and quite devoid of any large mounds. The water table is almost at the surface and the surface water pH is 3.5.

The central and western part of the eastern section are covered by large mounds about 30 cm high covering 90% of the area. The water table is deeper. The surface water pH varies from 4.0 to 4.3. The common occurrence of S. fuscum gives this part the appearance of a sphagnum bog type.

The central section is generally tree covered and from B1100W to B1480W and all along Transect B1250W (except its southern end) has a $T^{14}g^{24}B$ cover. This type covers a total of 121 ha with an average thicknessof 3.6 m. The detailed study was carried out at B1250W + 100S and 100N. The graminoid cover percentages are 21%, 26% and 25% respectively. The common plant species include Larix laricina, Picea mariana, Chamaedaphne calyculata, Ledum groenlandicum, Kalmia polifolia, Vaccinium angustifolium, Eriophorum spissum, E. virginicum, Carex oligosperma, Sphagnum magellanicum, S. rubellum, and S. recurvum.

The tree cover was relatively low and about 3 m high. The tree cover was variable with only 16, 11 and 14% coverage values respectively (sites listed above). The area has a park-like look due to the open character and the abundent herbaceous cover. The surface water pH varied from 4.0 to 4.3. Depth to ground water varied from 5 to 35 m. The hummocks are 20 - 30 cm high and cover about 80 - 90%of the area.

From B1480W to F50W the type is $T^{14}1s^{20}B$. The shrubs are quite high and there is more variation in the types across the area than in the previously described section. This part of the central section has only a shallow peat layer and does not offer much use potential. The part of this cover type that is in the western section contains some of the thickest peat layer of the

entire deposit and from this point of view offers good use potential. The occasionally heavy tree cover might hamper it however.

The rest of the western section is covered by $O^2g^{23}B$ and $O^2ls^{22}B$ types. The detailed plant work on the OlsB type was carried out at G400W + 100S, + 200S + 700S and at site T5 located 100 m east of G400W + 200N. All these sites had a very similar species composition including among others Chamaedaphne calyculata, Kalmia polifolia and as a very conspicuous species Sphagnum fuscum that forms sizeable mounds over a large portion of this section giving it an appearance of a pure sphagnum bog. The surface water pH values varied from 3.7 to 4.2 and the shrub cover percentages were 22, 32, 17 and 24% respectively while the graminoid/herb covers 6, 7, 8 and 12%. This portion of the bog shows progressive development in the paludification since obviously the S. fuscum vegetation is actively growing and appears to be forming new peat quite vigorously.

The extreme southern end of the deposit from G400W + 800W onwards and the western end from F500W on is covered by $O^2g^{26}B$ type. The vegetation analysis was done at F600W, at site T4 about 100 m east F600W and at a site about 100 east of G400W + 900S.

The graminoid/herb cover percentages are 27%, 45% (F600W) and 31% (T4).

The plant species that characterize these sites are Eriophorum spissum, Carex oligosperma and C. paupercula. These species gives this area the meadow-like appearance interrupted by an occasional mound with S. fuscum, Chamaedaphne calyculata and other common shrub species in smaller quantities (shrub percentages varied from 4 - 12%). The surface water pH values varied from 4.0 to 4.5.

The hummocks are low (10 - 20 cm) and covered 2 - 20% of the area. The water table was at the surface between the mounds or only 10 cm below the surface. As a whole the entire Bear Lake Bog (Peatland 31E-24) shows quite a variety of types varying from sphagnum bog-like types to almost fen-like types. There appears to be various stages of paludification in different parts of the

deposit, a dynamic feature that makes this deposit, due to its large size, quite unique in this area and worth a more thorough vegetational analysis. Table 1 gives a summary of the peatland classification data.

SURVEY POINT	CLASSIF-ICATION	DOMINANCE TYPE	SURFACE WATER PH	AVERAGE DEPTH TO WATER(CM)
B300W	$0^{0}g^{29}B$	Eriophorum spissum^{20} Sphagnum papillosum^{55}	3.5	18
B300 + 200S	$0^{0}g^{30}B$	Eriophorum spissum^{30} Sphagnum fuscum^{40}	4.3	27
B850W	$0^{0}g^{21}B$	Eriophorum spissum^{15} Sphagnum fuscum^{60}	4.0	34
B1250	$T^{16}g^{21}B$	Larix laricina^{15} Eriophorum spissum^{15} Sphagnum rubellum^{65}	4.3	45
B1250 + 100N	$T^{14}g^{26}B$	Larix laricina^{13} Eriophorum spissum^{20} Sphagnum rubellum^{60}	4.0	32
B1250 + 100S	$T^{11}g^{26}B$	Larix laricina^{10} Eriophorum spissum^{20} Sphagnum rubellum^{60}	4.3	16
G50 + 170N	$T^{13}g^{32}B$	Larix laricina^{12} Carex oligosperma^{25} Sphagnum memoreum^{80}	4.5	10
G400W + 100S	$0^{0}ls^{22}B$	Sphagnum fuscum^{75}	4.0	28
G400 + 200S	$0^{0}ls^{32}B$	Sphagnum fuscum^{20}	3.7	46
G400W + 700S	$0^{0}ls^{17}B$	Eriophorum spissum^{10} Sphagnum fuscum^{40} Sphagnum recurvum^{40}	4.3	33
F700W	$0^{0}g^{45}B$	Carex oligosperma^{30} Sphagnum magellanicum^{40} Sphagnum cuspidatum^{40}	4.3	4
G400W + 100N	$0^{0}g^{32}B$	Carex oligosperma^{30} Sphagnum magellanicum^{60}	4.2	12
T4	$0^{0}g^{31}B$	Carex oligosperma^{20} Eriophorum virginicum^{10} Sphagnum magellanicum^{60} Sphagnum cuspidatum^{30}	4.0	2
T5	$0^{0}ls^{24}B$	Sphagnum magellanicum^{30} Sphagnum fuscum^{30}	4.2	21
T6	$0^{0}g^{27}B$	Carex oligosperma^{25} Sphagnum rubellum^{60}	4.5	11

TABLE 1 Summary of Peatland Classification Data (31E-24)

Peat Thickness

The total average peat thickness of Bear Lake bog is 2.4 m and for the area with more than 1 m of peat is 3.0 m. The maximum thickness found on site G50W + 230S is 5.0 m.

In describing the distribution of peat thickness the bog can be divided into three main sections. The first is at the eastern portion of the bog and consists of the area covered by BO - B900W and the Transects L300W and L850W.

Along the baseline the thickness varies at the bog sites from 2.3 to 3.0 m excluding the Site B500W where it is only 0.2 m. Along the Transect L300 the thickness varied from 0.9 m to 3.0 m except at Site B300W + 200V where it is O m. Total average is 1.6 m.

Along the transect L850W the thickness varied from 1.0 to 2.6 m.

In this section of the bog the surficial layer varied from 0.1 to 0.7 m in thickness, averaging 0.2 m. This is almost negligible as during the bog preparation phase it would be compressed down and mixed up with underlying humified peat. The average thickness of the humified peat for the area is more than 1 m thick.

The second section of the deposit is located in the centre of the bog within the area covered by B1000W to B1770W and the Transect L 1250W.

In this area the peat thickness along the main line varied from 1.0 to 5.0 m excluding sites B 1000W, 1400W and 1770W which are on mineral islands. The total average thickness is 2.7 m.

Along the Transect L1250W the thickness varied from 1.0 to 5.3 m. The average thickness of the surficial layer is 0.3 m which is quite negligible considering utilization of the peat for fuel purposes. The average thickness of the humified layer in the areas of 1 m or more of peat is 3.4 m which is very high as far as the averages are concerned.

The final section is occupied by the western portion of the deposit and covered by the lines FO-F770W, and the transects G50W and G400W.

In this section the average peat thickness is 3.5 m and the average thickness of the surficial layer is 0.3 m for the area more than 1 m thick.

The thickness varies along F-line from 1.8 to 4.9 m, down the Transect G50W from 1.1 m to 4.8 m. The deepest areas are found in the centre of G50 area in the central part of G400 or in both cases at the junction of the Transects and F-line.

The relation between the surface cover and the peat thickness is shown in Table 2, depicting the relationship between the physiognomic group, surface area and peat thickness.

Physiognomic Group	Area (ha)	Avg. Peat Thickness
OgB	221	2.3
TlsB	63	3.7
OlsB	211	3.4
TgB	121	4.3

Table 2. Distribution of Physiognomic Groups.

As a summary, and as far as the thickness of peat is concerned this deposit has a good fuel peat use potential. The best resources are in the eastern, central, and western section in an increasing order. The western one is the most uniform and has the best potential.

Peat Type

The main peat types found in this deposit include: S, SC, CS, SLn, SCLn, SEr, CLnS, CL and CB peat (B=Sb = Bryales) (the dominant types are mentioned first). In the eastern section there is thin surficial layer of sphagnum peat on the surface. This layer is usually less than 0.5 m thick. In addition to this type there are locations where LS peat is found on the surface also. This type is however thicker and reaches down to a depth of over 1 m. Below the sphagnum-dominated peats sedge peats become more prevalent, and they frequently alternate with sphagnum peats which also contain small percentages of sedge.

The shrubby sedge peats are a regular feature at the greater depths also. The substrate is mostly clay along the main line from BOW to B600W and at L300W + 300N and 400N. Elsewhere it is sand and occasionally rock. In the central section around Transect L1250W the peat contain more sedge and also some Eriophorum. Along the main line the sphagnum dominant peats mixed with sedges and shrubs are prevalent to about 3.5 m from the surface. The rest, below this, is sedge-dominated peat. Along the Transect at L1250W sedge-dominated peats are more common. To the south from the base line the peat is predominantly S or CS peat on the surface and SC or C peat at the greater depth. To the north of the base line S and ErS peatsare common on the surface while a greater depth sedge peat becomes incorporated to ErS peats. In the greater depths, from about 2 m down pure sedge or sedge mixed with some sphagnum are predominant. The substrate is clay except in the areas with shallow peat such as B1500W to B1700W where it is rock or sand and at L1250W + 100S or L1250W + 300S to 500S where it is rock. A number of points also have sand or gravel on the base.

The western section is very similar to the central one concerning the peat types. The immediate surface has a variable thickness of sphagnum peat with some Eriophorum and shrub remnants. Above that there is quite commonly a stratum of sphagnum peat with smaller quantities of shrub and sedge material. This stratum reaches down to about 2 m from the surface. At the greater depths the peats are dominated by sedge and occur as alternating lenses of pure sedge, woody and shrubby sedge and sedge mixed with sphagnum peats and as an occasional sedge-Hypnum peat layer.

The substrate is mostly rock with sand and silt at greater depths and along the edges of the deposit. Clay areas are found only at two sites, namely at F500W and G400W + 800N.

There does not appear to be any strong correlation between specific peat types and the surface vegetation except that the sphagnum peats predominate on the surface as could be expected since the entire deposit is a bog formation. This condition indicates that in the past shrub rich bog conditions have

prevailed from the time when the sphagnum peats became prominent. In the earlier phases fen types may have been more common and obviously have alternated with bog types. The paludification may have commenced as the infilling of small ponds and progressed later into a forest as a primary paludification forming eutrophic swamps as the occurrence of Hypnum peats indicate.

Peat Humification

The overall average degree of humification for this deposit is H6.8. The average degree of the surficial peat is H1.9 and its average thickness is 0.3 m.

In the eastern section the average H is 7.0. The average thickness of surficial layer (H1.8) is 0.2 m. It is quite evenly distributed over the entire section and does not show any special concentration thus eliminating horticultural use potential.

The humified peat is composed mostly of on average H8 peats with a few lenses of H6 (5-6) peat interspersed. As far as the peat humification is concerned this section has a fuel peat potential. The central section has an average degree of humification of H6.9. For the surficial layer it is H2.1, with an average thickness of 0.3 m. In this section the surficial peat is quite evenly distributed over the entire deposit varying from 0.1 to 0.5 m in thickness. It reaches a maximum of 0.7 m at the site L1300 + 900N. The peat below this thin surficial layer is almost totally composed of highly humified peat (H8), with only a few lenses of H5-6 encountered, at L1300W + 600N and 900N.

From the use point of view this section, as far as the degree of humification is concerned, is very well suited for energy related purposes.

The final section, the western area, has an overall average degree of humification H6.7. That of the surficial layer is H2.0 with an average thickness of 0.2 m. It is very evenly distributed over the entire area and is largely only 0.1 m thick with a number of areas up 0.4 m thick and it is too thin to offer any horticultural peat potential.

The humified layer in this section has an inverted structure in that below the surficial layer there is one with a high degree of humification (H8) reaching down to the depth of 2.5 - 3.0 m. Below this quite commonly is a stratum of peats with a degree of humification of H5-6 alternating with layers of H8. At F 400W to F700W and at G400W + 700N to 900N there are thin layers of H4 peats next to the base or H5 peats. These lenses are composed of Hypnum peat which tends to be more resistant to decomposition than other types. Also this section has a good fuel peat potential as far as the peat utilization is concerned.

Peat Volumes

The table below summarizes the basic peat volume data for this deposit.

Peatland No. Section: 31E-24	Total Area (ha)	Areas with > 1 m of peat (ha)	Total Volumes (x 10^6 m3)	Volume in area with > 1 m of peat (x 10^6 m3)	Humified peat volume in area > 1 m of peat (x 10^6 m3)
1. Eastern		60		1.106	0.993
2. Central		55		1.572	1.412
3. Western		118		3.234	2.903
Total	616	233	7.821	5.906	5.308

Table 3. Distribution of Peat Volumes.

According to the table the total peat volume of the deposit is 5.906 million m^3 of which 5.308 million m^3 are well humified. This quantity is divided into three sections: Eastern sections contain 0.993 million m^3 or 18.7% of the total, the central

section 1.412 million m^3 or 26.6 of the total and the last section in the western part of the deposit 2,903 million m^3 or 54.7% of the total humified peat.

The total volume of 5.308 million m^3 has a good potential for smaller uses such as home heating purposes.

Potential for Fuel on Horticultural Peat Development

There is no horticultural peat development potential in this deposit as the quantity of good horticultural peat is negligible.

In comparison with all other deposits in Parry Sound District survey areas this deposit has the best user potential for fuel peat development as far as the size of the deposit is concerned.

Each section described above has large enough surface areas, thick enough peat layers and large enough quantities of peat for a properly planned efficient mining operation. The peat types, largely well humified sedge peats, are considered as best for energy uses. They also contain enough sphagnum in their well humified forms to enable also a good sod production which is dependent on both fibers found in sedge peat and humic materials found in sphagnum for good coherence.

The tree cover on this deposit and in most areas to be considered for peat mining is not too heavy or large to pose any serious problems for pre-production preparation.

The access to the deposit is reasonable. A system of access roads would have to be built. The distance to a number of sizeable centres (Parry Sound, Huntsville, Burks Falls) is within a reasonable hauling distance.

Only along the line G50 was stump content calculated (1.5%). The report reflects the fact that this section is a treed area and may give a value higher than average for the entire deposit. However, it is low enough not to cause too much of a problem for the use.

Comments

The entire deposit is located on Crown Land. There appear to be no special ecological features or land use plans for the area. No problems in installing drainage were found. Technically the deposit is easily drained with proper planning.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

Ministry of Natural Resources
Ontario

Hon. Alan W. Pope
Minister

John R. Sloan
Deputy Minister

ONTARIO GEOLOGICAL SURVEY

Open File Report 5488

Peat and Peatland Evaluation of the Parry Sound Area

Volume III

by

Monenco Ontario Ltd.

1984

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V. G. Milne, Director
Ontario Geological Survey

PEAT AND PEATLAND EVALUATION OF THE PARRY SOUND AREA

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31E-33, 34A, 34B.

1983

By

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5.4 PEATLAND 31E-33

Location

Peatland 31E-33 is located in Monteith Township in Parry Sound District about 3 km southeast of Bear Lake and 2 km northwest of Axe Lake and about 2 km east of Horn Lake. This deposit is located approximately at 17-6145029 in U.T.M. coordinates or 45° 24'N latitude and 79° 33' longitude in geographic coordinates. (Airphotos: 77-4517 48-43, 44, 45; 77-4518 96-230, 231, 232).

Access

Peatland 31E-33 is most easily reached from Axe Lake Road which runs parallel to the eastern edge of the bog. The distance between the edge of the deposit and the road varies from 400 m to 800 m, or, on average about 500 m. Several logging roads cut through the forest linking the deposit to Axe Lake Road.

By road, this deposit is approximately 10 km south of Whitehall and 29, 37, 38, 53 and 56 km from Emsdale, Kearney, Burks Falls, Huntsville and Parry Sound respectively. All these communities have the wood products related industries.

Dates of Field Study

The detailed field study was conducted on September 28th and 29th, 1983. The laboratory samples were taken on October 11th and the surface levelling was performed on October 15th.

Topography and Drainage

Peatland 31E-33 occupies a depression. There is a considerable elevation difference between the surface of the deposit and the surrounding uplands on the east side of the peatland. In some places, the slope is quite steep - almost cliff-like. Along the north end, the slope becomes more gradual.

The substrate is mostly sand. In the north, the substrate material is sand and around F200N it changes to silt and continues to be that until FON. At FON (= BOS), clay is found, and from B200S on, the substrate material is once again sand. In general, there are two main surficial gradients. From F600N to the edge of the mineral terrain at F940N, the surface is basically flat; the slope of the surface between F600N and F940N is slightly over 0.1%. Between F600N and FON, there is a 2 metre drop over 600 metres, or about a 0.4% slope. Finally, between BOS and B1100S, there is a 3.3 m drop over 1100 metres or about a 0.3%. Overall, the slope between F600N and B1100S is a little over 0.3%.

A creek, originating in the southern portion of the deposit appears to be an adequate discharge system for most of the deposit. However, presently several beaver dams across it, not only within the boundaries of this deposit but also in the downstream deposits, such as Peatland 31E-34A. These dams severely constrict its conveyance of water into Horn Lake located about 1 km west. These dams have caused severe flooding on the southern portion of the deposit. For example, at B1100S, the floodwaters were at the time of the study about 40 cm deep. The effect of the flooding begins to appear around B300S.

Between F300N and B300S, very little ponded water is encountered. Surface conditions are relatively dry in comparison with the areas on either side. Along this stretch the greatest peat thicknesses were recorded. It should be noted that any rise in the flood level further south will result in surface ponding in this area.

A cedar swamp starts approximately at F400N and continues throughout to the edge of the bog to F940N. The drainage is quite poor in this area due to the very gentle gradient and the lack of a natural discharge system.

Some surface runoff from the surrounding uplands does drain onto the deposit.

Area and Shape

The total area of this peatland is 198 ha. Of this 56 ha contains a peat layer thicker than one metre. In the area between F300N and B300S the peat layer is nearly 3 metres thick. This portion of the deposit has some resource potential.

The Peatland 31E-33 is "crescent-shaped". It is oriented more or less in a north-northwest/south-southeast direction. It is approximately 3 km long and is on average between 500 and 600 metres wide. Within its boundaries there are also 10 mineral terrain islands.

Peatland Vegetation

The major physiognomic groups found on this deposit are treed lowshrub bog (TlsB), TlsB (F) (F=flooded) and open graminoid bog (OgB (F)) as shown in Table 3.

The OgB(F) type is found only at the southern end of the deposit which is flooded by the beaver dams. This type covers 11 ha or 6% of the total area and is of minor importance only.

The TtsB(F) ($T^{18}ts^{30}B$) covers 23 ha or 12% of the northern part of the deposit from F 500N to F940N and along Transect G500N. It is characterized by large trees up to 10 m high and a moderately high groundwater table caused by beaver flooding. This area actually has characteristics of a swamp.

The second and the major group, TlsB ($T^{12}ls^{25}B$) covers the area south of F400N to the open OgB area in the south. The total coverage is 164 ha or 82%.

The southern end is similar to the northern area covered by TlsB(F) except that the flooding is more pronounced and the trees are showing signs of dieback due to the flooding.

The northern end is drier and shows signs of flooding only at its southern extremities. A detailed study of vegetation was carried out at the sites B0S and B200S. On both these sites Larix laricina was the dominating tree species while the understorey was composed of a number of shrubs covering 30 and 46% of the ground respectively. This area had been invaded by

the beaver and had a number of beaver channels and ponds with open water. Further north the tree cover is slightly smaller in stature and would cause less problems than in the southern portion to a utilization plan.

The peatland classification data is summarized in Table 1.

On the whole, the entire deposit is covered by a large stand of sizeable trees and consequently would not be suitable for peat production because of the clearing problems.

Survey Point	Classification	Dominance Type	Surface water pH	Avg. depth to water
(FON) BOS	$T^{11}ls^{30}B$	Larix laricina^{10} Chamaedaphne calyculata^{10} Sphagnum recurvum^{60}	4.3	22
B200S	$T^{12}ls^{46}B$	Larix laricina^{10} Myrica gale^{35} Sphagnum girgensohnii^{70}	4.2	19

Table 1. Summary of Peatland Classification Data (31E-33).

Peat Thickness

The total peat thickness varies considerably on this deposit from area to area. In the northern portion of the deposit approximately from F400N to F940N, the thickness varies from 0.9 to 2.2 m. Generally, there is very little surficial unhumified peat. A surface layer of 10 cm was recorded only at several sites.

Between F300N and B300S the thickness ranges from 2.3 to 4.1 m. A slightly thicker unhumified peat layer exists along this stretch varying from 0.2 to 0.4 m with an average of about 0.3 m.

South of B300S, the thickness varies from 0 m, where the base line comes close to the edge of a mineral island, to 1.8 m. Excluding the 0 m thickness, the peat thickness ranges from 100 to 180 cm.

As a whole, the average thickness across entire Peatland 31E-33 is 1.8 m. In the area containing a peat layer greater than one metre in thickness, the average thickness is 2.2 m.

The average peat thickness in each physiognomic group has been summarized in the following table.

Physiognomic Group	Area/(ha)	Average Peat Thickness
TlsB	164/82	2.4
TtsB	23/12	1.6
OgB(F)	11/6	flooded, not measured

Table 2. Distribution of Physiognomic Groups.

