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Sketch maps, sections and laboratory analyses of peat resources in deposits of eastern Maine

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

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ABSTRACT

Peat deposits in eastern Maine in Washington and southern Aroostook Counties were investigated for their estimated potential as peat resources available for energy, horticultural and agricultural uses. Sketch maps of 51 areas illustrate the areal extent, thickness, and amount of commercial-quality peat. The total yield is estimated at 23,104,600 short tons air dried peat with ash content generally less than 5 percent and heating value of 8,500 to 10,000 BTU.

INTRODUCTION

Peat is a light to dark brown or almost black residuum formed by the partial decay and disintegration of plants that grew in marshes, swamps, or damp places such as heaths. It may be (1) fibrous matted material composed of mosses, ferns, grasses, rushes, reeds, sedges, and woody material from trees and shrubs; (2) finely divided plants so decomposed that their biological identity has been lost; or (3) nonfibrous, plastic colloidal, and macerated material deposited at the bottom of lakes or other bodies of water. The U.S. Bureau of Mines classifies three general types of peat. Moss peat is material derived from moss; reed-sedge peat is material derived from the reed, sedge, shrub, and tree groups; and humus peat is material so decomposed that its botanical identity has been obscured and its further oxidation impeded. The American Society for Testing and Materials (ASTM) refined these classifications in 1969 and defined commercial-quality peat as only that peat having an ash content of not more than 25 percent. To avoid confusion with soil-science terminology in this report, sphagnum moss peat is equivalent to fibric peat, reed-sedge peat is equivalent to hemic herbaceous peat, and humus peat is equivalent to sapric peat (Olson and others, 1979).

Peat has been used for many years in agriculture and horticulture primarily because of its ability to retain many times its own weight in water. It has also been used as a domestic fuel for hundreds of years. More recently, peat has been used by nations such as Ireland and the Soviet Union to generate electricity. At the present time, virtually all of the peat harvested in the United States is used in agriculture and horticulture. However, in light of the increasing costs of traditional energy sources, peat is being more closely scrutinized as an alternate fuel source.

The State of Maine has significant peat resources, and current estimates suggest that there are as many as 6,000 to 8,000 individual peat deposits comprising a total land area of 500,000 to 750,000 acres. The current resource evaluation was developed to provide a more comprehensive analysis of available peat resources.

This report summarizes the work conducted in eastern Maine in Washington and southern Aroostook Counties under the Maine Peat Resource Evaluation Program. It includes sketch maps, sections and laboratory analyses on which estimates of the resources are based. These data may be utilized to more accurately assess the energy and agricultural potential of Maine's peatlands.

ACKNOWLEDGEMENTS

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GEOLOGIC SETTING OF MAINE PEAT DEPOSITS

Maine is part of the Northern Appalachian Province. Its bedrock consists primarily of metamorphosed sedimentary rocks which range in age from approximately 350 to 600 million years. The metasediments were intruded by numerous bodies of granitic rock. Both the granite bodies and the metamorphic rocks have been subjected to several episodes of folding and faulting, as well as millions of years of weathering resulting in rounded mountains and well-established drainage patterns.

Much of Maine's bedrock is covered by glacial sediments deposited during several episodes of glaciation in the last several hundred thousand years. Large continental glaciers (as opposed to small alpine glaciers found in mountain valleys) spread southward from Canada until much of northern North America was covered by a sheet of ice hundreds to thousands of feet thick. These ice sheets eroded the bedrock and deposited a blanket of sand, gravel, boulders, silt, and clay. As the last ice sheet retreated, between about 13,500 and 12,500 years ago, much of southern Maine was submerged as the ocean inundated land that had been depressed by the great thickness of ice. Fossiliferous marine sand, silt, and clay were deposited on top of the bedrock and glacial sediments. The ocean gradually receded as the land surface slowly rebounded.