Within Peatland 31E-33, the portion of deposit situated between F300N and B300S has the greatest resource potential. The average thickness in this portion is 3.1 m.

Peat Type

The main peat types are S, SC, SLn, SCLn, CSLn and CS or various combinations of them (the dominant type is mentioned first). Most often there is a thin layer of sphagnum peat on the surface only from F600N to B400S and along the Transect 6500N. Sphagnum peats mixed with sedge predominate to the base of the deposit at F600N to F940N and SLn peat from B400S to B1300S. From B700S to B1300S they are underlain by a thin layer of CS peats. The rest of the deposit is mainly composed of sedge peats mixed with varying quantities of wood and sphagnum. The large quantities of wood in peat and the prominent slope of the base of the bog indicates that most of this deposit is a result of the primary forest land paludification.

The peat types are suitable for fuel peat use but the wood content stump content up to 4% does not favour mining.

Ooze was found as a thin 30 cm layer at F500N to F700N, G500N + 100W to G500N +200E and also at B200S where it was 1.6 m thick.

Peat Humification

The total average degree of humification is H5.9, and H1.3 for the unhumified peat. The average thickness of the unhumified layer is 0.2 m and consequently, this deposit does not have any horticultural peat potential.

The humified peats are found in a number of lenses of H7 and 8 as the most common ones with H4, 5 and 6 less frequently.

Peat Volumes

Peat volume data has been summarized in table below.

Peatland No.	Total Area (ha)	Total Volume (x 10^6 m3)	Volume in area with >1 m of peat (x 10^6 m3)	Humified peat volume in area with > 1 m of peat
31E-33	198	1.773	1.065	1.012

Table 3. Distribution of Peat Volumes.

The total peat volume in this deposit is 1.773 million m^3. A total of 1.065 million m^3 are contained in the area with 1 m or more of peat. The volume of humified peat in this area is 1.012 million m^3. The rest (0.053 million m^3) is unhumified and due to its small volume does not offer any horticultural use potential.

The humified peats are located in the area extending from B1300S to B0S and further on to F800N. This section is only about 300 m wide except at the northern end (Transect G500N) where it is almost 500 m wide. The majority of this volume is within the area with 2 m or more of peat reaching from B350S to F700N. Due to this restricted mineable area the use potential, as far as the volume combined with the surface area is concerned, is limited. Volume alone would indicate some potential for a small-scale mining operations.

Potential for Fuel or Horticultural Peat Development

Peatland 31E-33 has no potential for horticultural peat development and with regard to general development the potential is only moderate.

The fuel peat development potential, at this deposit is lessened by the heavy tree cover and a high stump content. The northern portion of the deposit, besides being quite heavily treed like most all of the other parts also has a high stump content reaching in this area about 4% while further south, between F300N and B300S it is just under 2%. No stump content calculations were made south of B300S due to the shallowness of the peat layer. The significance of these stump contents is as follows. If the stump content of a peatland is greater than 2%, milled peat operations are not considered physically or economically viable. If the stump content is 4% or greater, additional operating costs will be incurred due to more preparation having to be made such as more passes by stump removers and surface profilers. Also, wear and tear on equipment will be greater. Development of peatlands of this nature (i.e. stump content greater than 4%) is generally avoided if possible.

Although the tree cover (average 14%) and stump content are not favourable, the potential for a small peat mining operation exists based on the total peat volume of 1.773 million m^3. This is an adequate volume of peat if a small scale peat mining operation is being considered. Sod peat production should still be possible. Also, the sedge peat which predominates in this peatland has on average the degree of humification of H5.9 - well within fuel peat range. It is expected that if the beaver dams are removed and minor channelization of the stream at the south end of the deposit is performed, drainage of the deposit by ditching will be possible. Also, the access is good relative to other surrounding peatlands and is well within economical hauling distances of the population centre with industries as possible uses of fuel peat.

With the exception of Lot 6 in Concessions IV and V, which is Crown Land, the deposit in Concessions III through V

is all private (patented) land. The District Office of the Ministry of Natural Resoures has no specific ecological concerns on this peatland area.

Comments

There are no known data of previous resource assessment on this deposit which is largely privately owned except the Lot No. 6 Concession IV and V which are on Crown Land.

There is no specific land use plan for this location indicated by the District Office of the Ministry of Natural Resources.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.5 PEATLAND 31E-34A

Location

Peatland 31E-34A is located in Monteith Township in Parry Sound District about 2 km southeast of Horn Lake and 3 km southwest of Axe Lake. This peatland is located approximately 17-6135026 in U.T.M. coordinates or 45° 23'N latitude and 79° 33'W longitude in geographic coordinates. (Airphotos: 77-4516 85-56, 57, 58).

Access

Peatland 31E-34A is accessible only from Axe Lake Road. The west side can be reached by logging roads which start at Axe Lake Road 100 m west of the intersection of Axe Lake and Bear Lake Roads. The distance between Axe Lake Road and the edge of the deposit is a little over 400 m.

By road, this deposit is approximately 14 km south of Whitehall and 33, 41, 42, 57 and 52 km from Emsdale, Kearney, Burk's Falls, Huntsville and Parry Sound respectively. Wood products industries are located in all of these communities and could be considered as potential users of fuel peat.

Dates of Field Study

The detailed field study was conducted on September 27th, through to the 30th as well as on October 3rd, 1983. The laboratory samples were taken on October 4th and the surface levelling was performed on October 3th and 4th.

Topography and Drainage

Peatland 31E-34A is on almost entirely surrounded by rocky uplands. In the northwest, the land gently slopes down to the peatland from Axe Lake Road. However, along the northeast edge of the deposit, for example, at the northern end of the sideline

at B900E, the surrounding land is quite steep and a sizeable elevation difference exists between the bog surface and the surrounding terrain. Along the eastern and southern extremities of this deposit, the nearby uplands rise gently from the edge while the uplands on the western side of the peatland are rather steep.

In general, this deposit is quite flat and over the length of its 1600 m baseline, the surface drops less than one metre (0.8 m). Along the sideline at B400E, the surface dips towards the baseline from both sides. North of the baseline, the surface dips downwards towards the south at a slope of 0.3% while south of the baseline, it also slopes downwards towards the north at a slope of 0.2%. Hence, along this north-south axis centred about the baseline, the surface tends to be slightly concave.

Further east, along the sideline at B900E the surface slopes gradually downwards when proceeding northwards along the transect. From L900E + 200S to L900E + 700N the surface drops approximately 1.2 m which represents a slope of about 0.1%. Although the deposit is basically flat, it has relatively few drainage problems. Some surface ponding exists at both the northern and southern ends of the sideline at B900E, however, the water is not very deep. The surface ponding observed at L400E +150N was created by a nearby beaver dam. This dam is situated on the creek which receives effluent water from Bog 31E-33 and eventually discharges into Horn Lake. This beaver dam is causing localized flooding. Drainage conditions certainly can be improved by removing the dam. The natural drainage system appears to offer an adequate discharge system for the deposit if the beaver dam were to be removed. Minor channelization of the creek would further improve the drainage. It should also be noted that the present state of the natural drainage coupled with the relative flat relief of the deposit would suggest that during the spring runoff there may be some flooding.

Within the boundary of the deposit there is one small lake in the southwest section. It is quite small and covers only 1 ha. From airphoto interpretation it appears that this lake influences very little the drainage patterns on the whole.

The most common underlying substrate is sand except along the baseline between B800E and B900E and from B1200E to the end of the baseline (B1575E) where the substrate material is silt.

Area and Shape

The surface area of this peatland is 159 ha of which 83 ha contain a peat layer thicker than one metre. The largest peat quantities are located in the area approximately bounded by B700E, L900E + 600N, B1500E and L900E + 200S. A much smaller area is situated on the west side of the mineral island located between B506E and B583E. This lesser area extends from B300E to beyond B400E and from L400E + 155N to at least L400E + 400S.

The deposit is basically round with several peninsulas of mineral terrain jutting into it. It has several mineral islands which cover a total area of 10 ha. The maximum length is approximately 1.8 km and the maximum width is about 1.8 km.

Peatland Vegetation

This deposit is a bog with the main phsiognomic groups being open graminoid bog (OgB), open lowshrub bog (OlsB) and treed tallshrub bog (TtsB) (Table 2). The detailed vegetation analysis was carried out at B200E, B400E, B900E, B1100E, L400E + 100S, L900E + 200N. OgB ($O^4g^{43}B$) covers only about 8 ha or 5% of the total deposit along the southern branch Transect L400E. The vegetation in this section is characterized by scattered (1%) Larix laricina, and also shrubs such as Amelanchier bartramiana, Nemopanthus mucronata and Chamaedaphne calyculata among others and Carex paupercula (40%). The water table was at the surface with 15% cover of open water. (Vegetation analysis on site L400E + 100S). Hummocks were non-existent. The surface water pH was 4.3. Due to flooded conditions dieback of trees is evident.

Approximately 95 ha (60%) of the southern and western part of the deposit are covered by OlsB type ($O^3ls^{34}B$). This cover extends south from about L400E + 150N to L900E + 250N to L1150E

(see the peatland classification map). The average tree cover of 3% reflects the variation between the low values west of the island (site B500E) (0-1%) and the higher ones (5% east of the island.

The vegetation in these western portions (B200E + B400E) has tree cover value of 1% (Larix laricina) and has a shrub cover of 23% and 20% respectively. Shrub species are the same as in almost all the deposits in Parry Sound District (e.g. Chamaedaphne, Kalmia spp., Ledum). The dominant sedge is C. paupercula and the dominant moss S. nemoreum.

East of the island the tree cover becomes noticeably denser, being commonly 5-6%.

The dominant tree species again is Larix laricina (canopy up to 5 m) with smaller quantities of Picea mariana also present.

The shrub species are the same as mentioned earlier with the coverage percentages in the range of about 20 - 25%.

Sedges include also C. oligosperma, and C. trisperma in addition to C. paupercula. Eriophorum virginicum also is common. Of the mosses S. megellanicum is the most prominent.

The remaining northern and eastern section is covered by TlsB ($T^{13}ls^{43}B$). It is characterized by dense tree cover on occasion and the abundance of large shrubs. Also, the section of the peatland north of the mineral island in the middle of the deposit has very dense alder growth and is not suitable for peat production. This section was not studied due to access problems caused by flooding and the older thicket. As a whole this deposit, as far as vegetation cover is concerned would have a very low use potential due to the abundant tree cover in its eastern part. The classification data is summarized in Table 1.

Survey Point	Classif-ication	Dominance Type	Surface Water pH	Average Depth To Water (cm)
B200E	$0^{1}1s^{23}B$	Chamaedaphne calyculata^{15} Sphagnum nemoreum^{50} Sphagnum magellanicum^{30}	4.8	19
B400E	$0^{1}1s^{20}B$	Chamaedaphne calyculata^{15} Sphagnum nemoreum^{80}	4.3	19
B900E	$0^{6}1s^{26}B$	Chamaedaphne calyculata^{15} Sphagnum nemoreum^{60} Sphagnum recurvum^{30}	4.0	26
B1100E	$T^{20}1s$	Larix laricina^{10} Chamaedaphne calyculata^{15} Sphagnum magellanicum^{40}	4.3	12
L400E + 100S	$0^{1}g^{40}B$	Carex paupercula^{40} Sphagnum cuspidatum^{70}	4.3	10
L900E + 200N	$0^{5}1s^{25}B$	Chamaedaphne calyculata^{15} Sphagnum magellanicum^{40} Sphagnum recurvum^{40}	4.5	29

Table 1. Summary of Peatland Classification Data (31E-34A)

Peat Thickness

The peat layer thickness of this deposit can be discussed in terms of the layers on either side of the mineral island situated on the baseline roughly between B506E and B582E. It should be noted that although a surface layer exists at many of sites, the thickness does not vary much from 30 to 40 cm.

On the west side of the mineral island from B0E to B506E and the points along the sideline at B400E and several traverse points, the peat layer thickness varies from 0.7 m at B500E to 4.0 m at L400E + 100S and also at Traverse Point #3. The unhumified layer thickness in this portion of the deposit ranges from 30 to 40 cm with the exception of a 90 cm layer at L400E + 400S.

On the other side of the island, peat thickness varies from 0.1 m and 1.0 m at L900E + 730N and B600E respectively to 4.4 m at L900E + 100S. The surface layer thickness on this side of the deposit ranges from 0.1 m (at two sites) to mostly 0.3 and 0.4 m. Between L900E and 400N + 0 L900E + 700N there is no surface layer.

As a whole, the average peat thickness across the entire Peatland 31E-34A is 1.8 m. In the area containing a peat layer greater than one metre in thickness, it averages 2.2 m. The average thickness of surficial layer is 0.3 m.

The average peat layer thickness in each physiognomic group has been summarized in the following table.

Physiognomic Group	Area (ha%)	Average Peat Depth (m)
TtsB	95/60	2.6
OlsB	56/35	2.2
OgB	8/5	2.9

Table 2. Distribution of Physiognomic Groups.

The area of greatest resource potential in Peatland 31E-34A appears to be located east of the mineral island. Within a 200 m radius of B900E, the average peat thickness is 3.1 m.

Peat Types

The main peat types found in this deposit include S, SC, SCLn, and CSLn peats (dominant peat type is mentioned first).

The sphagnum peats are found on the surface across the deposit either as almost pure sphagnum only or mixed with shrubby or sedge remnants (SLn, SC). On the western part of the deposit

from BOE to B500E and along the Transect L400E, the sphagnum-dominated peats reach down from about 0.5 m to a little over 1.0 m. The first 0.5 m is relatively pure sphagnum peat. Below that, the proportions of Ln and C increase and at the greater depths the sedge-peats (CS) predominate. The peat in this section is underlain by ooze and the substrate is sand.

To the west of the island from B600E on and along the Transect L900E sphagnum peats are dominant to greater depths especially along the baseline where they reach down to about 2.5 m. This is also the case along the northern arm of Transect L900E. In the eastern end of the deposit sedge peats are more prominent as well as along the southern arm of the Transect L900E. As a whole,the remnants of shrub are quite evenly spread through the entire peat stratum. In the eastern section as well, the peat is underlain by ooze and the substrate is sand with silt at a few locations. It appears that this deposit has developed as a result of the paludification of a small brook which had deposited oozy material on the base of the deposit in the early stages of the paludification as a result of periodical flooding. It is possible that the drainage channel formed on this deposit today is the same as was there in the early stages of the paludification. As far as the peat types are concerned this deposit has peat suitable for fuel peat purposes. The pure sphagnum stratum is too thin for horticultural use.

Peat Humification

The overall average degree of humification is H5.2 and that for the unhumified layer it is H1.3.

The surficial layer is only 0.3 m thick and quite evenly distributed over the entire deposit without any concentrated thicknesses. Thus, consequently, this deposit does not have any horticultural peat potential.

The humified peat layer is composed of a number of lenses from H7 to H8 of varying sizes. There are relatively large lenses of H4 and H5 throughout the deposit. In several locations they are below more humified peats of H6 to H8, e.g. along the

Transect L900E and form the basal peat strata. Often H5 peats can be also used for horticulture but they should be composed of sphagnum and mixed with others of lower degrees of humification. In this deposit H4 and H5 peats are largely sedge-dominated and thus regarded as fuel peats. The total volume of peat with a degree of humification of H7 or more is 1.419 million m^3 (Table 2). As far a the degree of humification is concerned the peat of this deposit is useable for fuel purposes.

Peat Volumes

Peatland No.	Total Peatland Area (ha)	Total Peat Volume ($X10^3$ m^3)	Peat Volume in Area with > 1 m peat ($X10^3$ m^3)	Humified Peat Volume in Area with > 1 m of Peat (H4-10) ($X10^3$ m^3)
31E-34A	159	2.048	1.668	1.419

Table 3. Distribution of Peat Volumes.

The total peat volume is 2.048 million m^3. Of this total 1.668 million m^3 are located in the area of the deposit with 1 m or more peat in the area that can be considered mineable. A total of 1.419 million m^3 are humified peats and the rest (0.249 million m^3 unhumified peats). Due to the small quantities of the unhumified peats there is no real use potential. The quantity of humified peat gives this deposit a potential for fuel peat mining. However, this is diminished by the irregular shape of the area with 1 m of peat and by the fact that the area with 2 m or more of peat is in two sections. In order to have a well designed mine 2 m or more of peat is required over a larger area. One metre minimum thickness requirement is for the equipment and draiage purposes and alone will not support a viable mine.

Potential for Fuel or Horticultural Peat Development

Peatland 31E-34A has some potential for small-scale fuel peat development however, it has none for horticultural peat development.

The part of the deposit west of the mineral island between B500E and B582E is not very heavily treed and is from this point of view ideal for peat extraction. The stump content for this area is 1.8% and suitable for a milled peat mining operation.

On the other side of the mineral island, tree cover is much heavier. For example, at the end of the northern stretch of the sideline at B900E and the eastern end of the baseline from approximately B1200E eastwards it is up to 10-20% at a few locations. The stump content of up to 5% would make it unfeasible to consider a milled peat operation in this area. This area of the peatland does however, have a considerable area with a peat layer thickness in excess of one metre and humified peats dominate and the peat is most suitable as fuel peat.

Looking at Peatland 31E-34A as a whole, its peat volume of 1.419 million m^3 can support a small peat mining operation. Certainly with removal of the beaver dam and some channelization of the creek, drainage would improve. As well, good access relative to several surrounding peatlands and its location well within economical hauling distances of population centres and the industries located in them increases its value for development.

Comments

Peatland 31E-34A is mostly on private land. The portion of the peatland in Concession I is mostly Crown Land with the exception of Lot 11 which is private land, however, all of Concession II is private land. The District Office of the Ministry of Natural Resources does not have any wildlife or parkland concerns for this peatland area, however, it is within an area designated as a "Moose Concentration Zone".

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.6 PEATLAND 31E-34B

Location

This deposit is located in Cardwell Township in Bracebridge District, with a small portion of its northern tip in Monteith, Township Parry Sound District. The northeastern section of the deposit is about 400 m east of Meadow Lake. The UTM coordinates are 17-6135024 or in geographic coordinates 45° 22'N latitude and 79° 33'W longitude Airphotos: 77-4515 83-228, 229, 230)

Access

There is no direct access by road to this deposit. The closest road passes by the northern end of Meadow Lake about 500 meters east of the northeastern tip of the bog. This road is a continuation of Axe Lake Road which is passable by car within about 2 km of the bog. The rest of the distance is passable only by 4 wheel-drive vehicles. The total distance from Whitehall on Highway 518 is about 19 km. The distance to Parry Sound is about 57 km.

Dates of Field Study

The detailed field study was conducted from September 22nd through to 25th, 1983. The laboratory sample extraction and the surface levelling were performed concurrently on September 26th and 27th.

Topography and Drainage

The deposit lies in a relatively flat and wide depression which is contiguous with other peat-filled depressions to the northeast and east. The surface of the deposit lies between 328.5 to 330.5 m a.s.l. The surrounding uplands are quite low-lying and relatively featureless. Along parts of the northern and southern lobes, the rock knob mineral terrain rises

quite steeply from the deposit to evevations of almost 335 to 340 m a.s.l. While the terrain viewed at this scale is rugged, these small elevation differences on a large scale are insignificant. However, this typical Precambrian topography limits also the size of this deposit and its drainage.

The elevations along the baseline vary between 328.5 and 329.5 m a.s.l. There is no considerable gradient along this line. Instead the surface fluctuates up and down reaching the lowest values of about 328 m a.s.l. at Points B1700S to B1900S. The highest elevations are at the southern end of the baseline (329.5) as well the northern and (329.4) near the mineral terrain. From the northeastern corner of the deposit, the elevations drop about 4.6 m to Meadow Lake providing the necessay gradient for drainage.

At L1000 S + 870E the surface elevation is about 330.3 m a.s.l. From here the surface gently descends towards the north and west to about 289.5 m a.s.l.

The elevation map indicates that while there is very little gradient on the bog itself, adequate drainage can be obtained with a proper channelization towards Meadow Lake and through a channel running off the southeastern corner as indicated by the map.

Presently the southwestern end of the deposit is flooded due to a beaver dam. Otherwise there are no other ponds on the deposit. Parts of the northwestern corner are also partially flooded by beaver dams, leaving the area around the origin of the baseline quite wet and in fact "quaking" due to the high water level. The water is drained into Meadow Lake by a small brook partially blocked by these same beaver dams.

Area and Shape

The total surface area of the deposit is 173 ha. Of this, 91 ha have a peat layer of 1 metre or more in thickness.

The largest uniform areas are located in the northwestern portion of the deposit around B0W to B1100W and along the Transect F from F0N - F600N. The rest of the deposit is composed

of smaller embayments and narrow strips located around a number of mineral soil islands, which occupy a total area of about 8 ha.

The shape as shown by the enclosed maps is quite irregular, a fact that would detract from some of the deposit's value for a peat mining project.

Peatland Vegetation

The distribution of physiognomic groups is shown in Table 1. This deposit is a bog and covered by three major physiognomic groups: open graminoid bog (OgB), open lowshrub bog (OlsB) and treed lowshrub bog (TlsB) covering 62 ha (36%) and 40 ha (28%) and 65 ha (38%) of the total area respectively. On the southern part the deposit there is a pond created by a beaver dam. Its total area is 6 ha (3%).

The OgB cover (O^2 $g^{32}B$) is divided into two sections. One stretches from B100S down to B2200S which is at the edge of the beaver pond. The other section is located on the northwestern part of the bog between B280S to B520S approximately and along the edge of the deposit towards its centre.

The first section is characterized by flooded conditions over most of the area caused by a beaver dam blocking the southern discharge channel. The tree cover is characterized by Larix laricina and Picea mariana. The most common shrub is Chamaedaphne calyculata. There are a number of graminoid species present such as Carex paupercula, C. rostrata, C. canescens, and Eriophorum virginicum. Among other plants Thelypteris palustris and Hypericum virginicum are common.

The most common sphagna are Sphagnum magellanicum and S. cuspidatum.

Due to the flooding, from B1300S on towards the south there are large numbers of dead trees and surface ponding is a common occurrence. The surface water pH values are about 4.5. As far as the depth to the water table is concerned, in many places it is zero but increases up to 20-30 cm towards the north occasionally. This, however, is influenced by the beaver dams and rainfall.

The hummock - hollow topography is not too pronounced. The hummocks are mostly only 20-30 cm high and cover 30 to 60% of the area.

The northern area where OgB is found is also flooded but to a lesser degree than the southern end of the bog. In this area the trees are smaller and there is no dieback visible. The surface vegetation is comprised of more shrubs in parts of this section than that in the south. The shrub cover is about 12% while of the graminoid/herb cover is 16% so that this section approaches OlsB type.

Here, too, beaver dams have caused inundated conditions especially towards the north where a beaver dam has blocked the discharge into the lake. A surface water pH of 4.2 was measured in this area. The water table is at or near the surface. The hummocks are very low or non-existent. As well, in this area, the trees are smaller and together with relatively smooth surface topography these surface conditions would not pose any serious preparation problems if utilization were considered.

The and northern portions of the bog are covered by OlsB-type vegetation (O^2 $ls^{29}B$). In this area Larix laricina and Picea mariana are the predominant tree species as well. The understorey is composed of the common shrubs found on almost all of the deposits in the district Chamaedaphne calyculata, Ledum groenlandicum, Vaccinium macrocarpum, V. angustifolium, Kalmia polifolia, Andromeda glaucophylla, Nemopanthus mucronata). The graminoid/herb vegetation includes e.g. Carex oligosperma, Eriophorum virginicum and Sarracenia purpurea. The most common sphagnum moss is S. magellanicum. The density of tree cover is variable and is quite low (1%) in.

The average density of tree (2%) cover and the size of the trees (3-5 m) would not impose any serious problems if utilization were considered.

The surface water pH values range from 3.8 to 4.0. The average water varied between from a few centimetres to 20 to 30 cm. Hummock - hollow topography was quite smooth. Often, the hummocks were only 20 cm high and hardly could be called hummocks due to their flat nature.

The OlsB (F) cover was found on a small area covering 15 ha of the deposit on its northwestern tip and in a 25 ha section in the centre of the deposit. The northern section is heavily flooded by the beaver dams which impede drainage towards Meadow Lake. The openness of the cover is possibly secondary at this location. Flooding may have caused the trees to die in this once tree-covered area. Also, the treed hummocks indicate that with improved drainage this section would quickly acquire a tree stand.

The OlsB cover in the central part reaches from about B520S to B1050S and along the transit L1000S + OE to + 500N and along the transect L1000S + 0E + 0 + 500N and F-line to F280N. The ground vegetation in this section is very similar to that of TlsB area with the main difference being the tree cover which is 2% in the former and 13% in the latter.

The entire deposit's vegetation shows the effect of the flooding to a certain extent in that the tree cover tends to be disappearing. This of course is part of the sucession in an area where the climate is gradually becoming more humid but, in the Parry Sound Area this is commonly caused by beaver activity. The peatland classification data has been summarized in Table 1 below.

Survey Point	Classif-ication	Dominance Type	Surface Water pH	Average Depth To Water (cm)
B500S	OgB	Sphagnum magellanicum^{70} Sphagnum nemoreum^{30}	4.2	10
B1700S	OgB	Chamaedaphne calyculata^{10} Sphagnum cuspidatum^{40} Sphagnum magallanicum^{30}	4.5	18
F400N	TlsB	Larix laricina^{10} Chamaedaphne calyculata^{15} Sphagnum nemoreum^{25}	3.8	12
F800N		Picea mariana^{10}	4.0	20
T1400S + 50E	OgB	Sphagnum cuspidatum^{30} Sphagnum magellanicum^{30}	4.5	9

Table 1. Summary of Peatland Calssification Data (31E-34B)

Peat Thickness

The overall average thickness of peat in this deposit is 2.2 m. The average for the area containing one meter or more of peat is 2.8 m. This portion covers about 91 ha.

The overall average thickness of the surficial layer is 0.3 m and for the area with 1 m or more of peat it is 0.5 m. The former value is based partly on an estimate while the latter one is based on accurate measurements and can be used for determining the volume of humified peat in the area of bog with one metre or more of peat. The thickness of the surficial layer varies between 0.0 m along the L150 W-transect to 0.8 m to 0.7 m along the B155S to B900S and along the Transect L1500S and also at the

southern end of the deposit from B1600S on. Elsewhere it varies mostly between 0.3 and 0.4 m. The locations with the thickest surficial layer occur in area flooded by beaver dams. This flooding may have fluffed up the peat and "artificially" increased its thickness. With improved drainage the peat would compact and the thickness would be reduced. Thus, in fact the surficial layer of this deposit is insignificant as far as horticultural peat quantities are concerned. Also its thickness would not pose much of a problem if a fuel peat operation were considered.

The area with a peat layer of one meter or more in thickness is distributed quite evenly over the entire bog area. The peat thicknesses of 2 m or more are concentrated in an area around the northwestern and northern lobes of the deposit and individual locations at the southern end of the bog. Peat layers of 5 m in thickness found at L500S + 100W, and L1000S + 700E.

The average thickness in each physiognomic group, is summarized in the table below. The greatest average peat thickness amongst physiognomic groups is 2.3 m for the OgB group. Although the TlsB group covers 38% of peatland, the average peat thickness is only 1.8 m. The OlsB group which covers the smallest surface area of the peatland has an average thickness of 2.1 m.

Physiognomic Group	Area (ha/%)	Average Peat Thickness (m)
OgB	62/36	2.8
TlsB	65/38	3.1
OlsB	40/23	2.2
W	6/3	-

Table 2. Distribution of Physiognomic Groups.

Peat Type

Peat types in this deposit as in most others in Parry Sound District are composed mostly of SC and CS peats with lenses of SCL and CSL peats (dominant peat types mentioned first). The wood-component usually is derived from shrubs. Inspection of

the profiles indicates that sphagnum peats are dominant in the surficial layers while the sedge peats are more prevalent in the greater depths throughout the deposit. Also, ooze is found in a number of locations, mostly in the areas of the greatest depths such as along Transect L500S and in the northern part of F-line. The occurrence of ooze in the depressions as well as the location of Deavy Lake at the end of F-line coupled with a thick layer (4.6 m) of peat right at the lake indicate that portions of this deposit are the result of the filling in of small bodies of water by peatland vegetation.

The distribution of sedge and shrubby peats at the greater depths also indicates that fen and shrubby bog conditions have prevailed either concurrently or alternately during the bog development.

The apparent larger percentage of sphagnum peat in the surficial layers may have been caused by a recent flooding of the deposit. Conversely, its small percentage at the levels where the degree of humification is higher may have been caused by the faster degradation of sphagnum in relation to that of sedges. Sedge peats may also be overrepresented in the peat analysis since they are more readily identifiable in more humified conditions than sphagnum.

As far as the peat types are concerned, this deposit contains peats which would be more suitable for energy than for horticultural uses.

Peat Humification

The overall average degree of humification in this deposit is H5.3. That of the surficial layer is HO.9. As was earlier mentioned, the average thickness of the surficial layer of the entire bog area is about 0.3 m and the area with more than 1 metre of peat 0.5 m varying from 0 to 0.8 m. In general, this unhumified layer is not a serious problem if the deposit is going to be used for fuel peat mining. The majority of the peat is well humified. The humified layer is quite evenly H5 or more. The H4 lenses are found only in limited quantities and they are small in

areas and may only be about 0.5 m in thickness except at B500S where there is a H4 lens about 1.8 m thick as well as that at site F900N of about 1.6 m thick. The rest of the peat is well humified and composed of layers usually increasing towards the base although quite commonly there are a number of layers of various degrees of humification alternating so that e.g. H5 is often below H6-8.

As far as the fiber content is concerned there are no significant quantities of sapropels in this deposit although occasionally thin layers of peat with H8-9 are encountered with almost no fiber content. These, however, are of no significance due to their scattered nature.

There are no specific concentrations of humified peats except that the largest volumes are found in the areas where the greatest thickness occurs such as along B100S to B1200S and along L500S and around site L1000S + 700E as well as at the northern end of the F-Line.

Peat Volumes

The peat volumes are summarized in the table below.

Peatland No.	Total Area (ha)	Total Volume (x 10^6 m3)	Volume in area with >1 m of peat (x 10^6 m3)	Humified peat volume in area with > 1 m of peat (H4-10)
31E-34B	173 ha	2.652	2.242	1.787

Table 3. Distribution of Peat Volumes.

The total peat volume of 2.652 million m^3 is quite small when considering any large scale use of peat. It is distributed quite evenly across the area with 1 m or more peat. There are smaller pockets of larger volumes in scattered locations along the baseline from B100S to B600S, from B900S to B1200S, and the L500S-transects as well as on smaller locations along F-line as the attached map reveals. However, due to the limited surface area these concentrations are of no real importance. If mining

is considered this bog contains a volume of only 1.787 million m^3 of fuel peat in the area of 1 m or more of peat. This would support a 100 MW power station even at a 100% recovery rate for only about 5 years. For a smaller scale operation, or used together with a larger numbers of deposits, this one contains enough fuel peat as far as the volume is concerned to warrant its consideration for mining.

Potential for Fuel or Horticultural Peat Development

As a summary for user potential the following can be stated based on the description in the previous chapters.

It appears that this deposit is drainable although the gradient within the bog itself is very gentle. However, a good gradient exists from the edge of the bog towards Meadow Lake in the northwest. Also the southeastern end has an outlet that could be used for drainage. However, as far as the peat types, humification and quantities are concerned there is no potential for horticultural peat mining (H1-3 volume only 0.435×10^6 m^3).

Fuel peat utilization potential exists. However, hauling distance (57 km for Parry Sound) to the user might be too long and the bog could only produce about 5000 tonnes of peat (50% moisture content) a year. This alone would be too small for any large scale project. Also due to total mining area being only 91 ha, the small quantity (1.187×10^6 m^3) of fuel peat, and the irregular size of the deposit, the mine life might be quite limited.

Thus, for any larger scale operation this deposit should be considered only in connection with a number of others in the same district.

As far as other factors such as the vegetation and animal life and other environmental factors are concerned, this deposit does not show any special features over the others in the district and thus per se does not merit any special environmental protection measures.

The 3.5% tree cover on the bog is not a hindrance to peat mining. However, 2.8% stump content approaches values hampering the operating of various pieces of equipment.

By improving the drainage it might be possible to consider this deposit for in situ uses such as forestry. This deposit displays minerogenic conditions especially along F-line and could be considered as a suitable candidate for peatland drainage for forestry purposes.

Depending on priorities, leaving the deposit in its virgin condition for wildlife is also a worthwhile consideration.

The overall user potential is medium if considered together with other deposits and low if considered alone.

Comments

There does not appear to be any previous assessments of this deposit.

This deposit is on Crown Land. The Bracebridge District - Ministry of Natural Resources office has designated this peatland area as a moose concentration area. The Parry Sound District office has no particular designation for the portion of the deposit in Monteith Township.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

Ministry of Natural Resources
Ontario

Hon. Alan W. Pope
Minister

John R. Sloan
Deputy Minister

ONTARIO GEOLOGICAL SURVEY

Open File Report 5488

Peat and Peatland Evaluation of the Parry Sound Area

Volume IV

by

Monenco Ontario Ltd.

1984

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Ontario Geological Survey

PEAT AND PEATLAND EVALUATION OF THE PARRY SOUND AREA

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31E-55; 41H-11, 17, 20.

1983

By

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5.7 PEATLAND 31E-55

Location

Peatland 31E-55 is located in Georgian Bay Township in Parry Sound District about 1 km northwest of Silver Sands Lake and 3 km south of the village of MacTier. This peatland is located approximately 17-5974994 in U.T.M. coordinates or 45° 06'W latitude and 79° 46'W longitude in geographic coordinates. (Airphotos: 77-4504 36-21, 22, 23 and 77-4505 36-123, 124, 125)

Access

Peatland 31E-55 is highly accessible. It is adjacent to Silver Sands Lake Road, which connects the cottages on Silver Sands Lake to Highway 69. This road comes to within 40 m of the edge of the peatland. The northernmost edge of the deposit is within 400 m of Highway 69 and Canadian Pacific and a Canadian National Railway lines are 2.5 and 4 km respectively to the east of it.

By road, the deposit is within a reasonable distance of several nearby population centres and wood products industries. The distances, by road, have been summarized in the following table:

Names of Community	Distance from Peatland 31E-55 (km)
Footes Bay	4.5
MacTier	5
Port Carling	20
Bala	23
Bracebridge	43
Parry Sound	43
Huntsville	63

Dates of Field Study

Initially peatland 31E-55 was studied on a reconnaissance basis. The reconnaissance field study was conducted in August. Following consultation with the O.G.S., it was decided that it would be surveyed in detail. Subsequently, the detailed field study of was conducted on September 7th and 8th 1983. Both the laboratory sample extraction and the surface levelling were completed on September 8th.

Topography and Drainage

Peatland 31E-55 is situated in a depression surrounded on the east and west sides by relatively steep rocky uplands. A sizeable elevation difference exists especially along the eastern edge of the deposit between the surrounding terrain and the surface of the bog. This steep characteristic is also illustrated by the high peat thickness found near the edge on the eastern side. Starting at the north end, the surrounding mineral terrain generally slopes very gently away from the deposit. Along the eastern and western edge, the mineral terrain rise steeply and along a southern portion of the eastern side, the edge is almost cliff-like. The southern perimeter of the deposit borders on a thin rocky span which joins the eastern and western edges of the deposit and separates it from a small peatland area to the south.

There are no large surface gradients on this peatland. Along the baseline, the surface elevation fluctuates slightly. For the most part, the surface elevation varies from 259.1 to 259.3 m a.m.s.l. Similarly, along the sidelines, no significant gradients exist. In all, the entire deposit is almost flat.

The drainage of this deposit has been largely blocked by beaver dams. Two dams at the south end have created surface ponding and have created very wet surface conditions nearby. These dams influence the area between BON and B600N. Besides creating open ponds in the area immediately near the dams and some surface ponding of water further away. Study showed these

dams are also causing the surface to float. A third beaver dam located at B1400N is causing localized flooding on the northern portion of bog namely in the heavily treed swamp area which starts at about B1200N and extends to the end of the baseline.

The drainage conditions would be greatly improved if these beaver dams situated on the natural discharge systems were removed. Based on the site examinations and airphoto interpretation work it appears that the natural discharge systems are adequately capable of keeping the deposit drained. In the present state, during spring runoff, extensive flooding is expected.

This deposit is predominantly underlain by the bedrock which is the most often encountered substrate material along the base line. Only at a few sites are sand, silt or clay encountered and it is only along the L1300N sideline that at three consecutive sites a substrate material other than rock (sand at all three sites) is found.

Area and Shape

Peatland 31E-55 is 49 ha in size of which 24 ha contains a peat layer thicker than one metre.

The area of greatest resource potential can be found approximately between B700N and B1400N. A smaller potential resource area lies between B100N and B500N.

Peatland 31E-55 is long and narrow in shape. It is oriented in a northwest - southeast direction and is 1.4 km long and varies from 300 to 400 m in width.

There are three mineral islands with the largest one being centered approximately at B550N (the island is 15 m north of the site). There are also several small and narrow embayments and the southwest edge of the peatland is generally very irregularly shaped.

Peatland Vegetation

The distribution of the main physiognomic group on Peatland 31E-55 is shown in Table 2. The main part of the deposit is a

bog divided into two physiognomic groups: open graminoid bog (OgB) which covers 25 ha or 51% of the total area, and open lowshrub bog (OlsB) which covers 17 ha or 35% of the area.

The detailed vegetation studies were done at sites B200N, B800N, B1100N, L750N + 100W, L1100N + 100W and 100E and are summarized in Table 1.

The surface water pH values were measured at 16 sites and give an average of 4.8 with extremes of 3.8 and 5.4.

Up to 90% of the bog is covered by mounds 20 to 30 m in height.

The water table in most cases is right at the surface of the surface. At the northern end, there is a minor area of 7 ha (14%) of deciduous swamps. The southern portion of the bog with OgB cover is flooded and shows post-fire signs in the form of dead trees. This portion of the deposit possibly one time was covered by TlsB but the flooding and a fire eliminated much of the tree and shrub cover. Only dead partly charred trees remain. The shrub cover shows quite a strength in scattered concentration. The cover in the south is $O^0g^{40}B$.

The northern half covered by OgB is dryer and firmer than is the south. The percentage-wise the cover is $O^0ls^{30}B$. The northernmost section is a deciduous swamp with tall and large trees. The cover is $h^{30}S$.

Survey Point	Classif-ication	Dominance Type	Surface Water pH	Average Depth To Water (cm)
B200N	$0^0g^{40}B$	Carex rostrata^{20} Thelypteris palustris^{10} Sphagnum magellanicum^{40} Sphagnum cuspidatum^{30}	4.5	15
B800N	$0^0g^{21}B$	Eriophorum spissum^{10} Sphagnum magellanicum^{45} Sphagnum papillosum^{40}	3.8	21
B1100N	$0^0ls^{24}B$	Sphagnum magellanicum^{85}	4.5	32
L750N+100W	$0^0g^{55}B$	Carex rostrata^{30} Thelypteris palustris^{20} Sphagnum papillosum^{30} Sphagnum magellanicum^{40}	4.3	19
L1000N+100W	$0^0ls^{60}B$	Chamaedaphne calyculata^{40} Sphagnum magellanicum^{45} Polytrichum commune^{30}	4.5	46
L1000E+100E	0^0ls^{40}	Chamaedaphne calyculata^{27} Sphagnum magellanicum^{40}	3.8	28

Table 1. Summary of Peatland Classification Data (31E-55)

Peat Thickness

South of site B600N, peat depths vary from 1.5 m to 3.0 m. The average total thickness is approximately 2.2 m. The surficial layer of unhumified peat in this area is relatively thin ranging between 0.3 to 0.6 m and on average is slightly over 0.4 m.

North of site B600N, the area which has been designated as the one with the greatest resource potential, the peat thickness ranges between 1.0 m and 3.1 m. On average, the total peat

thickness is 2.2 m. At 14 sites established north of B600N, at one site the thickness is greater than 3 metres while at only 4 sites it is less than 2 metres. The surface layer of unhumified peat varies from 0.2 to 0.5 m in thickness on average it is 0.3 m.

As a whole, the average thickness across Peatland 31E-55 is 1.4 m and in the area containing a peat layer thickness greater than one metre it is 2.2 m.

The average peat layer thickness in each physognomic group has been summarized in the following table.

Physiognomic Group	Surface Area (ha/%)	Average Peat Depth (m)
OgB	25/51	1.9
OlsB	17/35	1.8
hS	7/14	1.7

Table 2. Distribution of Physiognomic Groups.

Peat Types

The main peat found in this deposit includes S, CS, SC, CSL peat. The woody component is comprised both of shrubs and remnants of trees (dominant type is mentioned first).

The sedge peats predominate from the surface down to the base in the southern edge of the bog from B0N to about B700N. In this section of the deposit there is only one surficial and one buried lense of sphagnum peat. The rest of the deeper peats are CS-peats with L components present at the bottommost layer. The surface vegetation in this section tends to be open and commonly OgB. This may account partially for the prevalance of the sedge peats also in the surface.

The northern end of the deposit has a cap of Sphagnum-peats on the surface up to the depth of slightly more than 2 m. Below this cap the predominant peats are again sedge peats (CS) mixed with sphagnum and smaller quantities of woody (shrub and wood peat) peats. The surface cover in this section of the bog is OlsB type. The northern end from about B1250N is covered by

deciduous swamp with larger quantities of wood in the surface peat layer.

The deposit is almost entirely underlain by a layer of ooze ranging in thickness up to 1.8 m. It appears that this deposit is a result of paludification of a small pond or ponds filled in by peatland vegetation. The most common bog types may have been minerotrophic fens and shrubby bogs. The bog type has slowly become more prominent with time. It is possible that beavers have affected the drainage periodically earlier as they are doing presently.

Peat Humification

The overall degree of humification is H5.8. The surficial layer is H1.2. The unhumified layer is on average 0.3 m thick both for the entire deposit and the area 1 metre or more thick. Its thickness varies from 0.6 m in the southern portion of the deposit to 0.2 in the northern portion. A thin surficial deposit such as this is normal on almost all the peat deposits and can neither be regarded as source of horticultural peat nor as a hindrance to fuel peat development. The rest of the peat is well humified and is mainly located in two areas. The first one is in the southern portion of the bog from B50N to B500N and the second one in the northern portion of the bog from about B670 to B1400N.

There are occasional small lenses of peat with a high degree of humification and a low (0-1) fibre content. No significant quantitites of sapropel peat were present.

Peat Volumes

Peat volume data has been summarized in Table below.

Peatland No.	Total Peatland Area (ha)	Total Peat Volume ($X10^6$ m^3)	Peat Volume in Area with > 1 m peat ($X10^6$ m^3)	Total Humified Peat Volume for area > 1 m of peat (H4-10) ($X10^6$ m^3)
31E-55	49.7	0.623	0.499	0.427

Table 3. Distribution of Peat Volumes.

The total peat volume is 0.623 x 10^6 m^3. The area with more than one metre of peat contains 0.499 million m^3 of peat of which 0.427 million m^3 is well humified. The peat resource is divided into two basins. One is situated in the southern end, from BON to B500N and the other is in the northern portion from B670N to B1400N. Due to the small quantities this deposit is not suitable for any large scale use.

Potential for Peat Development

Peat 31E-55 has very little potential horticultural peat development due to the lack of a thick surface layer of unhumified peat, however, it does have potential for fuel peat development on a small scale.