Erosion by glaciers and deposition of glacial and marine sediments significantly altered preglacial morphology and drainage, creating environments favorable for the formation of peat. Streams and rivers were slowed or dammed. Ponds and lakes formed in bedrock basins or in poorly drained depressions, particularly those underlain by glacial or marine silt and clay deposits. Where drainage was impaired, the accumulation of undecayed organic material was enhanced.

FORMATION OF PEAT DEPOSITS IN MAINE

The development of economically significant domed peatlands typically found in Maine normally progresses through three phases. During the initial stage, moss and marsh-type vegetation fill shallow depressions. If the depression is deep enough to contain a pond, the process begins with aquatic plants, such as lilies and bulrushes, taking root when a sufficient thickness of organic matter has accumulated on the pond bottom. The continuing accumulation of aquatic plant remains gradually displaces the ponded water until a marsh plant assemblage comprised of grasses, mosses, and reeds

replaces the aquatic plants. If the depression is too shallow to contain a pond, marshes develop directly on the clay, silt, sand, or gravel. The marsh, which receives water from rainfall, surface streams, and adjacent aquifers, grows upward, filling the depression.

In the second stage, the peat-forming vegetation spreads out beyond the margins of the original basin forming a continuous flat surface. At this stage, surface water flowing toward the bog and ground water from adjacent aquifers lack the gradients necessary to reach the centers of the peat-filled depressions. Because the mineral content of the water supply is greatest at the edges of the flat marsh, plants along the margins increase in variety and abundance.

When sphagnum moss becomes dominant, moss peat accumulates in a convex mass or dome. In this third stage, surface streams and ground water can contribute to the water supply only along the narrow strip between the dome of peat and the mineral soil. This strip, called the moat, collects runoff both from the mineral soil and the slopes of the dome of sphagnum (fibric) peat. Eutrophic marsh and swamp grasses, shrubs, and trees grow where they are fed by the nutrient-rich waters and soil. On the other hand, the mosses and heath vegetation on the dome are oligotrophic, receiving water solely from precipitation. A perched water table is maintained within the dome by capillarity.

Peat deposits in Maine may be covered by marsh, swamp, or heath vegetation according to the phase of peatland development. Floods and fires during any phase of peatland development may have destroyed all or part of a peat deposit, so that deposits in varying stages of development are common.

METHODS OF INVESTIGATION

Not all peat deposits are considered peat resources. A peat deposit is simply an accumulation of peat, whereas a peat resource contains enough commercial quality peat (peat that has an ash content of less than 25 percent) for economic exploitation. At least 80 acres with a minimum average thickness of 5 feet of commercial quality peat are generally required.

Estimates of commercial-quality resources were made in accordance with ASTM standards (1969) based on acre-feet of peat where the peat is five or more feet thick and has an ash content not greater than 25 percent. The formula used for converting acre-feet of peat to short tons of air dried peat was developed by Bastin and Davis, who summarized the procedure:

"the quantity of peat in a deposit may readily be calculated with enough accuracy for practical purposes, by obtaining its average depth and its area, and that it will yield at least 200 tons of dry machine-made fuel per acre, for each foot in depth." (Bastin and Davis, 1909, p. 24).

The formula is as follows:

$$\frac{\text{Volume of wet peat in bog, in cubic feet}}{4} \times \frac{\text{(average weight in pounds of 1 cubic foot of machine peat)}}{2{,}000} = \frac{\text{Volume of wet peat in bog, in cubic feet}}{200} = \text{Number of tons of air-dried machine peat which the bog can produce.}$$

(number of cubic feet of wet peat equal to 1 cubic foot of machine peat)

(pounds in short ton)

For use as a fuel, the peat must also have a minimum heating value of 8,000 BTU/lb.

In the field, the extent of the deposits was determined by pace and compass traverses, with the bearing and spacing of the traverses dependent on the size and configuration of the deposit. At regular intervals along the traverses (generally 500 feet), cores were obtained with a Macaulay or Davis peat sampler. Samples were taken for subsequent laboratory analysis, and factors such as surface vegetation, type and distribution of peat (both horizontally and vertically), and geomorphic characteristics were noted.

The factors that determine resource potential, namely the chemical and physical quality of peat, the thickness, and the areal extent of the deposit, result from various environments in which the peat accumulated and was preserved. Environmental factors fundamental to development and preservation of the deposit include: (1) the unconsolidated sediment and bedrock foundation; (2) the glacial processes that affected the surface morphology of glacial deposits; (3) the surface and ground water regimes; (4) the past and present climate; and (5) the past and present influences of beaver activity, lightning-set fires, and human activities.

FIELD GUIDE TO IDENTIFICATION AND STUDY OF MAINE PEAT RESOURCES

The following guide to field identification and study of Maine peat resources synthesizing these environmental factors has been developed (Cameron, 1984) and applied to the peat deposits studied. Each deposit was assigned a geologic setting code number based on the hierarchy outlined in Table 1 and explained below. The system can be used to predict whether or not a peat deposit is in fact a peat resource.

The settings of 270 mapped peat deposits have been used to design a guide for the identification and study of peat resources in the State of Maine. These deposits have been grouped into 46 classes of settings based on a synthesis of environmental factors within a framework of peat resource characteristics. The 46 classes of settings plotted on 10 charts that accompany the guide show the relationship of area and thickness to estimated tonnages. Deposits plotting in nine of these classes can be screened out as having inadequate resource potential.

The two primary headings for deposits in Maine are:

I. Deposits within the region of maximum marine invasion, and
II. Deposits outside the region of maximum marine invasion.

The location of a deposit relative to the marine limit (the maximum inland extent of the postglacial marine invasion) is significant. Crustal subsidence associated with the glaciation of coastal Maine (Stuiver and Borns, 1975) produced settings among the glacial features on the former sea floor that are particularly favorable to the formation of peat resources. Climate, especially humidity, influences size, height, and amount of sphagnum common to economically significant raised bogs. The area between the marine limit and the present coastline typically has relatively high humidity; the July average humidity at 8 PM (EST) is greater than 70 percent (Visher, 1954).

The secondary headings, A and B of Table 3, refer to the major categories of underlying bedrock. The type and structure of the local bedrock influences the shape and orientation of preglacial valleys and basins which are among the common locations for peat bogs. The topography of Maine, although modified significantly by glacial processes, is bedrock controlled. Such economically important indicators as ash content, trace-element content, pH, and the occurrence of marl are related, at least directly, to the local or regional bedrock foundation.

The tertiary headings are based on the synthesis of factors related to surface and groundwater regimes, permeability and water-table fluctuations, and past and present effects of fires and flooding or ponding. Surface and ground water, for example, affect soil chemistry and help control growth, preservation, and decay of peat-forming vegetation. The degree of breakdown of peat fibers takes place chiefly in the zone of water-table fluctuation where aerobic bacteria help produce hemic (reed-sedge), and sapric (sphagnum) peat. Extreme breakdown of peat fibers results in an ash content that is too high for commercial quality peat. Introduction of mineral matter in the form of clay or silt by streams also reduces resource potential by increasing ash content. In addition, a potentially economically valuable raised bog may be destroyed by fire allowing the site to become a marsh or swamp, while a currently economically valuable peat deposit may be concealed by ponding.

The chart following the geologic setting code shows classes of peat deposits that are the most unfavorable in terms of peat resource potential. Although tonnages of commercial quality peat may exceed 800,000 tons dry weight, the deposit is not a resource because the peat is of insufficient thickness. These deposits may also contain 50,000 to 100,000 tons of commercial quality peat, but their inadequate areal extent (less than 80 acres) disqualifies them as peat resources.