Due to its size, 49 ha, Peatland 31E-55 can be considered for fuel peat development only on a small scale. The volume of fuel peat is sufficient for a small scale operation. This deposit also has an area of 24 ha where the thickness is greater than one metre, averaging 2.2 m. With the exception of the north end of the peatland, the remainder is devoid of a dense tree cover. The overall average tree cover is 3.3%. The stump content of this deposit is not too high to preclude mining. North of site B600N, the stump content is about 1.3% which is not detremental for any type of peat mining however, south of B600N the stump content is 2.3% which might hamper milled peat mining.

Size and shape may also diminish mining in general. The drainage does not appear to be a problem. Drainage on this deposit can be greatly improved with the removal of the beaver dams which presently are constricting flow through natural discharge system.

Good access and the proximity to population centres and wood products related industries certainly also enhance the potential of this deposit for fuel peat development.

Aside from fuel peat development, Peatland 31E-55 could possibly be considered for agricultural purposes e.g., cranberry production. The southern portion of the deposit south of B600N would be well-suited for this type of activity.

Peatland 31E-55 is in Concessions VII and VIII of Georgian Bay Township. The portion is in Concession VIII is on private (patented) land while the portion in Concession VII is partly on private (patented) land and partly on Crown Land. The District Office of the Ministry of Natural Resources has no specific concerns regarding this area.

Comments

No literature was found on any previous assessments of this deposit.

As a final comment it appears that this deposit could be considered as a suitable site for small-scale fuel peat production which could sell the product either to private homes as a replacement for fire wood or on a partial supplier to some industrial user. Its excellent accessibility and relative proximity to a number of small communities enhance this kind of user potential.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.8 PEATLAND 41H-11

Location

Peatland 41H-11 is located in the Mowat Township in Parry Sound District. It is about 90 km south of Sudbury, 80 km north of Parry Sound and about 17 km northeast of Britt by road.

The UTM coordinates are 17-5475077 and the geographical coordinates are 45°51' N latitude and 80°24 W longitude (1:50000 scale map NTS No. 41H/16, airphotos 77-4536, 42-100 to 102 and 77-4535, 42-34 to 25).

Access

This deposit is accessible only by a forestry road maintained by the Ontario Ministry of Natural Resources. This road joins Highway 69 about 70 km north of Parry Sound and 5 km north of Britt Station. The distance from Hwy 69 to the bog is between 12 and 16 km to the western and eastern part respectively. This road runs about 1 km north of the bog. There are several winter roads adjacent to the bog which branch off the forestry road. These roads are not passable by motor vehicle during the summer without improvement. In all, the access to this deposit is fair. The distances to larger communities are quite long; 90 km to both Parry Sound and Sudbury. However, there are a number of smaller communities closer to the deposit. These include e.g. Britt (about 20 km) and Still River (14 km) among others.

Dates of Study

The detailed field study was conducted from August 26th to September 1st, 1983. The levelling was performed on August 26th through to the 28th and the physical sampling on September 12th or 13th.

Topography and Drainage

This deposit is located on a wide relatively flat plain slightly lower than the surrounding rolling Precambrian terrain. It appears that the general location where this deposit is situated is less rugged than the regions to the east or to the south. Due to the relative smoothness of the topography this deposit is not as confined to a depression as are several others in Parry Sound District. The surrounding uplands are covered by a mantle of surficial deposits and display less bare bedrock outcrops than the areas further south or east. It appears that in fact this deposit is on a height of land in relation to the surroundings except to those in the east which appear to be about 15 m higher than the bog. The surrounding terrain slopes gently away from the deposit to the northwest and south. However, the bog surface itself is slightly below the immediate mineral terrain which is at an elevation of about 210 - 213 m a.s.l. while the bog's surface is at about 205 m a.s.l. However, within a very short distance from the edge of the bog the land quickly descends to about 198 m a.s.l., except in the east where it rises to about 228 m a.s.l. This general gentle slope away from the deposit should be helpful in case drainage were planned in the future.

The inspection of the deposit itself reveals that, as a rule, it is very flat without any conspicuous topographical features. The surface elevations vary from about 204 m a.s.l. at the southwestern end of the deposit to 206 m a.s.l. in the centre around L1865 + 300N where there is an area slightly domed above the rest of the immediate surroundings and also 206 m a.s.l. at the northeastern end of Transect H (H1100N). There is a drop of about 2 m from the central high spot of 206 m to the low southern end. This is equivalent to about a 0.2% gradient. The deposit slopes gradually away from this central dome also (see the map) in other directions.

The inspection of the airphotos and the observation in the field have established that there are five discharge points for this bog. The southwestern end is drained by a small creek which

is visible on the airphotos, starting at B565N and following the F-line to the tip of the deposit and from there into Little Key River which drains eventually into the Key River at Ludgate and then into Georgian Bay. The southeastern corner of the deposit is drained through a small outlet on the T points (traverse points) and into Little Key River.

The northeasternmost portion of the deposit is drained from Point H1100E into Little Key River by a small channel. At site H1100N, the bog surface elevation was measured to be 206 m a.s.l. This is about 0.5 m higher than the elevation measured for H300N and would seem to conflict with the observations on the ground as well as with the airphoto interpretation which indicates that the gradient is not towards northeast. However, further airphoto study showed that the drainage channel is blocked by a series of beaver dams. This has raised the water table and flooded the bog. The flooding has caused the peat layer to float and apparently it has floated more in the northeastern corner than further away towards southwest. As a result, the levelling gives the elevations of the surface of the peat mat and thus, higher relief toward northeast. The water table is level below the mat and controlled by the beaver and the flow is towards northeast whenever there is excess water to spill over the dam. The northern section of the deposit, north of the central dome is also drained towards the north by a narrow channel leading north from site L1865E + 1000N. This outlet discharges directly into Key River located about 4 km north of the deposit and approximately 10 m below the level of the surface of the bog at the point of discharge.

All these discharge channels are presently blocked by a number of beaver dams. This has created some flooding and ponding of water on the bog near the discharge points but has not usually affected the deposit more than a few hundred meters from the outlets.

It is apparent that, regardless of the flat surface topography, this deposit is quite well drained through the mentioned channels and that the major drainage work required

would be in controlling the beavers and deepening of the channels in addition to the field ditching.

Area and Shape

This deposit covers a total of 394 ha of which 137 ha have a peat layer of one metre or more in thickness. The major portion of the peat reserves are within the one meter isopach and include most of the areas covered by the line network. The deeper areas are centered around the middle section of the bog where a regularly shaped area devoid of any major islands is located along the baseline from B1165E to B2400E and along the Transects L1865E + 250S to L1865E + 700N and L2365E +400S to L2365E + 450N. The overall shape of the deposit is quite irregular with a number of narrow embayments and a number of rocky "islands" of mineral terrain covering a total of over 40 ha. The longest axis runs southwest - northeast direction and is about 5.5 km and the widest area at the location of Transect L2365E is about 2.5 km of which 0.7 km traverses a mineral terrain island. This central portion with its homogeneous area makes the deposit quite suitable for peat extraction as far as the area and the shape are concerned.

Peat Vegetation

The distribution data of the main physiognomic groups for this bog are in Table 2. The main physiognomic groups are open graminoid bog (OgB), treed lowshrub bog (TlsB) and treed graminoid bog (TgB). The peatland classification data is summarized in Table 1.

OgB type covering a total of 65 ha (16.5%) is found in two areas: in the southern part of the deposit around the Transect F-line and in the northeastern section of the deposit. Percentage dominance for this type gives the values $0^{O}g^{53}B$. The southern area is shallow with an average thickness of peat of 0.7 m. This portion is also flooded and ponded by the beaver as one of the main drainage outlets discharges via this section.

The sedge, Carex oligosperma, dominated vegetation is found along the edges of the bog up to the end of L1365E + 200N as a narrow lagg. It is also found as an intermittant lagg along the southern edge of the bog to L2365E + 445S.

The northern portion where OgB cover was found on airphotos, was not surveyed in detail due to its flooded condition. This portion is similar to the southern one.

A more conspicuous group is the TlsB covering most of the central part of the deposit (208 ha or 53%) of the peatland area. This area has a formula of $T^{12}ls^{22}B$. It is typified by Picea mariana, Larix laricina as the most common tree species. The canopy height varies from 3.5 m reaching up to 7.5 m.

The schrubs include Chamaedaphne calyculata, Ledum groendlandicum, Kalmia polifolia, Vaccinium angustifolium among others. The most common graminoid species are Eriophorum spissum and E. virginicum and Carex oligosperma.

The most common sphagnum is S. magellanicum.

The surface water pH value in this area is 3.5-3.8. The average depth to the water was varied from 100 cm in the west to 5.3 cm in the central part. However, one time reading may not give a year round value as this paramater is highly dependent on the season and daily rainfall.

The area has hummocks of up to 90% cover. The height varies from 0 to even 90 cm in a few cases. As a rule the hummock topography is not very pronounced and should not affect possible mining operations.

The sizes and density of trees contained within this physiognomic group, however, would cause some slowdown of the bog preparation for mining.

The northeastern part of the deposit is largely covered by TgB vegetation (121 ha, 31%). The percentages are T^{10} $g^{38}B$. The tree cover is less than in the previous type. The most common tree is Larix laricina with some Picea mariana also present. The common canopy height is 3-4 m.

The surface water pH was measured to be 3.5-3.7. The hummocks are lower in this area than elsewhere and often are not present at all. Commonly they are only 10 cm high but may cover

up to 90% of the surface. The average water table was of the order of 40-50 cm to 60 cm. However, near the discharge channels discussed earlier the water table is at the surface. The species composition in the lower stories is very similar to that of TlsB area. The main difference is in the abundances of Carex oligosperma which gives this part of the bog a park-like appearance.

As far as the use is concerned this section would pose less of a hindrance to pre-preparation activities due to smaller stature and density of the trees as well as due to a smoother surface area. Table 1 summarizes the peatland data.

Peat Thickness

The overall average thickness of peat is only 1.6 m and, for the area with 1 m or more peat it is 2.1 m.

Survey Point	Classification	Dominance Type	Surface Water pH	Avg. Depth to Water (cm)
B765E	$T^{17}ls^{10}$	Larix laricina[15]	3.5	100
		Nemopanthus mucronata[20]		
		Sphagnum magellanicum[40]		
B1365E	$T^{18}ls^{10}B$	Larix larcina[15]	3.5	42
		Ledum groenlandicum[12]		
		Eriophorum spissum[15]		
		Sphagnum nemoreum[20]		
B1465E	$T^{26}ls^{22}B$	Larix laricina[15]	3.8	53
		Chamaedaphne calyculata[10]		
		Ledum groenlandicum[10]		
		Eriophorum spissum[20]		
		Sphagnum nemoreum[70]		
B1865E	$T^{11}ls^{62}B$	Larix laricina[8]	3.5	56
		Chamaedaphne calyculata[30]		
		Ledum groenlandicum[20]		
		Carex oligosperma[10]		
		Eriophorum spissum[10]		
		Sphagnum nemoreum[60]		
B2365E	$T^{20}ls^{6}B$	Larix laricina[20]	3.5	36
		Sphagnum nemoreum[65]		
		Sphagnum magellanicum[30]		
L2365E+700N	$T^{17}g^{26}B$	Larix laricina[20]	3.7	40
		Carex oligosperma[25]		
		Sphagnum nemoreum[80]		
2365E+300N	$O^{5}g^{39}B$	Eriophorum spissum[30]	3.5	39
		Sphagnum nemoreum[70]		

Table 1. Summary of Peatland Classification Data (41H-11)

The surface layer is an average 0.3 m thick for the entire deposit as well as for the area with 1 m or more peat. The southern narrow lobe south of Point L765E + 100S and along the F-transect is shallow and reaches a thickness of 1 m only at a couple of locations. The rest of the deposit has quite a uniform area of peat more than 1 m. A number of embayments, judged from the airphotos to be shallow, were not drilled and are assumed to be less than 1 m in thickness.

The maximum thickness of 5 m was encountered at two locations only; at L2365E + 200S and at T2. Thickness between 3 and 4 m was found at Points B1565E to B1965N, L2365E + 100S and 300S and at T3. Otherwise, the thicknesses are largely between 2 and 3 m. The area of the deposit covered by 2 to 3 m thickness is 69 ha while for the 1 to 2 m thickness it is 56 ha.

While 1 m is required for peat mining, 2 m or more is preferred and in this regard this deposit has relatively good production potential in comparison with others in the Parry Sound District.

The average thickness of peat within various physiognomic groups is detailed in the table below.

Physiognomic Group	Area (ha/%)	Average Peat Thickness (m)
OgB	65/16	1.2
TlsB	121/31	2.3
TgB	208/53	2.3

Table 2. Distribution of Physiognomic Groups.

Peat Types

The main peat types found in this deposit include CS, SC, CSLn, CSEr, SErC and a small lens of CSB (B = Bryales Peat) (dominant peat type is mentioned first) (C = sedge, S = sphagnum, Er = eriophanum).

As a rule sphagnum peat is located on the surface mostly as a relatively thin layer across the entire deposit (mostly 0.5 m

or less in thickness). It is in this deposit associated with sedge peat and only in one small lens at sites B1065 - B1065 to B1165E with some shrub remnants. Also, the sphagnum peats are dominant all the way through the peat stratum in the southern part of the deposit from B565E to B1065E and along the entire length the of H-transect and the northern end of transect L2365E from L2365E + 400N to the end of the line.

Sphagnum peat also forms a considerably thick strata from B1065E to B1365E, B2365E, and at L2365E + 100S, L2365E + 400S as well as at L1865E + 1000N.

Elsewhere the peats are almost exclusively CS types with varying ratios of C or S. There does not appear to be any strong correlations between the present surface vegetation and the underlying peat type except that the entire surface deposit is bog and this is reflected in the fact that the immediate surface layer of peat is sphagnum dominated. At the greater depths the sedge dominance indicates that at one time this deposit may have had more fen-type characteristics than today. The initiation of paludification at this location appears to have started as a filling in of small shallow ponds judging from the widespread occurrence of ooze and clay as the most common non-peaty soils. Clay appears mostly in the depressions and ooze is found also on the sandy bases between these depressions reflecting the gradual encroachment of peat from the depressions onto the adjacent mineral soils which have been flooded in the meanwhile.

Peat Humification

The overall average degree of humification for the entire deposit is H5.9. The average for the surficial layer is H1.1 with an average thickness of 0.3 m.

The surficial peat layer is evenly distributed over the entire deposit without showing any concentrations. Consequently, it does not offer any horticultural resource potential neither would it cause any preparation problems for fuel peat operations due to its low thickness values. The humified peats are composed mostly of H7 and 8 and to a lesser degree of H5 and 6 peats.

Usually the more humified peats are below the less humified areas. However, the inverse is common e.g. from L1865+300N to L1865 + 3006 and B1165E to B2065E less humified peat underlays those with a higher degree of humification. Conditions as these may indicate differences in the local hydrological conditions (lower degree of humification higher water/table) or in the climatic conditions which have fluctuated during the past 11,000 years that have been available for paludification.

From the humification point of view, this deposit has peat humified well enough for fuel peat uses.

Peat Volumes

The peat volume data has been summarized below

Peatland No.	Total Area (ha)	Total Volume (x 10^6 m3)	Volume in area with >1 m of peat (x 10^6 m3)	Humified peat volume in area with > 1 m of peat (H4-10)
41H-11	394	4.101	2.816	1.775

Table 3. Distribution of Peat Volumes

The total volume is 4.101 million m^3. Of this 2.816 million m^3 are in the area where the peat thickness is 1 m or higher and thus potentially mineable. Of this total 1.775 million m^3 are well humified and useable for energy purposes. The bulk of the mineable peat resource is located in the area with 2 m or more of peat. The volume in this section is 2.088 million m^3 and it is located in the central part of the deposit from B1165E to B1400E and along the transfers from L1865E 250S to L1865E+700N and L2365E + 300S to L2634E + 450N and along the transect H up to Point H1000E. Due to the homogeneity in shape, this area offers the best peat resource potential for energy uses as far as the volume is concerned.

Potential for Fuel Peat or Horticultural Peat Development

The deposit has no potential for horticultural peat utilization due to the lack of large enough quantity of unhumified sphagnum peats.

As far as the peat thickness, peat types, the degree of humification and the volumes are concerned this deposit does have a fuel peat development potential. However, it would be limited in industrial scale if this deposit was considered alone. At a small scale the potential is good. However, if one considers the fact that a 100 MW power station might consume over 400,000 m^3 of peat annually and that a coke plant producing 30,000 tonnes of coke annually requires about 900,000 m^3 of in situ peat, then the total volume of 1,775 million of m^3 peat would not offer much of a potential for a large operation. However, if this deposit was used together with others it would add to the total.

As far as the immediate access to this bog is concerned there are no big problems as the road maintained by the Government of Ontario for resource purposes is passable by large trucks. Only access roads would have to be built to bog which in this case would have to be 1 to 1.5 km long from the forestry road. The distances to the possible users are considerable; about 90 km both to Parry Sound and Sudbury. However, smaller communities are closer and could be considered as potential users.

The vegetation type of this deposit does not cause much of a hindrance to bog development. The average tree cover over the entire deposit is 10%. Trees are for the most part quite small and easily removable. Most of the deposit would be passable with a 4-wheel drive tractor even without drainage.

The ditching could be done even during the summer time for most of the deposit. The areas which presently are flooded by the beaver could be quite readily drained initially just by removing the beavers and their dams.

The stump content overall is 1.3%. It does not have any high concentrations in any specific areas and would not pose real problems for the mining.

This deposit is totally located on Crown Land. According to the Parry Sound District M.N.R. office the deposit is within a deer winter yard. According to Parry Sound District Office the Northern Georgian Bay Recreational Resource Plan covers this area.

Comments

There does do not appear to be any published data on possible previous studies on this deposit. If the deposit were considered for use a further more detailed study is recommended.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.9 PEATLAND 41H-17

Location

This deposit is located in Shawanaga and Carling Township in Parry Sound District about 23 km northwest of Parry Sound by Highway No. 69. Its UTM and geographical coordinates are 17-5615038, and 45° 29' N latitude and 80° 41' W longitude respectively. (Map Sheet, 1:50000, NTS. No. 41H/7 & 8 and 41H/9, Airphotos 77-4521 - 52-4 to 6 and 77-4520 46-104 and 105).

Access

Access to this deposit is very good. It is located on Highway 69 which passes by the northeastern side of the deposit coming within 100 m from its edge. The southern lake of the bog is on the secondary road connecting Highways 69 and 559. The CN railway bisects the southern part of the deposits.

The nearest large community is Parry Sound located about 23 km southeast of the deposit by the road.

Dates of Field Study

The detailed field work was carried out on October 15th and 16th. The physical samples were taken on August 24 and levelling carried out August 25th.

Topography and Drainage

Peatland 31E-17 is located in a basically flat Precambrian area where it fills a very irregularly shaped depression among low, almost bare, bedrock outcrops. In fact it lies on a height of land about 213.5 m a.s.l. Most of the adjacent mineral terrain slopes away from the deposit except for the low bedrock outcrops containing it. The bog surface itself is flat with hardly any gradient. The elevations vary only from 313.1 to 313.7 m a.s.l. without any clear gradient. One reason for this

may be that the drainage outlets found near the end of L800W + 360S and in the northern portion of the deposit are all dammed by beaver. As a result the entire bog is somewhat flooded and the originally gentle gradients have been masked by flooding. The deposit is in fact comprised of two distinct areas. Only the northern lobe with lines B, L200S and L800S is flooded. The southern lobe (lines F and G 400N) is not flooded.

The northern lobe has 4 main drainage outlets. Two of them (see the maps) drain the deposit northeast into Winassegan Lake and from there into Shawanaga River. The northeastern tip is drained into the nearby Rainy Lake, and it and the southern end drain into a small stream discharging ito Shebeshekong Lake and eventually into Georgian Bay. All these drains are presently blocked by beaver dams. By removing the beaver dams this deposit can be drained without any major problems. According to the information supplied locally the flooding is fairly recent. Once in the early 1960's the bog was well drained and even surface vegetation was different from that of today.

The southern end of the deposit is well drained even today. Part of its southern portion has been ditched for agricultural purposes, but since abandoned. This work as well as the drains installed for the CN Railway line have kept this portion well drained and quite dry and even discouraged the growth of peatland vegetation. This section discharges by its southern tip also into Shebeshekong Lake.

The underlying substrate is composed mostly of clay with sand usually in the shallow parts of the deposit at F200N, and L800U + 200N where it is also found in the deeper depression.

Area and Shape

The total area of this deposit is 153 ha. A number of irregular embayments were not covered by the survey network because of their small sizes and number of mineral outcrops indicating shallow peat thickness and also excluding any user potential.

About 29 ha has a peat layer of 1 metre of more in thickness. This deposit is composed of two sections. The southern section, covering about 51 ha has no potential for peat mining due to the low thickness of the deposit (maximum 1.4 m). Also the CN railway line bisects it further reducing its value as a source of peat.

The northern lobe covering a total of 102 ha is very irregularly shaped. Only the main portion was studied in detail. Even this section has very little value as a source of peat beause of irregularity of the shape and also because of low thickness values which reach only a maximum of 2.8 m at two locations. In fact the area of peat 2 m or more in thickness is only 10 ha and is divided into two sections located from L800W + 200S to L800W + 200N and the other one from L 200W + 100S to 200ML 200N.

Peatland Vegetation

The main physiognomic groups are listed in Table 2 within total areas and percentages and average thickness. This peatland is a bog with treed lowshrub bog (TlsB) covering 81 ha or 53%, and open graminoid bog (OgB) 47 ha or 31% of the total area. There are two others; treed graminoid bog (TgB) covering 10 ha or 6% and open lowshrub bog (OlsB) covering 15 ha or 10% of the total area.

The TlsB is characterized by Picea mariana and Larix laricina in association with low shrubs such as Ledum groenlandicum, Kalmia polifolia and Neomopanthus mucronata. The surface water pH values in this area are in the order of 4.0. The depth to the water table varies and was calculated at 40 cm. The hummocks are low (20 m) and cover up 50% of the surface. At the site B0 and along the northern branch of L300 W line there is a zone of alder thicket at the edge of the bog.

In the southern section of F-line this physiognomic group shows rather higher shrub vegetation with Myrica gale and Salix spp. approaching thicket swamp conditions.

OgB vegetation predominates in the northern portion of the deposit as well as in the area covered by Base Line from B500 W - B920 W and the Transect L800 W + 360S to L800 W and L800 W + 200N to L800 W + 340 m.

This section has a very abundant cover of Carex rostrata and C. oligosperma vegetation. This section also is flooded and shows residual patches of former shrub vegetation as well as post-fire trees killed later also by the flooding. The surface water pH was measured to be 4.9 and 5.0 and the average depth to water 6 and 10 cm.

In the southern section of the FON to F 400N there is an OlsB type. This region has been drained previously and then abandoned. As a result there is a secondary growth of some trees and a vegetation resembling mineral terrain types. A special vegetation analysis of this site would be useful for a research into the effect of the drainage on succession. The peatland classification data is summarized in Table 1.

Survey Point	Classification	Dominance Type	Surface Water Ph	Average Depth To Water (cm)
B200W	$O^{12}ls^{33}$	Nemopanthus mucronata^{15} Sphagnum nemoreum^{60} Sphagnum magellanicum^{40}	4.0	40
B400W	$T^{10}g^{40}B$	Larix laricina^{9} Carex oligosperma^{35} Sphagnum nemoreum^{80}	4.5	18
B700W	$O^{0}g^{55}B$	Chamaedaphne calyculata^{15} Carex rostrata^{40} Sphagnum cuspidatum^{40} Sphagnum nemoreum^{40}	4.9	10
L800W+100S	$O^{0}g^{50}B$	Chamaedaphne calyculata^{18} Carex oligosperma^{40} Sphagnum cuspidatum^{80}	5.0	6

Table 1. Summary of Peatland Classification Data (41H-17).

Peat Thickness

The overall average thickness of peat is 1.2 m and that of the area with 1 m or more of peat is 1.9 m.

The southern lobe has a maximum thickness of only 1.4 m and the area of 1 m or more only about 2 ha. Most of the peat in this lobe is less than one meter and thus does not offer any resource potential.

The original relationship of peat thickness to surface vegetation in this lobe is impossible to determine as there is a secondary growth of trees and a number of mosses and vascular plants which are more representative of mineral terrain vegetation than that of a peatland. This is all due to the drainage of this lobe, presumably for agricultural purposes.

The thickness in the northern lobe varies over the area over 1 m in the thickness up to a maximum of 2.8 m at B800W and L800W + 200N. Thus as a whole the entire bog has quite low values for peat thickness.

The surficial layer varies from none at a number of locations to a maximum of 0.6 m. At the southern lobe there is no surficial layer except at the northern end of Line F where it is 0.1 m thick.

The peat thickness and its relation to the surface cover is shown in the table below.

Physiognomic Group	Avg. (ha/%)	Average Thickness of Peat
TlsB	81/53	1.6
TgB	10/6	2.5
OgB	47/31	1.7
OlsB	15/10	1.2

Table 2. Distribution of Physiognomic Groups.

It should be noted in this context that the relationship in the flat southern lobe (OlsB cover) has been changed recently by the drainage while in the north it has been changed by the beaver flooding.

Peat Types

The main peat types include SC, CS, C and CLn peats with Eriophorum in smaller quantities at a few locations (S = sphagnum, C = sedge, Ln = shrub; dominant type is mentioned first).

The sphagnum peats are mostly found only on the surface as a thin surficial layer while the sedge peats dominate at depth. The sphagnum peats are located on the surface along the Base Line from B100W to B920W and on Transect L300 W from L300W + 100N to L300 W + 200S. They are also found along the Transect L800 and at the northern end of F-line. They are also found at greater depth as lenses or continuous strata at greater depths along the main line and the southern end of the transect L800 W.
At the northern end of F line sphagnum peats are found from the surface to the base. Elsewhere in the bog sedge (C) peats predominate in the basal layers over a thin layer of ooze found everywhere except the western end of the Base Line and the transect L800 W.

There is no clear correlation between the peat types and surface vegetation. It appears that often at the surface sedge peat may be associated with open graminoid cover while the sphagnum peats appear to have associated with lowshrub bog types. However, along the transect L800W graminoid cover is on sphagnum peats. This is perhaps due to the fact that the graminoid cover reflects the influence of the recent flooding as described earlier. In the areas not flooded cover was OlsB.

This deposit, as so commonly the others in this region, seems to have started as a fen or a graminoid bog in a small water-filled depression and developed from there to todays bog type.

Peat Humification

The overall averagre degree of humification for this deposit is H6.0 and for the surficial layer H1.0.

The average thickness of the surficial layer is 0.3 m for the area with one metre or more of peat. Its thickness ranges from 0 in the southern section of the deposit to 1.0 m at the northern end of Transect L300W to 0.6 m along the Transect L800W.

As far as the horticultural peat use is concerned this thin surficial layer does not offer any potential. On the other hand it would not hamper fuel peat mining operation. The humified layer underlies the surficial layer as a very uniform stratum without any lenses of unhumified peat. It is composed mainly of peat of H5-8 with one minor lens of H4 at B500W and a longer one of H9 at L800 + 100S to 200S. Quite commonly the more humified layers of H7-8 are underlain by H5, which lies directly on the basal substrates of ooze and clay and, in the shallower areas, sand. There are no special concentrations of humified peat since all the peat under the thin cap of unhumified surficial peat is well humified. Naturally the largest quantities are in the locations where the thickest peat layers are found as shown by the peat isopach map.

Peat Volumes

The table below summarizes the peat volume data from Peatland 41E-17.

Peatland No.	Total Area (ha)	Total Volumes (x 10^6 m3)	Volume in area with >1 m of peat (x 10^6 m3)	Humified peat volume in area with > 1 m of peat (H4-10)
31E-17	153	1.116	0.496	0.468

Table 3. Distribution of Peat Volumes

The total volume of this deposit is only 1.116 million m^3 and only 0.496 million m^3 is in area one metre or more in thickness or in a mineable area regarding the thickness requirement. Only 0.468 million m^3 are humified peat, mainly located along the transect L8000 and L300W. These small scattered mineable peat volumes do not present any good potential

for peat use in this deposit since they do not offer any considerable mine life expectancy and are not in one uniform location enabling a practical mine plan to be designed.

Potential for Fuel and Horticultural Peat Development

There is no potential for horticultural peat production due to small quantities of unhumified sphagnum peat in this deposit. The fuel peat potential for any sizeable market is not good. There is some potential for cottage size fuel peat production industry if it were an integral part of a number of production areas or if the produce were aimed at markets that supply fireplace or home heating fuel.

Comments

There are no data or any published studies on this deposit. It has been used in the late fifties and early sixties as an off-road vehicle test site but no comprehensive resource inventory was performed.

The portion of the bog located in the Shawanaga Township is in an area designated as a candidate Park by the Ministry of Natural Resources. This fact may totally exclude this deposit from any industrial use.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

5.10 PEATLAND 41H-20: THOUSAND ACRE BOG

Location

Peatland 41H-20 is located in Carling Township in Parry Sound District about 2 km northwest of the village of Shebeshekong and 2 km west of Shebeshekong Lake. This peatland is located approximately at 17-5615032 in U.T.M. coordinates or 45° 26'N latitude and 80° 14'W longitude in geographic coordinates. (Airphotos: 77-4518 46-154, 155, 156. 77-4519 46-16, 17, 18).

Access

Peatland 41H-20 is a relatively accessible deposit. The nearest road is 1 km southwest of the southernmost part of the deposit. From this road several paths lead through the forest to the edge of the deposit. These paths are not maintained and are suitable only for rugged off-road vehicles. The road from which the paths can be reached is a small side road off of the township road linking Dillon and Highway 559.

Peatland 41H-20 is within a reasonable distance of several population centres as well as a number of wood products related industries. The distances by road to nearby communities have been summarized in the following table.

Name of Community	Distance from Peatland 41H-20 (km)
Nobel	14
Parry Sound	22
Woods	22
McKellar	43
Dunchurch	55
Britt	67

It should be noted that Peatland 41H-20 is 11 km west Highway 69. It is also 5 km from a CNR line.

Dates of Field Study

The detailed field study was conducted on August 18th, 1983. The laboratory samples were extracted on August 24th. The surface levelling was performed on August 25th.

Topography and Drainage

Peatland 41H-20 is situated in an irregularly shaped low-lying area. There are no great elevation differences between the surface of the deposit and the surrounding mineral terrain. For the most part, the uplands rise gently from the edges of the bog. This characteristic is illustrated by the relatively thin peat layers found at the edges of the peatland.

To facilitate discussions on the peatland it is perhaps best to divide the deposit into two parts on the basis of the baselines, that is, the northern portion of the deposit within the "B" grid system and the southern one in the "F" grid system.

The uplands surrounding the "B" grid portion generally slope gently from the edge of the deposit with the exception of the northeast edge facing the southern end of the L100E sideline. Here peat depths are relatively deep in close proximity to the edge and, as well, the uplands are more steeply rising from the edge.

Around the "F" portion of the deposit the uplands generally rise more steeply from the edge. For example, at the southern end of the "F" line, not only is there a peat layer thickness of 1.5 m 10 m from the edge of the deposit but also, the immediate edge of the upland is basically vertical and 3.0 m high.

An examination of the surface elevations reveals that this deposit is flat. Along the "B" baseline, there is very little elevation change as is the case along the L650E-transect and the southern portion the L100E-transect. Across the northern portion of the L100E transect, between L100E + 200N and B100E, the surface dips 0.9 m. This represents a slope of 0.45%.

Along the "F" baseline a slight slope exists. Specifically, between F160S and F660S the peatland rises 0.4 m.

This deposit is a naturally well-drained peatland. However, presently three beaver dams are disrupting the natural discharge system. The drainage in the area within the "B" grid system has not been very adversely affected. However, in the area covered by the "F" grid, 2 beaver dams are causing considerable flooding. Although no surface ponding was apparent, the surface is nevertheless very soft and can be generally described as "quaking".

With the present state of drainage, the susceptibility to spring flooding is a definite possibility and can only be lessened by removing the beaver dams.

Due to the uneven and generally channelized surrounding terrain, this deposit does not appear to be the recipient of large quantities of surface runoff from the adjacent terrain.

The most common underlying substrate is clay. The substrate material along the "B" baseline is clay with the exception of sites B100E and B200E which are sand and rock (island) respectively. The northern portion of the sideline at B100E has sand or clay as a substrate while along the southern stretch, the substrate varies between, clay, silt and sand. The substrate material along the sideline at B650E and baseline F is all clay.

Area and Shape

The total area of this peatland is 82 ha of which 38 ha contain a peat layer thicker than one meter. The largest quantities of peat are located along the sideline running through B100E. Along this sideline the peat thickness is consistently greater than 2 metres. This area stretches from L100E + 200N to L100E + 600S.

The shape of Peatland 41H-20 is very irregular. The area within the "B" grid system is oriented on a southwest - northeast direction while the area with the "F" grid is more oriented in a north-south direction. The greatest straight line dimension is 965 m. This deposit has only 2 small rocky islands located near at B200E and F100S.

Peatland Vegetation

This deposit is a bog. It is virtually totally covered by open graminoid bog (OgB) vegetation ($O^0g^{50}B$). Detailed vegetation analysis was performed and physical samples were taken at Points L100E + 400S, F460S and at L650E + 200S.

The inspection of the results of these survey points shows that the shrub percentages (5, 6 and 4%) and graminoid/herb percentages (50, 41 and 41%) for these sites (respectively) are either the same or nearly so. Yet the inspection of the airphoto shows a clear tone difference so that Points L100E + 400S and F460S have almost the same light tone mottled with darker grey, while the Point L650E + 200S has a uniformly darker tone. The shrub species composition differences and the percentages of shrubs are so low that they hardly would influence the tone. It appears that the difference is possibly partly to be found in the differences between the reflectance of C. paupercula (Point L650 E + 200S) in contrast to those at C. oligosperma (point L100E + 400s) and Eriophorum spissum (Point F460S). The former may have a lower reflectance than the latter two. Also the areas of the latter two are flooded somewhat and this may change the reflectance also. The airphotos were taken in 1977 and the hydrological conditions may have changed. As well, the surface may have been more shrub dominant in the area of L650E + 200S than it is presently. In any case, the basic bog type remains the same. The surface water pH was measured to be 4.7 at the sites L650E + 200 and L100E + 400S and 5.0 at site F460S. The depth to the water table was in some of the flooded areas almost nil while the rest of the bog it was of the order of 20 cm. The hummock - hollow topography was non-existent in large areas.

While the cover is marked as open, there are areas with trees near the edges of the deposit and scattered areas over the deposit either singly or in small groups. However, as far as the general bog vegetation is concerned this deposit is open. Also, if utilization is considered, the trees would pose no problems at all on this deposit. The surface vegetation also is smooth and

would not require any special attention from the user's point of view. The peatland classification data have been summarized in Table 1.

Survey Point	Classification	Dominance Type	Surface Water pH	Average Depth To Water (cm)
L650E+200S	$O^1g^4{}^1B$	Carex paupercula^{35}	4.7	10
		Sphagnum magellanicum^{50}		
		Sphagnum nemoreum^{49}		
F460S	$O^0g^4{}^1B$	Eriophorum spissum^{30}	5.0	13
		Sphagnum nemoreum^{60}		
L100E+400S	$O^0g^5{}^0B$	Carex oliogosperma^{45}	4.7	10
		Sphagnum nemoreum^{70}		

Table 1. Summary of Peatland Classification (41H-20)

Peat Thickness

To facilitate the discussion of peat thickness the deposit has been divided into 2 areas, one covered by the "B" survey line grid system and the second covered by the "F" survey line.

In the area covered by the "B" baseline grid system, peat thickness vary from 1.5 m at B200E to 3.0 m at L650E + 300S. Along the baseline, the thickness ranges from 1.5 m to 2.3 m. Point B200E is situated on a mineral island. In the area of greatest resource potential which is basically within the area between L100E + 200N and L100E + 600S, the thickness varies between 1.8 to 2.5 m averaging 2.2 m. With the exception of Point L100E + 600S which has 1.8 m of peat, all of the other remaining points within the limits of this particular area have more than 2 metres of peat. Further north, the thickness ranges from 1.7 m and 3.0 m between B650E and L650E + 500S along the

L650E Transect. Within the area contained by the "B" survey line grid system, a relatively thin surface layer exists. For the most part, this peat layer thickness fluctuates between 0.3 m and 0.4 m.

In the area within the "F" survey line grid system peat the thickness ranges from 0.8 m to 3.5 m at F260S and F460S respectively. At Points F100S (on a mineral island) and F160S no peat layer was found. Between F260S and F660S, the average thickness is 2.2 m. The thickness of the surface layer along this portion of the baseline fluctuates between 0.4 m and 0.6 m.

As a whole, the average thickness across the entire Peatland 41H-20 is 1.4 m. In the area containing a peat layer in excess of 1 metre in thickness, the average is 2.0 m.

Peat Types

The peat types found in this deposit include CS, SC with minor occurrences of SLn and CSLn peat. There is no continuous sphagnum peat cap as is common in other deposits in Parry Sound District. Rather, sedge and sphagnum dominated peats alternate on the surface. This of course may reflect the graminoid surface cover as could be expected. The sphagnum peats are found on the surface on the base line from B240E to the end of the line and on the F-line Points F460S and F660S. Elsewhere the sedge peats are found on the surface. There are lenses of sphagnum peats at depth along L100E Transect, located between sedge peats and also along the F-line from F160S to the end of the line (dominant peat type is mentioned first).

The rest of the peats are sedge dominated. Transect L650E is totally composed of sedge peats. The other lines show sedge as the basal peat type in addition to being encountered on the surface and as lenses within the stratum.

The base substrate is clay commonly in the deeper areas. Sand is also found as the base soil but commonly in the shallower areas except along transect L100E where it is common all along

the line alternating with clay. Ooze is found almost uniformly across the entire deposit below the peat as a thin layer less than 1 m in thickness.

From the peat type profiles it appears that this deposit has basically started as a pond which has been filled in by peatland vegetation. The first types may have been fens judging from the predominance of sedge peats. Later, it would appear there has been the normal alternation of formations depending on the climatic and hydrological conditions.

As far as the use is concerned the peat in this deposit do not offer any horticultural potential. The sedge dominated peats are suitable for energy purposes.

Peat Humification

The overall average degree of humification is H5.7. The average for the surficial peat is H 1.1. The average thickness of the surface peat is 0.4 m. It is quite evenly spread across the entire deposit. The maximum thickness is 0.7 m and the usual range is 0.3 - 0.4 m. Due to its thinness there is no horticultural peat potential. Due to the thinness it would not cause any bog preparation problems if utilization were to be considered.

The rest of the peats are well humified and distributed as a great number of alternating lenses of H5, 6, 7 and 8 and an occasional H9 throughout the deposit. Quite often the bottommost layer is less humified than the one immediately above it indicating high water tables during the earlier phases of paludification.

As far as the degree of humification is concerned, this deposit has potential as a fuel peat source.

Peat Volumes

Peat volume data for Peatland 41H-20 has been summarized in Table 2.

Volumes-wise this deposit has a very limited use potential. The total volume (Table 2) is only 0.914 million m^3 of which 0.694 million m^3 are within the mineable thickness of 1 m or more of peat and only 0.542 million m^3 are humified peats. There are no large special concentrations but the peat is quite evenly distributed over the entire deposit with some concentration in the areas covered by B300E to B730E/L650E + 620S and L100E line as well as as F-line.

This deposit could be considered as a source for a small scale private operation, but has not enough volume for an industrial operation alone.

Peatland No.	Total Peatland Area (ha)	Total Peat Volume (x 10^6 m3)	Volume in area with >1 m of peat (x 10^6 m3)	Humified peat volume in area with > 1 m of peat (x 10^6 m3)
41E-20	82	0.914	0.694	0.542

Table 2. Distribution of Peat Volumes.

Potential for Fuel or Horticultural Peat Development

Due to the thinness of the surface layer and the degree of humification and peat types found in this peatland, there is no potential for horticultural peat development.

As for fuel peat development, there is some potential. The small volume of 0.542 m^3 of fuel peat and average thickness of peat of 2.0 m in the area containing a peat layer thicker than one metre suggest that the deposit could support a small-scale peat mining operation. The well humified sedge peats are ideal for fuel peat production. Peatland 41H-20 does appear to have adequate natural discharge systems although presently they are all blocked due to beaver dams. This peatland has no heavy tree cover whatsoever. The stump content of the portion of the deposit within the "B" and "F" line survey grid systems are 1.2% and 2.5% respectively. The latter number may be high due to the

limited data available to perform the calculation. Nevertheless, the stump content does not appear to be a limiting factor especially in the area of greatest resource potential.

Peatland 41H-20 is also accessible although minor road construction would be required if the peatland were to be developed. Also, this deposit is within economic hauling distances of nearby population centres and wood related industries.

One potential limiting factor is its shape. Peatland 41H-20 is very irregularly shaped which is not ideal for peat extraction, however, this may not be a serious problem depending upon the size of area being considered for potential production.

Comments

This deposit is located on Crown Land. The District Office of the Ministry of Natural Resources indicate no special ecological concerns or land use plans for this deposit.

No previous published resource assessments have been found for this deposit.

(The following dockets contain the Peatland Classification Map, Elevation Map, Isopach Map, and Peat Profiles for this site.)

Ontario Ministry of Natural Resources

Hon. Alan W. Pope
Minister

John R. Sloan
Deputy Minister

ONTARIO GEOLOGICAL SURVEY

Open File Report 5488

Peat and Peatland Evaluation of the Parry Sound Area

Volume V

by

Monenco Ontario Ltd.

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Ontario Geological Survey

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1983

By

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6.0 RECONNAISSANCE SITE EVALUATIONS

6.1 GENERAL

The following chapters describe each deposit studied on a reconnaissance basis. The data in these chapters form the basis for the summaries in Part 4. The reconnaissance sites number 12 in total and include Peatlands 31E-3, 31E-5, 31E-10, 31E-11, 31E-30, 31E-31, 31E-39, 31E-47, 31E-49, 31E-63, 41H-14A and 41H-19. The index map shows their general location.

6.2 PEATLAND 31E-3

Peatland 31E-3 is located in Lount Township in Parry Sound District about 5 and 15 km west of Eagle Lake and the community of South River respectively. A creek (Commanda Creek) bisects this deposit along its main axis. Its U.T.M. coordinates are approximately 17-6105079 and the geographical coordinates are 45° 51' N latitude and 79° 35' longitude. (NTS Topographical Map Sheet 31E/13; airphotos: 77-4535 42-66, 67; 77-4536 86-350, 351, 352, 77-4537 86-381,382).

Access

Only certain areas of Peatland 31E-3 are easily accessible. The northern portion of the deposit is accessible from a township road which passes near the northern edge of the deposit. Further south, the western edge of the middle section can be reached by a 1 km long trail which is cut through the forest and starts at a tree nursery located in the hamlet of Rye.

By road, this deposit is approximately 23 km from the village of South River.

Dates of Field Study

The reconnaissance field study of was carried out on September 9th, 1983.

Topography and Drainage

Peatland 31E-3 is located in the valley of Commanda Creek, which starts at Deer Lake located 2 to 3 km south of the bog and flows through the deposit towards the north. The section of the valley in which this deposit is located is quite flat. Consequently, Commanda Creek meanders considerably within the perimeter of the deposit and is also prone to seasonal flooding. This creek also receives the discharge of several small tributaries both from the east and the west along the stretch of the valley. As a result, a relatively narrow and shallow peat deposit has been formed along the creek and confined to the valley by the uplands which rise quite steeply, by as much as 5 to 15 m, on its eastern and western sides. Although the deposit is over 2 km long, it is only 500 to 600 m wide for the most part and composed of narrow lobes jutting into the valleys of the tributaries.

The drainage of this area is hampered by the gentle gradient of Commanda Creek and by its limited capacity to convey water discharged into it by its tributaries. Due to these drainage conditions, this deposit is not drainable without extensive channelization along Commanda Creek. This alternative may be undesirable from an environmental point of view.

Area and Shape

Peatland 31E-3 is 366 ha in area. It is approximately 5 km long and oriented in a north-south direction. Its northern part is narrow, less than 200 m wide in places. The central and southern parts of the deposit are wider, however, only in a few places greater than 1 km. Commanda Creek is situated more or

less in the middle of the deposit throughout its entire length. Peatland 31E-3 is contiguous with several narrow peaty deposits surrounding it.

Peat Thickness

Two sampling locations were established on Peatland 31E-3. At the first point no peat was found, while 2.2 m of peat were found at the second site. Due to the limited access only these 2 points were drilled. Also, the airphoto interpretation indicates that the rest of the deposit appears to be very shallow and due to the location at Commanda Creek, not useable for peat mining.

Reconnaissance Site #2

(cm)	Peat Type	Degree of Humification
	Ss8Ln2	4
30		
	SsO	
50		
	Ss5C5	5
110		
	C6Ss4	
170		
	C8Ss2	4
220		
	Ooze	
230		
	Silt	

Note: No peat was found at Reconnaissance Site #1.

Peatland Vegetation

This deposit is composed of two main bog types. The first one is open lowshrub bog (OlsB) (102 ha, 28%) found along Commanda Creek. This type is actually a mixture of OlsB, OgB and

small patches of alder thicket swamp (tS) (type) too small to be mapped separately because of the scale. This section appears to be flooded most of the time.

There is treed bog cover on both sides of the creek bordering to the mineral terrain. This cover is primarily composed of TlsB vegetation over the entire deposit. According to the airphoto interpretation this would be marked down as TsrB, however, the field visit more accurately described it as TtsB.

There are also patches of tS cover, but only one area near the northern edge of the bog has been marked as such. The other areas of tS cover are smaller and interspersed amongst the OlsB cover, however, due to the scale of the map, they cannot be individually marked on the peatland classification map.

The OlsB, TlsB and tS physiognomic groups cover 102, (28%), 260 ha, (71%) and 4 ha, (1%) respectively.

Peat Type

The first 110 cm of the peat layer at site R2 were sphagnum dominated and the remainder was sedge dominated (dominant type mentioned first).

Peat Humification

The overall degree of humification for the peat found at Site #2 is H4.6. There was no surface layer.

Estimated Peat Volume

No volume estimates were attempted for this deposit since it has been judged by airphoto interpretation to be composed of scattered pockets of mostly very thin peat layers.

Potential for Further Detailed Study

Peatland 31E-3 is not recommended for any further survey because of a dense surface vegetation, access to various parts is difficult due to the creek running through it and because its

shape and drainage pattern do not favour any mining planning. This deposit's potential for peat extraction is very low not only because of the aforementioned reasons but also due to its irregular shape which is not conducive to peat mining.

Generally, this peatland is not very representative of peatlands in the District.

Comments

The Ministry of Natural Resources has designated the waters of Commanda Creek which run through this peatland as "brook trout waters". This deposit lies mostly on Crown Land (Concessions - VIII and XI).

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.3 PEATLAND 31E-5

Location

Peatland 31E-5 is located in both Lount and Chapman Townships in Parry Sound District, about 4 km south of Deer Lake and 15 km west of Sundridge. It is bisected by the Distress River. This peatland is located approximately at 17-6105069 in U.T.M. coordinates or 45° 46'N latitude and 79° 35'W longitude in geographic coordinates. (NTS 15000 scale map sheet No. 31E/13; airphotos: 77-4533 70-8,9; 77-4532 43-157,8).

Access

Peatland 31E-5 is accessible from three directions. The southwest portion of the deposit is accessible via a cut township line. The north and northeast edges of the peatland are within 800 and 100 m respectively, of township roads which lie north and east of the deposit.

By road, Peatland 31E-5 is approximately 17 km north of Magnetawan, 20 km west of Sundridge and 23 km southwest of South River. There are sawmill operations in each of the above-mentioned communities.

Dates of Field Study

The reconnaissance field study of Peatland 31E-5 was carried out on September 9th, 13th, and 14th, 1983.

Topography and Drainage

Peatland 31E-5 is located on the flood plain of the Distress River. With the exception of an upland area on the west side of the peatland, generally, the terrain immediately surrounding the deposit is relatively flat and slopes towards the deposit. It is underlain by clay.

There do not appear to be any drainage problems on this peatland. No beaver dams were detected during the airphoto interpretation phase nor during the site visit.

About 200 m downstream of the perimeter of the bog the river drops quite suddenly. Hence, the potential for good drainage is there. In all, the Distress River appears to be an adequate discharge system. Due to its meandering-nature within the peatland area and slightly beyond its perimeter, some flooding may occur during the spring run-off. Surface runoff from the uplands west of the peatland and water being discharged onto it from ditches draining farmland north of it do not appear to be sources of serious flooding.

Area and Shape

Peatland 31E-5 is 184 ha in area. It is best described as "pear-shaped". It is oriented in a southwest to northeast direction. It is contiguous with several peaty embayments and peripheral channels.

Peatland Vegetation

This deposit is covered by open graminoid bog (OgB), open lowshrub bog (OlsB) and treed shrub-rich bog (TsrB) type vegetation. All four survey points had an OlsB cover. OlsB covers 110 ha or (60%) of the total area and is found over most of the deposit. There are minor areas of tree cover on the deposit but due to the map scale these areas have not been separately mapped. The most prominent species are Chamaedaphne calyculata, Kalmia angustifolia, Andromeda glaucophylla, Carex oligosperma, C. rostrata and Sphagnum magellanicum.

TsrB covers the central and eastern portion of the southern half of the deposit. The area covered by this cover type is bisected by the Distress River. The central portion of this area is prone to flooding in that it lies in the Distress River channel. This type covers a total of 45 ha (24%). The third type, OgB, covers only 29 ha (16%) of the northeastern corner and

a small embayment jutting to the east. The former is apparently quite shallow. The latter is flooded by a number of beaver ponds and probably also has as negligible thickness of peat.

Peat Depth

Four sampling locations were established on Peatland 31E-5. At 3 of the 4 points a 20 cm surface layer existed. The average thickness of the humified layer is 2.0 while the average thickness of the whole peat layer is 2.1 m.

Peat Type

The peat type predominantly found in this deposit is sedge peat. The surface layer at sites R2, R3 and R4 is, sphagnum dominated, however, the humified layer is sedge dominated. With the exception of site R1, the peat in the humified layer tends to be woody or shrubby. The stump content, for this peatland is 3.3% based on stump counts performed at these sites. Some Eriophorum is also present in the peats of the humified layer (dominant type is mentioned first).

Peat Humification

The average overall degree of humification for the 4 points is H5.6. The average degree of humification for the surficial layers is H1.0 and H6.0 for the humified layers.

Estimated Peat Volume

The estimated peat volume for Peatland 31E-5 is 3.864 million m^3 and is solely premised on information gathered at the site due to the lack of a detailed survey site in its close proximity. However, the average thickness of 2.1 m conforms with that of the other deposits surveyed in Parry Sound District and is presumed to be precise enough for the volume estimate. In any case this volume is to be considered as a maximum value at the present state of knowledge.

Potential for Further Detailed Study

Peatland 31E-5 is recommended for a further detailed investigation. Its potential for fuel peat extraction is relatively good based on estimated volumes and peat layer thicknesses found during the reconnaissance work. Also, 31E-5 is an open bog with spotty dense tree cover and no apparent drainage problems. The deposit is accessible and is within economic hauling distances of several population centres and industries which could use the fuel peat as a source of energy. From these points of view, the potential for peat extraction at this site is good. However, this potential may be diminished by a preliminary stump content calculations which indicate that the peat may be quite woody and thus preclude the employment of certain mining methods or even utilization of the peatland at all. A detailed survey would provide useful information in this regard.

Comments

This deposit is partly on private and partly on Crown land. The Distress River has been designated as "brook trout water" by the Ministry of Natural Resources.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

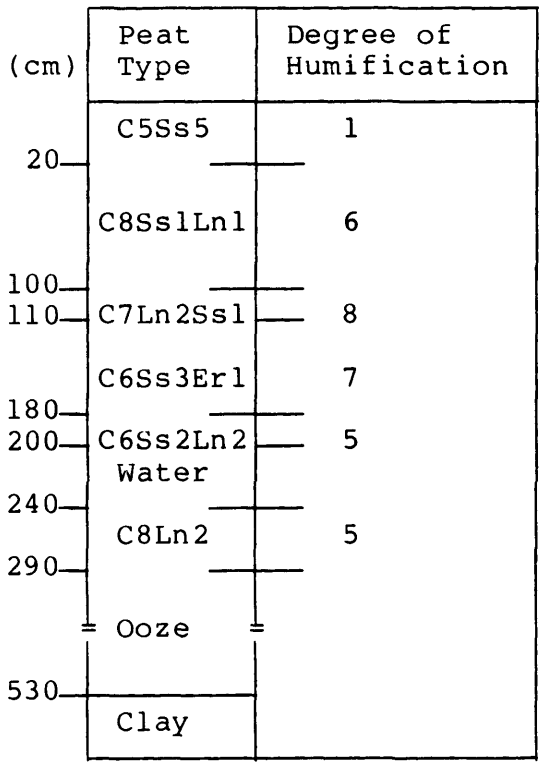
Reconnaissance Site #1

(cm)	Peat Type	Degree of Humification
	C7Ss3	5
60		4
90	Clay	

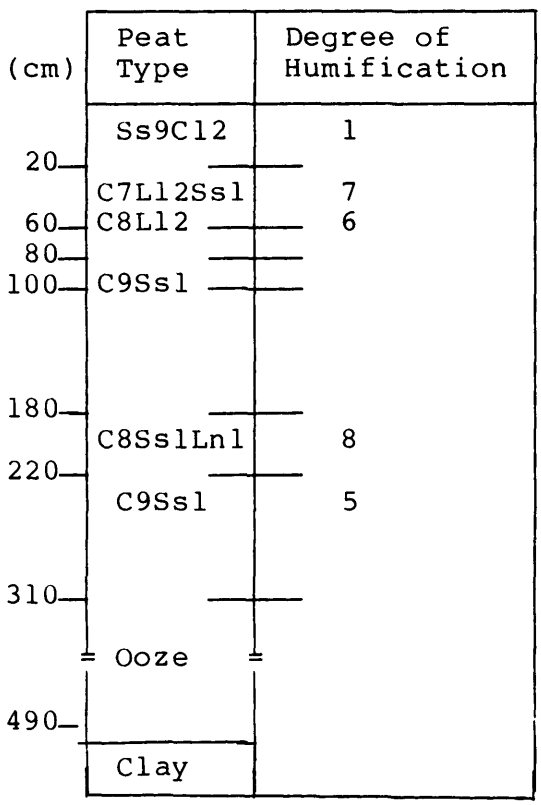
Reconnaissance Site 2

(cm)	Peat Type	Degree of Humification
	Ss8C2	1
20	C9Ln1	6
40	C7Ss3	
80		8
	C8Er1Ss1	
120		
150		6
	C8Ln1Ss1	
200	Clay	

Reconnaissance Site #3



Reconnaissance Site #4



6.4 PEATLAND 31E-10

Location

Peatland 31E-10 is located in Chapman Township in Parry Sound District, about 2 km east of the village of Magnetawan. This peatland is located approximately at 17-6075060 in U.T.M. coordinates or 45° 41'N latitude and 79° 38'W longitude in geographic coordinates. (NTS Topographical Map Sheet No. 35E/12; airphotos: 77-4528 86-318, 319, 320; 77-4529 56-128, 129, 130).

Access

Peatland 31E-10 is for the most part highly accessible. Highway 124 passes through its northern most portion providing an excellent access point to the northern half of the deposit. Elsewhere, the most southwesterly part lies directly off Highway 510. To reach the southern half of the peatland is more difficult. The Distress River limits the access. Also access from roads on either the east or west side is gained only on foot through about a kilometer of hilly, heavily-wooded terrain.

Via Highway 520, this deposit is slightly over 2 km from Magnetawan and by Highway 124 it is 13 km from the community of Ahmic Lake.

Dates of Field Study

The reconnaissance field study was done on October 14th, 1983.

Topography and Drainage

Unlike most peatlands studied in the Parry Sound District, this one is not completely surrounded by uplands and is, in is this respect, quite similar to Peatland 31E-5. Instead, the surrounding land slopes gently towards the peatland with the exception of hilly stretch along the western perimeter.

This deposit is situated in the floodplain of the Distress River. The water level in the Distress River is influenced by the Magnetawan River whose elevation is regulated by control structures at Magnetawan.

There is a small lake on the southwest perimeter approximately 1 km northwest of the Distress River/Magnetawan River confluence. It appears to have little influence on the overall drainage system of this area.

The underlying substrate is silt.

Area and Shape

Peatland 31E-10 is 187 ha in area. Its shape is slightly irregular partly due to the definition of its southern perimeter. In fact, this deposit is part of a much larger peatland complex which incorporates Peatland 31E-11. Its general orientation is north-south.

Peatland Vegetation

This deposit is a bog and has conifer swamp (cS), thicket swamp (tS), treed sphagnum bog (TsB) and open lowshrub bog (OlsB) covers. The northern part is a swamp with both deciduous and coniferous trees and a thicket understorey, in fact one could say a mixed swamp type (chtS). The most common tree species is Picea mariana. The thicket is Alnus rugosa. This type covers about 16 ha (8.5%) of the total bog area. The peat depth was only 90 cm.

South of this physiognomic group there are about 97 ha (52% of TsrB type. This also contains dense vegetation comprised of small trees and abundant shrub cover. Further south there is an area with OlsB cover (32 ha, 17%). It displays quite an abundant growth of Myrica gale among others. This section also gets flooded during the spring and after heavy rainfall. The peat in this area was only 70 cm thick. Along the highway at the southern part of the deposit there is also a narrow zone of tS (42 ha, 22.5%) type. There was no peat found at Site R2.

Peat Depth

Peat depths were measured at 3 sites. The average total peat depth is 0.9 m. The total peat depths vary from 0 m at site R2 to 1.9 m at site R1. At sites R1 and R3 surface layers of 0.2 m and 0.3 m exist respectively.

Reconnaissance Site #1

(cm)	Peat Type	Degree of Humification
	Ss9Cl	1
20		
	Ss7Ln2cl	
80		
		7
	Ss6C2Ll2	
140		
160	Ss9Lnl	8
	C9Lnl	5
190		
	Ooze	
260		
	Silt	

Reconnaissance Site #3

(cm)	Peat Type	Degree of Humification
	Ss9Cl	1
30		
	Ss6C3Lnl	6
70		
	Silt	

Note: No peat was found at Reconnaissance Site #2.

Peat Type

The predominant peat type found in this deposit is sphagnum peat. At both sites R1 and R3, the surface layer is mostly sphagnum with some sedge. Below the surficial layer, the peat layers at both sites are sphagnum - dominated peats with the exception of the based layer at site R1 which is shrubby-sedge peat. In general, all of the humified layers of peat contain some shrub or wood at both sides (dominant type is mentioned first).

A 0.7 m layer of ooze was encountered at site R1.

Peat Humification

The average overall degree of humification for sites R1 and R3 is 5.1. The average for the surficial layer is 1.0 while the humified layers average is 6.4.

Estimated Peat Volume

Based on the information available on Peatland 31E-10, an accurate estimated peat volume cannot be provided. However, if based on the available date it may be as big as 2.992 million m^3. A larger number of data points would possibly change this estimate.

Potential for Further Detailed Study

It is recommended that Peatland 31E-10 not be investigated further in detail.

The deposit's potential for horticultural or fuel peat extraction is very low mainly due to its extremely dense tree cover. Also a good portion of the peatland area is in an area not well suited for efficient peat mining. Hence, this deposit should not be surveyed further in detail from the view point of attempting to gauge its potential for horticultural or fuel peat extraction.

This peatland is located on a flood plain, like several others surveyed in Parry Sound District. It could be considered for study with Peatlands 31E-5 and 31E-11 in detail in order to get a better understanding of this type of peatland.

Comments

Peatland 31E-10 is almost all on private land except several lots on the western edge. The Ministry of Natural Resources has designated the lower Distress River waters as a "pike-spawning" area.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.5 PEATLAND 31E-11

Location

Peatland 31E-11 is located in Chapman Township in Parry Sound District, about 2 km east of the village of Magnetawan. This peatland is located approximately at 17-6085059 in U.T.M. coordinates or 45° 41'N latitude and 79° 37'W longitude in geographic coordinates. (NTS Topographical Map Sheet No. 35E/12; airphotos: 77-4528 86-318, 319, 320 and 77-4529 56-128, 129, 130).

Access

Peatland 31E-11 is well accessible. Highway 520 borders on the southwest side of the deposit for several hundred metres. Township roads also border on its north, northwest and south sides. Only the east side of the deposit inaccessible directly from a road.

Via Highway 520, Peatland 31E-11 is 2 km east of Magnetawan and 20 km west of Burk's Falls.

Dates of Field Study

The reconnaissance field study of Peatland 31E-11 was conducted on October 13th and 14th, 1983.

Topography and Drainage

This deposit is contiguous with Peatland 31E-10. Peatland 31E-11 is surrounded largely by uplands with the exception of the north and northwest perimeter. Around the southern extremeties, the surrounding uplands are up to 10 m higher than the bog surface.

This deposit's drainage is controlled by the Distress River. Also, the township road which separates the two deposits, in the case of Peatland 31E-11, creates a "damming effect"

resulting in localized surface ponding of water on the bog along the road.

There is a small lake (Tarrant Lake), in the southeast area of the peatland. It appears to have only a localized effect on drainage.

This deposit is underlain for the most part by silt.

Area and Shape

Peatland 31E-11 is 159 ha in area. Several rather large mineral islands are contained within the perimeter of this deposit. In general, this deposit is oriented in a northwest/southeast axis and its shape is best described as being semi-arcual.

Peatland Vegetation

This deposit is a bog covered by treed lowshrub bog (TlsB), treed shrub-rich bog (TtsB), open lowshrub bog (OlsB) and thicket swamp (tS) type vegetation. The mixed swamp (hctS) and OlsB physiognomic groups cover only 9 ha (7%) and 2 ha (1%) respectively of the northern part of the bog. The former is an extension of the same area found at the southeastern corner of Peatland 31E-10 and the latter is an extension of the same found at the southwestern corner of Peatland 31E-10.

TtsB covers 96 ha (60%) of the northern half of the deposit. In the northern portion of this area under Thuja occidentalis is prominent while elsewhere Picea mariana dominates. Moss cover is composed of sphagnum. The most common shrubs are Alnus rugosa and Ledum groenlandicum. Carex trisperma is the most prominent sedge species. This part of the deposit has some swamp-like characteristics although the mosses are sphagna.

The southern portion of this deposit is covered by TlsB type (52 ha; 32%). In this area Larix laricina and Picea mariana are the dominant tree species. The most abundant shrub species include Chamaedaphne calyculata. Herbaceous cover was

characterized by Carex trisperma. There is also a small pond (4 ha) in the southern part of the bog.

Peat Thickness

Peat thickness was measured at 4 points. The average total peat thickness is 3.1 m. Overall, the peat thickness varies from 2.3 m at Point R4 to 3.6 m at Points R2 and R3. As with Peatland 31E-10, the surficial layers are very thin. At points R2 and R4 no surface layer existed at all while it was only 0.1 and 0.2 m at points R1 and R3 respectively. See also the attached profiles.

Reconnaissance Site 4

(cm)	Peat Type	Degree of Humification
	Ss6Ln2C2	4
30		
	C4Ss4Ln2	5
120		
	C6Ln2Ss2	4
180		
		5
230		
	Ooze	
260		
	Silt	

Peat Types

The dominant peat type found is sedge peat. Only at Points R1 and R3 does a surface layer exist. At Point R1 it is composed of sphagnum moss while at Point R3 it is sphagnum-sedge peat. The humified layers in this deposit are mostly dominated by sedge peat. Only at Point R1 are all of the peat types sphagnum dominated. Besides being mostly sedge-type the peat throughout the deposit is quite woody. For the most part is is shrub-wood, (Ln), however, at Points R1 and R3 there are layers of humified

peat containing tree-wood (L1) (dominant type is mentioned first).

Layers of ooze were encountered at all 4 points. The thickness varied from 0.3 m at Points R3 and R4 to 1.2 m at R2.

Peat Humification

The average overall degree of humification for all sites is H5.8. The average degree of humification for the surficial layer at Points R1 and R3 is H1.0 and H6.0 for the humified layers at all four sites.

Estimated Peat Volume

The estimated peat volume for Peatland 31E-10 is 4.681 million m^3. This figure is based on the total surface area and the average thickness calculated from the field data and should be regarded as a maximum value.

Potential for Further Detailed Study

It is recommended that Peatland 31E-11 be investigated further in detail. The potential is low for horticultural use due to the orientation of the mineral islands and Tarrant Lake which split up the deposit into small inefficient to mine areas and also due to the heavy tree cover. However, this peatland should be surveyed in detail because it is a good representative of a floodplain deposit. In actuality, Peatland 31E-10 is not very different from Peatland 31E-11, however, the latter deposit affords a survey crew easier access and thus, it has been recommended for further detailed survey. By doing this, a comparison could be made between peatlands situated in river floodplains (compare with deposit No. 31E-5).

Comments

Peatland 31E-11 is all on private land. The Ministry of Natural Resources has designated the lower Distress River waters as "pike-spawning" waters.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.6 PEATLAND 31E-30

Location

Peatland 31E-30 is located both in McMurrich and Monteith Townships in Parry Sound District, about 1.5 km southwest of Whitehall and 2 km east of Bear Lake. This deposit is located approximately at 17-6145035 in U.T.M. coordinates or 45° 28'N latitude and 79° 33'W longitude in geographic coordinates. (Airphotos: 77-4519 46-54, 55, 77-4520 85-172, 173, 174).

Access

This deposit is very accessible. The northeastern side is within 200 m of Axe Lake Road which also runs right along the southern end of the bog.

By road, the deposit is approximately 2 km southwest of Whitehall, 5 km west of Sprucedale and 8 km east of Jarlsberg.

Dates of Field Study

The reconnaissance field study was carried out on September 12 and 13, 1983.

Topography and Drainage

Peatland 31E-5 is basically composed of two almost separate peatlands. The northern portion occupies a depression which is bisected by a creek draining the southern part. The more southerly portion is a narrow bog confined to a depression. The entire deposit is surrounded by quite high mineral terrain uplands.

At present the drainage is mostly unhampered except for a beaver dam is constricting flow out of the southern part. The airphoto interpretation investigation indicated considerable flooding on both the northern and southern sections. However,

during the reconnaissance field study, no flooding was observed on the northern portion. The flooding observed on the airphotos may have been seasonal on the southern portion. No surface ponding was observed, but, the surface was very wet and could be described as being a floating mat. Surface "quaking" was also observed especially at sites R5 and R6.

The natural drainage system of Peatland 31E-30 is basically composed of a series of creeks. The confluence of the two creeks draining this deposit is in the southwest part of the northern portion. It is at this point where the creek draining the northern portion intersects a creek conveying effluent water from the southern portion. The latter creek eventually drains into a small lake situated west of the northern portion. From this small lake another creek conveys water into Bear Lake. There is another smaller creek which drains the southernmost edge of the southern end from a small partly filled-in lake on the other side of Axe Lake Road.

Based on the findings of the reconnaissance study which revealed that presently this deposit was not seriously flooded, the airphotos indicated that earlier (1977) much of the central part of the deposit was covered by free water due to beaver dams at the narrow channel between the southern and the northern end as well as in the discharge channel. This indicates that in order to maintain ditches, beaver must be controlled.

The deposit is mostly underlain by silt based on findings of the reconnaissance field study. Sand was found at sites R2 and R6.

Area and Shape

This deposit is 156 ha in area. The northern portion covers 100 ha of the total area. It is almost square in shape being on average 900 m wide with a maximum length at 1200 m long. This portion is oriented in a southwest-northeast

direction. The long, narrow southern section is oriented in a northwest-southeast direction. It is approximately 1.6 km long, rarely exceeds 400 m in width.

There are only 3 mineral islands. Two rather large islands in the northern portion, the smaller of which is centered in the middle of the peatland area. There is only one small island on the western edge of the southern section.

Peatland Vegetation

This deposit has three major physiognomic groups all of which are bogs by formations; treed sphagnum bog (TspB), treed graminoid bog (TgB), and open graminoid bog (OgB). The free water is not presently as extensively spread as it was at the time airphotos were taken (1977), perhaps because the beaver may have abandoned the area because of the exceptionally dry summer.

TspB (46 ha, 29.5%) is confined to the northern end of the deposit and is actually the only area of sphagnum bog recorded in this study region. Picea mariana is the dominant three species.

South of the treed area there is a section covered by OgB type (67 ha; 43%). Parts of this cover is a mixture of OgB and OsrB, the former predominating. Common shrub among others is Chamaedaphne calyculata.

OgB type vegetation also covers most of the southern section (total 23 ha; 14.8%). The southern section in fact is covered partially by Osr and OgB of which the latter was regarded more prominent. Total OgB cover is 98 ha (5.8%).

The southern end of the southern lobe is covered by TgB (20 ha, 12.8%) where the cover is Larix laricina and the most common shrub is Chamaedaphne calyculata. The extreme southern tip of the deposit has a limited area covered by a very dense alder swamp which is almost impassable without cutting a path.

On the whole, the surface vegetation of this deposit does not pose extremely serious problems as far as development is concerned.

Peat Thickness

Six sampling points were established on Peatland 31E-30; three on the upper portion and three on the lower. The average total thickness of the three points on the northern portion of the peatland is 2.3 m while in the southern portion it is 1.5 m. A surface layer exists at all six points ranging from 0.2 to 0.5 m in thickness.

Peat Type

The predominant peat type found in this deposit is sedge peat. At Point R1, the sphagnum-sedge peat is found. At Point R2, which was located in a treed area, considerable quantity of wood were found. In fact, one layer near the surface is dominated by woody peat. Point R3 is similar to Point R1 in that, the peat types are sphagum-sedge peats. At the three points further south, the peat types are for the most part sphagnum-sedge peats. At Points R5 and R6, some shrub peat was noted (dominant type is mentioned first).

All six peat layers are underlain by layers of ooze. These ooze layers vary from 10 cm at points R1 and R6 to 80 cm at Point R2.

Peat Humification

The average overall degree of humification for the six points is 4.9. Excluding Point R6 (which is mostly unhumified surficial layer peat) from the average, the average is H5.5. The average degree of humification for the surficial layers is H1.0.

Estimated Peat Volume

The estimated peat volume for Peatland 31E-30 is 3.140 million m^3. Of the volume, 2.3 million m^3 is contained in the northern and 0.840 m^3 in the southern portion. These volume

estimates are based on the findings of the reconnaissance field study and should be regarded as maximum values.

Potential for Further Detailed Study

Peatland 31E-30 is not recommended for a detailed study. This deposit has little potential for peat extraction mainly due to it proneness to flooding and division into two sections. Also the mineral islands would hamper any peat extraction operations on the northern portion of the peatland. Although the lower section is 1.6 km long it is nevertheless, quite narrow and thus not attractive for peat extraction.

Comments

The deposit is mostly on Crown Land. Only a small part in Concession VIII is private (patented) land. The Ministry of Natural Resources has no specific concerns regarding this area.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

Reconnaissance Site #1

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
20		
	C8Ss1Ln1	5
50		
70	C7Ss3	
	C9Ss1	7
110		
	CO	6
190		
	Ooze	
200		
	Silt	

Reconnaissance Site #2

(cm)	Peat Type	Degree of Humification
	Ss9Cl	1
20		
	$L_1$6Ca	5
100		
	C7$L_1$2Ss1	
130		
		7
	C7$L_1$2Ss1	
200		
	C8Ln1Ss1	6
300		
		7
340	C9Ss1	
		9
370		
	Ooze	
450		
	Silt	

Reconnaissance Site #3

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
30		
50		8
	C8Ss2	
		7
100		
	CO	5
130		
	Ooze	
150		
	Silt	

Reconnaissance Site #4

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
30		
	$C7L_12Ss1$	6
70		
	C6Ss1	8
100		
	C9Ss1	6
170		
	Ooze	
200		
	Silt	

Reconnaissance Site #5

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
50		
	C8Ln2	5
70		
		7
110		
	CO	
190		
	C9Ln1	7
210		
	Ooze	
240		
	Silt	

Reconnaissance Site #6

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
40		
	C8Ln2	5
60	Ooze	
70		
	Sand	

6.7 PEATLAND 31E-31

Location

Peatland 31E-31 is located in McMurrich Township in Parry Sound District about 6 km southwest of Sprucedale and 0.5 km east of Banbury. It is is bisected by Beggsboro Creek. Its approximate U.T.M and geographical coordinates are 17-6175034, 45° 27'N latitude and 79° 30'W longitude respectively (NTS Topographical Map Sheet 31E/5 and 31E/6; airphotos: 77-4519 46-56, 57, 58).

Access

Peatland 31E-31 is accessible via a township road which is about 2 km south of Highway 518.

By road, the deposit is approximately 6 km southwest of Sprucedale and 20, 28, 29, and 15 km from Emsdale, Kearney, Burks Falls, and Huntsville respectively. All these communities have some wood products industries and could be considered as potential users of peat.

Dates of Field Study

The reconnaissance field study was carried out on September 21st, 1983.

Topography and Drainage

Peatland 31E-31 is located on a plain which is bisected by (Beggsboro Creek). Tree-covered uplands surround itexcept along the northeast perimeter. The terrain along the northeast edge is generally flat and open, however, sloping towards the peatland.

During the field reconnaissance study, the drainage appeared to be good. The stage of Beggsboro Creek was considerably lower than that of the bog. This was especially true in the southern parts where Beggsboro Creek drains this

deposit to the north and eventually into the Magnetawan River System.

No evidence of beaver dams were apparent during both the airphoto interpretation phase or the field reconnaissance study.

Area and Shape

This deposit covers a total of 209 ha. It is oriented in a northwest-southeast direction in a depression occupied by a small stream. The maximum length is about 3.5 km. The width varies, the maximum being about 1 km in the central part of the deposit. The shape of the deposit is almost rectangular broken by a large mineral terrain peninsula jutting into it and dividing the southeastern end into two lobes. Otherwise the deposit is quite regularly rectangular with two small islands of mineral terrain and a number of small embayments at both sides as is normal. As far as the shape is concerned it would be quite a simple matter to establish a peat mining plan on this deposit in comparison with a number of other deposits broken into smaller, semi discrete individual deposits.

Peatland Vegetation

This deposit, which is a bog, is covered by treed shrub-rich bog (TsrB), treed lowshrub bog (TlsB), treed graminoid bog (TgB), open lowshrub bog (OlsB) and open graminoid bog (OgB) types. The TsrB-type vegetation is mostly restricted to the edges of the deposit in the central portion of the deposit but covers most of the two southern lobes. It covers a total of 94 ha (45%) of the bog.

TgB is found only on the northeastern side of the central part of the bog. It covers only 13 ha (6%) and is of minor importance.

OlsB covers a total of 44 ha (21%) in the centre of the deposit along Beggsboro Creek. It is composed largely of OlsB vegetation with minor areas of OgB vegetation along the creek. The dominant shrub species are Chamaedaphne calyculata, Ledum

groenlandicum and Kalmia polifolia. Carex rostrata is the dominant sedge. Most of this area is subject to flooding.

The northern portion of the deposit is covered by OgB(F) (58 ha, 28%) type vegetation much of this area is subject to extended flooding as it is quite low-lying.

The graminoid cover in this area is as high as 85 - 95%. The dominant sedge species is Carex rostrata. There is also a healthy shrub vegetation mixed with graminoid cover with Chamaedaphne calyculata as the dominant species. Parts of this area do not have much moss cover and are approaching fen conditions. The surface water pH varied from 3.5 to 4.5.

Peat Thickness

Four sampling points were established on Peatland 31E-31. At three of the four points no surface layer existed. Only at Point 4 is there a surface layer of 20 cm. The thickness of the humified layers varied from 0.4 m at Point 1, to 2.0 m at Point 3 and averaged 14 cm. Total average thickness was 1.5 m. See the attached profiles.

Peat Type

There is no single dominant peat type in Peatland 31E-31. As can be seen in the tables the upper layers of peat are sedge-dominated followed by sphagnum peats. The lower layers are once again sedge-dominated. Very little woody peat was encountered. Stump counts conducted at Points 3 and 4 revealed a combined total of 3 stumps (dominant type is mentioned first).

Peat Humification

The average overall degree of humification is H7.2. As can be seen in tables, the peat tends to be well-humified. The overall average degree of humification of the humified layers is H7.3. It is interesting to note that at each point the sphagnum peat is usually more humified than the sedge dominated peats.

Estimated Peat Volume

The estimated peat volume for Peatland 31E-31 is 3.135 million m^3. This estimate is based on the findings of the field reconnaissance study and reflects a maximum as the average depth is based on that measured at four points only. The thickness of the peat layer at the sites studied on Peatland 31E-31 vary from 0.4 m to 2.0 m and on average is 1.4 m.

Potential for Further Detailed Study

Peatland 31E-31 is recommended for further detailed study. It is mostly on private (patented) land. Beggsboro Creek, which bisects it, has been cited as a "brook trout stream" by the Ministry of Natural Resources. These factors may diminish the peat extraction potential.

Comments

This deposit is on a possible deer range according the Parry Sound District Office of the Ministry of Natural Resources.

Most of the deposits is on private land excluding the lot No. 26 in Concession on VIII which is on Crown Land.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.8 PEATLAND 31E-39

Location

This deposit is located in Cardwell Township in Bracebridge District about 25 km west of Huntsville. Its U.T.M. and geographical coordinates are 17-6065021 and 45' 20'N latitude and 79° 39'W longitude respectively. (NTS 1:50000 scale topographical map sheet No. 31E/5; airphotos: 77-4514, 53-130, 131, 132).

Access

The deposit is situated about 1 km north of an unsurfaced road running north from highway 532 about 2.5 km northwest of Rosseau. The distance from the deposit to Highway 532 is about 8 km. The distance by road to Bracebridge is 50 m, to Huntsville 52 km and Parry Sound 55 km. There is no direct access to the bog and the last 1000 m to the deposit is over a rocky precambrian terrain.

Dates of Field Study

The reconnaissance study was done on September 9th, 1983.

Area and Shape

The total area of this deposit is 76 ha.

The main body is quite regularly shaped and almost rectangular. There is a narrow irregular embayment in the southwestern part of the bog. The maximum dimension in a southwesterly-northeastern direction is about 1750 m and the width at a 90° angle to the main axis approximately 650 m.

Topography and Drainage

The deposit is located in a relatively flat area of the Precambrian Shield. The immediate surroundings of the deposit are devoid of large scale hills. The deposit is about 310 m above sea level. The land rises to only about 320 m a.s.l. generally. To the south, the surface actually has a gentle grade and goes down to about 270 m a.s.l. 1-5 km south of the deposit.

In small features, the immediate surroundings of the deposit are quite rugged as is common in the Precambrian Shield country. The bordering mineral terrain rises a few metres above the bog surface in the form of a series of rock outcrops interrupted by lower lying narrow drainage channels.

The deposit itself is on a height of land and is drained to the northeast by its eastern end where the water drains into a narrow and long stretch of peat-filled valley and from there further towards the Rosseau River system which in turn drains into Lake Rosseau.

The western and southwestern corners of the deposit are drained through a couple of beaver-dammed channels. The western corner drains into a system that discharges into Star Lake. The southwestern portion drains through the Shadow River into Lake Rousseau.

If this deposit were made use of it could be drained relatively easily through these channels by deepening them and removing the beaver dams.

Peatland Vegetation

A total of five reconnaissance sites were drilled on this bog. The observation on the vegetation at these sites were used to adjust and verify the airphoto interpretation of the vegetation.

The main physiognomic groups found on this deposit which by formation is a bog are: thicket swamp (tS), open lowshrub bog (OlsB), open graminoid bog (OgB) and treed lowshrub bog (TlsB). The surface water pH measured in the open graminoid bog was 3.7.

OlsB covers a minor area (4 ha; 5%) of the deposit at its extreme eastern end where there is a discharge channel out of the deposit. OgB and OlsB complex cover the main body of the deposit (47 ha; 62%). This section has scattered trees (Larix laricina) some of which have died. There are patches of OlsB type giving the darker tones on the airphoto within the lighter OgB matrix. Carex oligosperma is the dominant sedge species giving this area a park-like appearance. Of the mosses, Sphagnum magellanicum is the most common. At the site, where the vegetation was recorded, Nemopanthus mucronata and Chamaedaphne calyculata were present. There is some flooding at the northwestern and southwestern parts of the deposit. It is caused by the beavers.

Most of the eastern end of the deposit is covered by TlsB type vegetation (23 ha, 30%). The tree cover at the survey points was only 15%. (Larix laricina, and Picea mariana). The dominant shrub was Nemopanthus mucronata. There was a relatively abundant amount of Carex oligosperma vegetation giving this area a park-like appearance. Regardless of the low tree cover at the survey points it appears denser than 10% in the overall area and justifies classifying this part as treed.

Along the edges of the deposit there are scattered areas of very dense alder thicket which reaches up to 30 m into the bog (tS). However, they are of a minor importance and not mapped mainly due to the scale factor except a small area (2 ha, 3%) at the northern edge.

Peat Thickness

The measured thickness varied from 2.2 m to 5.4 m. In order to get more representative average thicknesses the end points of the survey line(s) have been added as 0 m. This method gives an overall average thickness of 2.1 m. Of this total only 20 cm on average is surficial layer and the rest is well humified peat. As far as the peat thickness is concerned this deposit would be usable for a small-scale peat production operation. See also the profiles.

Peat Types

The main peat types are S, CS and CLn peats (see the profile).

Sphagnum peat is either pure sphagnum, or SC peat as a thin 20 cm cap on the surface. At Point 5 there are no sphagnum peats. At the greater depths, the peats are mainly sphagnum-sedge peats with a clear dominance of Carex. At Points R1, R3 and R4 there is also CLn peat as well as the Points R4 a thin layer of LlC peat over the surface (dominant type is mentioned first).

The underlying substrate is rock, sand and clay with a thin layer of ooze on it except at Point R2.

It appears that this deposit has initially started as a paludification of small ponds or wet depressions and later progressed through fen and shrubby fen or bog to the state it is found today.

As far as the peat types are concerned this deposit does not have any horticultural peat potential. The best use for the peat types found in this deposit would be energy-related.

Peat Humification

The overall average degree of humification is H6.3 and that of the surficial layer is Hl.0. The surficial layer is only about 20 m thick and non-existant at Site R5 in the eastern part of the deposit.

In the greater depths there are only a few small bases of H5 while the bulk of the peat has a degree of humification of H_6 ahd H_7 also with a layer of 2.8 m thick of H8 and Site 5.

As far as the degree of humification is concerned, this deposit is similarly to others surveyed in their area, that is suitable for fuel peat use.

Estimated Peat Volumes

Based on the information from other deposits surveyed in detail in this area. The calculated average thickness of 2.1 m appears to confirm that for other deposits and has been used as such to estimate the total peat volume in this deposit. It is estimated to be about 1.596 million m^3. Only a fraction is unhumified and it is estimated that 1.444 million m^3 are humified peats of a fuel peat quality. These values should be regarded as maxima.

Potential for Further Detailed Study

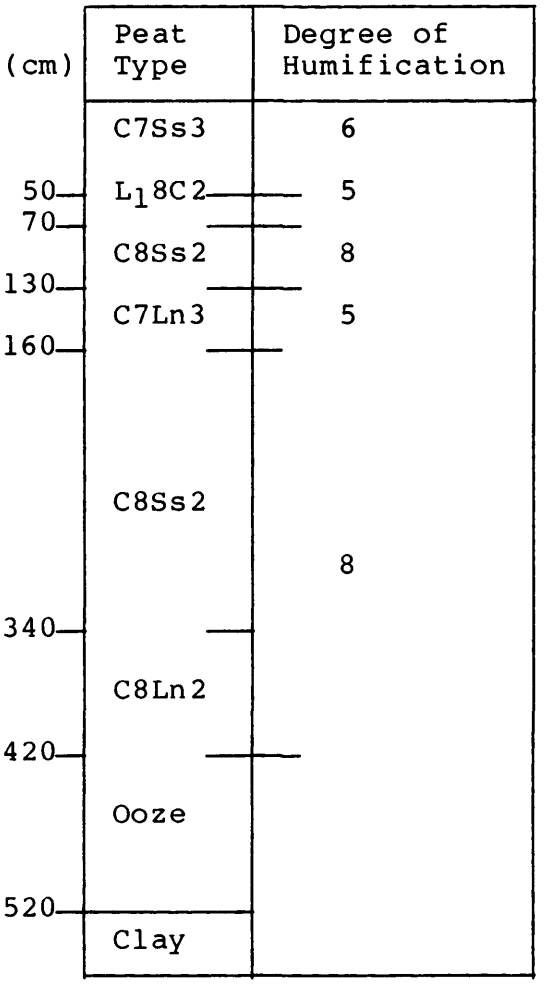
Due to its small size this deposit is not recommended for further detailed study. However, if a small-sized operation were found feasible, this deposit would be usable as far as the drainage conditions, peat types, thickness and volumes are concerned as a source of fuel peat and should be studied in further detail.

Comments

This deposit is located on Crown Land. According to the Bracebridge District Office of the Ministry of Natural Resources, this region is a moose concentration area. There are no special ecological concerns or land use plans for this area.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

Reconnaissance Site #5



6.9 PEATLAND 31E-47

Location

Peatland 31E-47 is located in Conger Township in Parry Sound District just north of Healey Lake between Crane Lake and Conger Lake. It is located approximately at 17-5855004 in U.T.M. coordinates or 45° 11'N latitude and 79° 55'W longitude in geographic coordinates (airphotos: 77-4508 61-109; 77-4509 53-19, 20, 21).

Access

Peatlands 31E-47 is well accessible from surrounding township roads. The southern portion is accessible from a township road which starts at Highway 69 at the Parry Sound District/Muskoka District Municipality and ends at La Force Lake. This road runs parallel to the southern end of the bog for a distance of about one kilometre. Branching off of it is a private road extending to the dam on the mouth of the river which links Pauls Lake and Crane Lake. This road passes by the northern edge of the bog. By road, the deposit is 12 km east of Highway 69 and 16 km northwest of the town of MacTier.

Dates of Field Study

The reconnaissance field study of was carried out on August 11, 1983.

Topography and Drainage

Peatland 31E-47 is situated in a depression (once a lake) surrounded by tree-covered uplands. The underlying substrate is clay.

Presently, there are no serious drainage problems. Beaver dams have caused considerable flooding on the bog especially in its middle and northern portions.

Area and Shape

Peatland 31E-47 is 152 ha in area. It is approximately 2 km long. Its shape is very irregular with many embayments. The main axis is oriented in a northwest - southeast direction.

Peatland Vegetation

Only one point at the southern end was drilled. The northern end was not accessible due to flooding. The survey point had a conifer swamp cover although the peat was 2.9 m thick. The trees were large (over 20 m) and mature. This type covers about 125 ha (82%) of the southern end of the deposit. The northern part has the same cover but the trees appear to be smaller and the cover is less dense. Two smaller embayments on the western side in fact have been interpreted to be treed lowshrub bog. They are also flooded by beaver dams and show areas of open water. Their total area is 27 ha (18%).

Peat Thickness

One sampling location was established on this deposit. The total thickness of the peat layer is 2.9 m (cf. diagram). No surface layer existed at this site. A thin layer of ooze (10 cm) was found below the peat layer.

Peat Type

Based on the information from the sampling site, no single peat type dominated. As can be seen in the diagram the layers near the surface are sphagnum-dominated peat with a high wood content. Further down, the peat is woody sedge peat. This layer is underlain by others of shrubby sedge and woody sphagnum-sedge peat (dominant type is mentioned first). A stump count was also performed at the sampling site. Ten hits were recorded in the attempts, suggesting a very high stump content.

Reconnaissance Site #1

(cm)	Peat Type	Degree of Humification
	$Ss6L_l4$	6
30		
50	$Ss7L_l3$	8
	$C6S_b2L_l2$	6
100		
	$C5Ss4L_ll$	8
150		
	$Ss5Ln3C2$	8
200		
	$C7Ln3$	
250		
	$C8SslL_ll$	
290	Ooze	
300		
	Clay	

Peat Humification

The overall average degree of humification for the site is H7.4. The woody sphagnum peat layers at and near the surface are H6 and H8 respetively. Below these layers, the peat is mostly H8.

Estimated Peat Volume

No peat volume has been estimated for Peatland 31E-47 due to the limited amount of sampling done and because no similar peatlands were surveyed within the general vicinity of this deposit which could have formed the basis of a comparison.

Potential for Further Detailed Study

This deposit is not recommended for further detailed study. Its peat extraction potential is low for a number of reasons; mainly poor natural drainage which had precluded further reconnaissance study in the middle and northern part due to inundated field conditions, dense tree cover and woodyness of the

peat. Also, this deposit is in an area the Ministry of Natural Resources has designated as winter deer range. Hence, with regard to peat extraction, further detailed study is unwarranted.

To study this deposit in detail for the purpose of only obtaining information on this type of a peatland is also not recommended for a number of reasons. Among these, the dense surface vegetation makes it too time consuming to carry out any detailed surveys. Also, beaver dams have caused considerable flooding which has resulted in a sizeable portion of the deposit being flooded and inaccessible and therefore, difficult or impossible to drill except in the winter time.

Comments

This deposit is located on Crown Land.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.10 PEATLAND 31E-49 : Mike's Marsh

Location

Peatland 31E-49 is located in both Conger and Georgian Bay Townships in Parry Sound District about 2 km east of Kapikog Lake and 4 km west of the community of MacTier. This deposit is located approximately at 17-591500 in U.T.M. coordinates or 45° 09'N latitude and 79° 50'W longitude in geographic coordinates(Airphotos: 77-4506 35 - 14, 15, 16, 17; 77-4507 63 - 19, 20, 21).

Access

This deposit is relatively removed from roads. The nearest road is approximately 2 km to the north. This road loops around Little Kapikog Lake and branches off a township road which links the north shore properties on Kapikog Lake and Highway 612. Running adjacent to the deposit are a series of high voltage power lines. A rough maintenance road runs alongside the power corridor and provides an access by an off-road or 4-wheel drive vehicle.

From the intersection of the maintenance road and the road which loops around Little Kapikog Lake, the distances to Highway 612 and community of MacTier are 8 km and 11 km respectively.

Dates of Field Study

The reconnaissance field study was conducted on August 10th and 11th, 1983.

Topography and Drainage

Peatland 31E-49 is located in a depression. The surrounding uplands generally slope quite steeply down towards the peatland. For instance, along the southern edge of the

deposit, a great elevation difference exists between the surrounding uplands and the peatland surface, in fact, at some locations, the edge is almost cliff-like.

This deposit has several discharge systems capable of adequate drainage. However, at the present time several beaver dams are constricting the flow through discharge system. This has resulted in inundated conditions especially on the northern portion.

At sites R3 and R4 rock was encountered as the substrate material. Clay and silt were found at sites R1 and R2 respectively.

Area and Shape

The total area is 186 ha. The shape of the deposit is very irregular and is oriented mostly in a northwest-southeast direction. It has a number of embayments which results in its irregular shape. There are also numerous mineral islands scattered throughout the deposit.

Peatland Vegetation

This southeastern part of this deposit is a thicket swamp covered mainly by Alnus and some Salix. There is very little moss cover and most of the ground is bare with dead plant matter and some semi-open water holes. The thicket is impassable without cutting. The southeastern part is flooded due to a beaver dam (5 ha, 3%). Part of this thicket swamp has sizeable deciduous trees (maple). The peat at site 4 was 1.1 m thick. There is another smaller area of thicket swamp on the northern side of the deposit. The total coverage of tS is 47 ha (25%).

The western and northwestern part of the deposit is covered by open graminoid bog (OgB). It is composed of pure OgB and smaller areas of OlsB type but because of the scale factor it is all mapped as OgB which is the predominant type. Total area of OgB is 134 ha (72%). The northern end is extremely flooded and

has large areas of open water. The cause of flooding is a number of beaver dams. The effect of this is found even at the survey points which are quite wet and almost impassable on foot. Point 1 had Carex rostrata as the main sedge species and Carex oligosperma was common at Point 2 and especially at Point 3. A very common species at points 1 and 2 was Thelypteris palustris. Shrubs, such as Chamaedaphne calyculata and Andromeda glaucophylla were present also. The most common sphagna were S. magellanicum and S. papillosum.

The flooded northern end displayed quite strong shrubby vegetation. The species were not verified due to an access problem but appeared to include Chamaedaphne calyculata and Myrica gale.

Peat Thickness

Four sampling sites were established on Peatland 31E-49. The average total peat depth at the four points was 3.9 m. At only 3 of 4 sites is there a surface layer. The surface layer thickness averages a little over 0.4 m. See the attached profiles.

Peat Type

Sedge-type peats are predominantly found in Peatland 31E-49. Although sedge-type peats dominate throughout, the type of sedge varies greatly. At site R1, layers of sphagnum-sedge peat are interlain by layers of shrubby sphagnum sedge peat. In contrast, the peat at R2 is mostly sphagnum-sedge peat. There is only one layer of shrubby peat throughout the total depth of the peat layer. Peat types at point R3 vary considerably. The predominant peat types are woody sphagnum-sedge peats. Whereas as Point R1 the shrub material usually comprises 10% of the peat, at Point R3, the wood (tree type) content is 30% in one layer and 20% in several other layers. At Point R4, sphagnum-sedge peat predominates. It should be noted that at Point R4 a considerable sphagnum peat layer exists relative to the total thickness.

Sphagnum peat layers were also found at Points R2 and R3, however, they were very thin and relative to the total peat thickness almost negligible. Layers of ooze of 0.75, 0.8 and 0.2 m in thickness, were encountered at Points R2, R3 and R4 respectively (dominant type is mentioned first).

Peat Humification

The average overall degree of humification for the four sites is H7.2. The average degree of humification of the surficial layer is H1.0 while for the four humified layers it is H7.6.

Estimated Peat Volume

The estimated peat volume for Peatland 31E-49 is 7.254 million m^3 and is based on information gathered on site. It is to be regarded as a maximum since the calculation is based on the point data above.

Potential for Further Detailed Study

Peatland 31E-49 is recommended for a detail study. It's potential for fuel peat extraction is somewhat diminished by it's irregular shape and remoteness. However, overall it has a good small scale fuel peat extraction potential. The peat layer on average is 3.8 m thick and the sedge-dominated peat is very well humified, on average H7.2.

The estimated peat volume is certainly sufficient to support a small scale fuel peat extraction operation. The surface is mostly open. With the proper measures, good draining could be restored if the peat extraction were to be considered. From a peat extraction point of view, this deposit could be surveyed in detail later.

A detailed survey also would give more statistical information for a regional assessment.

Comments

The entire deposit is on Crown Land. The District Office of the Ministry of Natural Resources has no specific concerns regarding the area.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.11 PEATLAND 31E-63

Location

Peatland 31E-63 is located in McMurrich Township in Parry Sound District south of Doe Lake about 2.5 km east of Sprucedale and 8.5 km west of Emsdale. It is located approximately at 17 - 6235039 in U.T.M. coordinates or 45° 30'N latitude and 79° 25'W longitude in geographic coordinates (airphotos: 77-4521 52-45, 46, 47).

Access

Peatland 31E-63 is well accessible by road. Highway 518 passes through the northern portion of the deposit. An old railway grade which has been converted into a Ministry of Natural Resources Nature Trail, skirts the southern extremities of the deposit offering several excellent access points.

By road, the deposit is 2.5 km east of Sprucedale as well as being approximately 12, 20, 21, and 36 km from Emsdale, Kearney, Burk's Falls, and Huntsville respectively, all of which have wood products industries.

Dates of Field Study

The reconnaissance field study of was carried out on August 22, 1983.

Topography and Drainage

Peatland 31E-63 is located in a depression almost completely surrounded by tree-covered uplands. The peat layer is underlain by sand.

At the time of the reconnaissance field study, no signs of significant drainage problems were observed. This can partly be attributed to the extremely dry summer experienced in the area.

However, during the airphoto interpretation phase considerable high water table was noted at the south end of the deposit. During the field study in places the surface was soft and quaking. It is apparent that due to the damming effects Highway 518 and the old railway grade some drainage problems exist. The flooding noted during the airphoto phase can probably be directly attributed to the railway grade. Similarly, although there are culverts under Highway 518 to convey water, during spring runoff these culverts probably are only limited in their ability to effectively drain the portion of the peatland adjacent to the highway and especially so because beavers use them to dam the water.

Area and Shape

This deposit is 121 ha in area. Its shape is very irregular and thus not well-suited for peat extraction. Most of the peatland is located south of Highway 518. Also its small size precludes peat operations.

Peatland Vegetation

This deposit is a bog covered by open graminoid bog (OgB) and treed lowshrub bog (TlsB) type vegetation. OgB is found on most parts of the northern lobe and covers the southern lobe entirely.

The northern portion has an abundant growth of Eriophorum angustifolium and E. virginicum with Carex oligosperma while in the southern portion also Carex rostrata and Typha vegetation are very prominant. Shrubs, such as Chamaedaphne calyculata also are common. Sphagnum magellanicum is the most prominent moss species. The southernmost tip of the deposit is flooded and covered by shallow open water to some extent (39 ha, 32%). The total area of OgB is 58 ha (48%).

There is a smaller area (24 ha; 20%) of TlsB at the southern portion of the northern lobe. This section has Larix laricina, Chamaedaphne calyculata etc. vegetation found almost on

all of the deposit's in Parry Sound District and in this is very similar to a number of deposits studied in detail.

Peat Thickness

Three sampling locations were established on this deposit. The average thickness of the surface layer is 45 cm while that at the humified layer is 1.2 m on average. The overall average thickness of the peat layer is 1.6 m. The thickest, 2.2 m, layer was found at Site 3.

Reconnaissance Site #1

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
50		5
70	C9Ss1	6
100		7
120	Sand	

Reconnaissance Site #2

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
40	C6Ss4	5
80		7
100	C5Ss5	8
150	Ooze	
160	Sand	

Reconnaissance Site #3

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
50		5
60	CO	7
120	$C7L_12Ss1$	8
150	C8Ss1Ln1	7
180		8
220	Ss7C3	
	Ooze	
	Sand	

Peat Type

The peat types are sedge dominated. The surface layer is mostly a mix of sphagnum and sedge peat, however, in the humified layers the peats are dominated by sedge peat. Only the humified layer at Point 2 contains peat with relatively large amounts of sphagnum mixed with the sedge peat (dominant type is mentioned first).

Degree of Humification

The average overall degree of humification for this deposit is H5.0. The average degree of humification of the surface and humified layers at the three points is H1.0 and H6.6 respectively.

Estimated Peat Volume

The estimated peat volume for Peatlad 31E-63 is 1.936 million m^3. The calcuation is based only on information derived for the field reconnaissance study and should be regarded as a maximum value.

Potential for Detailed Study

Peatland 31E-63 is not recommended for a further detailed study. This peatland's peat extraction potential is low not only because of the estimated low volume and thicknesses found at the reconnaissance points, but also because of its very irregular shape and consequently, small effective mining area.

Comments

This deposit is mostly on private (patented) land with the exception of Lot 10 in Concession X which is on Crown Land. The remainder of the peatland on Concessions IX to XI is private land.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.12 PEATLAND 41H-14A

Location

Peatland 41H-14A is located in Shawanaga Township in Parry Sound District opposite the Shawanaga Indian Reserve about 6 km southeast of Pointe au Baril Station. This peatland is located approximately at 17-554045 in U.T.M. coordinates or 45° 34'N latitude and 80° 18'W longitude in geographic coordinates. (NTS 1:50000 scale topographical map sheet No. 41H/9; (airphotos: 77-4524 49-12, 13, 14 and 15).

Access

The south end of Peatland 41H-14A lies directly off Highway 69. A winter road connects it and Highway 69 making it accessible by road.

This deposit is also within two kilometers of the Canadian Pacific railway line which passes to the south of it.

By road, it is 6 km southeast and 34 km of Pointe au Baril Station and Parry respectively and 8 km north of the community of Shawanaga.

Dates of Field Study

The reconnaissance field study of Peatland 41H-14A was conducted on August 19th, 1983.

Topography and Drainage

Peatland 41H-14A occupies a low-lying depression surrounded by uplands of varying elevation. Along its western perimeter, the peatland/mineral soil interface is rather abrupt. In many places, an elevation difference of 4 m or more metres exists between the bog's surface and the surrounding uplands. Around the remaining perimeter, the elevation difference of the uplands in relation to the peatland surface is much less and for the most part, the mineral terrain slopes up and away from the deposit.

Presently Peatland 41H-14A is poorly drained due to a beaver dam on one of the channels draining this deposit. As a result, surface ponding was observed in various parts of the bog. Due to the excess of water, the surface at site R3 can be described as a floating mat. As drainage conditions stand, this deposit is also highly vulnerable to spring flooding. It would appear that if the beaver dam were to be removed, drainage conditions would improve appreciably, especially in the area around site R3 and further south.

This peatland is underlain by sand in the north and clay and silt respectively further south.

Area and Shape

Peatland 41H-14A is 100 ha in area. Its shape is very irregular due to many small embayments along the perimeter as well as several "peninsula-like" mineral terrain intrusions.

There are also numerous mineral terrain islands of various shapes and sizes scattered across it. This peatland is oriented in a north - northeast direction.

Peatland Vegetation

This deposit is a bog covered by open lowshrub bog (OlsB) and open graminoid bog (OgB) types. OgB (74 ha, 74%) is located in the centre of the deposit and is partially flooded due to the activities of the beavers. This section has some scattered trees left. They are mostly Larix laricina. The lower vegetation is composed of some shrubs such as Chamaedaphne calyculata and Myrica gale and at Eriophorum viriginicum and Carex oligosperma with sphagnum in the ground cover (S. magellanicum).

OlsB type is found both in the northern and southern ends of the deposit. It covers 23 ha (23%) of the deposit. The vegetation is composed of Larix laricina, Nemopanthus mucronata, Chamaedaphne calyculata and Carex oligosperma and some Carex rostrata. The southern portion is heavily flooded by a beaver dam. Open water covers 3 ha (3%).

Peat Thickness

Peat thickness was measured at 4 points on Peatland 41H-14A. A fifth point was established on a nearby smaller peatland. The average total peat thickness at the four points is 2.8 m. The total peat thickness varied from 2.1 m at Point R3 to 3.1 m at Point R3. At Point R5, the point on the nearby peatland, the total peat thickness was 3.0 m. At all 4 points, a surficial layer exists. This layer varied from 0.5 m at Point R2 to 1.1 m at Point R3. A 0.3 m surficial layer exists at Point R5. See also the attached profiles.

Reconnaissance Site #5

(cm)	Peat Type	Degree of Humification
	C5Ss5	1
30		
60	Ss6C4	9
100		8
	C6Ss3Ln1	
150		
		7
	C7Ss2Ln1	
300		
	Ooze	
370		
	Ooze	

Peat Type

Sedge peats are the predominant peat types found in Peatland 41H-14A. The surficial layer of peat across the deposit is a mix of sedge and sphagnum peat. However, below the surficial layer, the peat layers vary greatly. At Point R1, the humified peat layers are all sphagnum-sedge peats, but further

south at both points R2 and R3 a sizeable layer of sphagnum peat was found through to Point R4. For the most part, the peat types were either sphagnum-sedge a sedge-sphagnum peats with the exception of Point R2 where one layer of shrubby sedge-sphagum peat exists.

At point R5 which was established on an adjacent peatland, the peat stratigraphy did not vary much at all. There too, a surficial layer of a mixture of sedge and sphagnum peat was underlain by a layer of sphagnum - dominated peat and sphagnum-sedge peat.

Layers of ooze were encountered at all 4 points. The thickness varied from 0.3 m to 0.5 m. At site R5 the ooze is 0.7 m thick.

Peat Humification

The average overall degree of humification for all 4 sites was H5.1. The average degree of humification of the surficial layer H1.0 while being H6.7 for the humified layers. At site R5, the figures were H1.0 and H7.6 respectively.

Estimated Peat Volumes

The estimated peat volume for Peatland 41H-14A is 2.775 million m^3 and is solely based on the information gathered on site during the reconnaissance field survey and should be regarded as a maximum.

Potential for Further Detailed Study

Peatland 41H-14A is not recommended for a detail study. Although this deposit is highly accessible, and has an average peat depth of 2.8 m and is devoid of dense tree cover, its small areal extent coupled with its irregular shape and numerous mineral islands make it unattractive for peat exploitation. Hence, from the point of view of further detailed study in order

to evaluate its suitability for exploitation, further detailed study is not recommended.

Comments

Peatland 41H-14 is all on Crown Land. The District Office of the Ministry of Natural Resources has designated this area as winter deer range. As well, this area is in the Northern Georgian Bay Recreational Reserve.

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)

6.13 PEATLAND 41H-19

Location

This deposit is located in Carling Township in Parry Sound District about 4 km northeast at the village of Shebeshekong and 3 km west of Shebeshekong Lake. Its U.T.M. and geographical coordinates are 17-5605033 and 41' 27'N latitude and 80° 14'W longitude respectively. (NTS 1:50000 scale topographical map sheet No. 41H/9; airphotos: 77-4519, 46-15, 16, 17).

Access

The access is relatively good. It is about 1 to 1.5 km northeast of a secondary road passsable by a small truck or a 4-wheel drive vehicle. This road runs off the township road which joins Highway 559 about 0.5 m from the intersection. The total distance to Parry Sound is 22 km by road.

Dates of Field Study

The reconnaissance study was done on September 7th, 1983.

Topography and Drainage

The deposit is located in a very irregular group of contiguous depressions. There are no large elevation differences between the surface of the deposit and the surrounding terrain which in most cases rises quite gently from the bog. The great number of mineral terrains islands within the deposit is one of its most prominent characteristics. As a result there are no extensive uniform peatland areas. It is composed of a network of narrow deposits around the mineral terrain islands and consequently would not offer any large mineable area.

The drainage is not well developed. Most of the deposit drains towards south and southwest via a small beaver dammed

brook. The eastern end has a drainage outlet towards Shebeshekong Lake.

The deposit could be drained through these outlets by deepening them.

Area and Shape

The total area of the deposit is 109 ha. By shape it is a maze of irregular interconnecting small depressions and channels filled out with peat. As the substrate is clay it may be assumed that this site once was a shallow lake with a number of islands.

The deposit is about 2 km wide in the east-west and 1.5 km wide in the north-south direction.

Peatland Vegetation

This deposit is a basin bog. The central parts are covered by treed graminoid bog (TgB) vegetation (24 ha; 22%) while the outlying edges have either treed lowshrub bog (TlsB) (34 ha; 31%) or treed tallshrub bog (TtsB) (51 ha; 47%) cover.

The shrubby types are characterized by Larix laricina, some Picea mariana and Nemopanthus mucronata and Carex oligogsporma. The graminoid type is characterized by Larix laricina and Carex oligosperma. As a whole, the vegetation on this deposit is very similar to that of the others studied in detail in the District.

Peat Thickness

The overall average thickness, based on only the measured data, is 2.8 m. However, considering the edge effect at the edges of the survey line it would be closer to 2.2 m.

The average thickness of the surficial peat layer is 1.1 m or thicker than on average in the region. Considering the broken nature of the deposit it is possible that if more sites were drilled in the narrow embayments the average thickness reading might be lower. See also the attached profiles.

Peat Types

The peat types are illustrated in the attached profiles. The major types found were: SC, SC Ln and CS peats. There was also a layer of extremely wet peat from R_1 to R_3 at the depth of about 1 m. This has been marked in the profile as water since no peat was recovered by the Hiller auger.

The sphagnum peat is predominent in this deposit mixed usually with sedge.

Sedge-dominated peat was found only as a thin lens on the base of the deposit and as a layer lens at R5.

The basal stratum was ooze underlain by clay. As far as the peat types are concerned, this deposit would be best suited for horticultural use.

Peat Humification

The overall average degree of humification is H4.0 and that the surficial layer H1.3.

The unhumified peat is spread over the deposit as an even surficial layer with an average thickness of 1.1 m. The humified peat is located at the greater depth as alternating lenses of H4 to H8 with H4 and H5 as the basal layers.

There are no concentrations of any well humified peats instead they are actually quite uniformly distributed over the entire deposit.

As far as the degree of humification is concerned this deposit could be considered for horticultural use.

Estimated Peat Volumes

The estimated total peat volumes is 3.052 million m^3. About 1.199 million m^3 of this are unhumified and the rest 1.853 million m^3 humified peats. The estimates are based on a direct calculation based on the average total thickness of 2.8 m and the total surface area.

Potential for Further Detailed Study

This deposit is not recommended for a further detailed work as it has very little use potential because of its irregular shape and small quantities of peat.

Comments

This deposit is on Crown Land. The District Office of the Ministry of Natural Resources indicates no specific land use plans for this area.

Reconnaissance Site #7

(cm)	Peat Type	Degree of Humification
	Ss9C1	1
110		
	Ss7C3	6
150		
170		
	$L_1$7Ss2C1	
190		7
	Ss7C3	
240		
	C6Ss3Ln1	5
260		
	C6Ss4	6
320		
	Ooze	
330		
	Clay	

(The following docket contains the Peatland Classification Map and Peat Profiles for this site.)