Further analysis of the classes on each chart shows distinct tendencies toward such factors as hydrologic and other engineering characteristics, chemical properties such as pH and trace-element content, the kind of peat such as fibric or hemic, the heights and slopes of bog domes, and the occurrences of swamps and marshes. Tendencies toward unique grouping of these factors may be recognized. These will prove useful in the preparation of environmental impact statements, in the planning for exploitation of peat deposits, and in related geological and biological scientific research. The guide is specific to Maine's peat deposits, but the idea and philosophy are applicable to peat deposits in other states and countries.

The Field Guide with Accompanying Charts

I. Deposit within the region of maximum marine invasion. If not turn to II.

A. Bedrock largely folded sedimentary, metasedimentary or layered volcanics. If not turn to B. Select appropriate number and letter under A or B.

1. Deposit in glacial drift in hills and mountains at the head of a stream - IA1, see chart 5.
2. Deposit in end or ribbed moraine - IA2, see chart 4.
3. Deposit in kame or kettle topography - IA3, see chart 4.
4. Deposit in till parallel to drumlins or other ice contact features - IA4, see chart 4.
5. Deposit in alluvium, till or glacial outwash in valley along stream
   a. behind natural levee or on plain subject to flooding - IA5a, see chart 1
   b. deadwater reaches of stream flow on deposit - IA5b, see chart 3
   c. adjacent to esker - IA5c, see chart 3
   d. in drift-dammed bedrock valley; natural levees, deadwater reaches or eskers not conspicuous - IA5d, see chart 3
6. Deposit in glacial outwash in valley remote from stream, outwash may include eskers - IA6, see chart 4
7. Deposit in glacial outwash and till on broad plain crossed by streams and eskers - IA7, see chart 3
8. Deposit on glaciomarine sediments
   a. in valleys between till ridges, glacial outwash or till-covered bedrock walls - IA8a, see chart 2
   b. in basins or plains between till ridges, glacial outwash or till-covered bedrock ridges - IA8b, see chart 2
   c. on plain adjacent to large stream - IA8c, see chart 1
9. Deposit in till or glacial outwash along a lake
   a. separated from lake by esker or bedrock - IA9a, see chart 10
   b. adjacent to lake that has been artificially dammed - IA9b, see chart 1
   c. adjacent to pond which deposit has incompletely filled - IA9c, see chart 4
10. Deposit in till or glacial outwash on drained pond or lake floor - IA10, see chart 1
11. Deposit on tidal flat; peat generally too shallow to be a resource - IA11.
12. Deposit a thin blanket over consolidated or unconsolidated rock slopes; peat too shallow to be a resource - IA12.

I. Within the region of maximum marine invasion.

B. Bedrock largely massive plutonic rock such as granite and gabbro
1. Deposit in glacial drift in hills and mountains at the head of a stream - IB1, see chart 5
2. Deposit in end or ribbed moraine - IB2, see chart 4

Guide continued.

3. Deposit in kame or kettle topography - IB3, see chart 4
4. Deposit in till parallel to drumlins or other ice contact deposits - IB4, see chart 4
5. Deposit in alluvium, till or glacial outwash in valley along stream
   a. behind natural levee or on plain subject to flooding - IB5a, see chart 1
   b. deadwater reaches of stream flow on deposit - IB5b, see chart 3
   c. adjacent to esker - IB5c, see chart 5
   d. in drift-dammed bedrock valley; natural levees, deadwater reaches or eskers not conspicuous - IB5d, see chart 5
6. Deposit in glacial outwash in valley remote from stream; outwash may include eskers - IB6, see chart 4
7. Deposit in outwash and till on broad plain crossed by streams and eskers - IB7, see chart 6
8. Deposit on glaciomarine sediments
   a. in valleys between till ridges, glacial outwash, or till-covered bedrock walls - IB8a, see chart 2
   b. in basins or plains between till ridges, glacial outwash or till-covered bedrock ridges - IB8b, see chart 2
   c. on plain adjacent to large stream - IB8c, see chart 1
9. Deposit in till or glacial outwash along a lake
   a. separated from lake by esker or bedrock - IB9a, see chart 10
   b. adjacent to lake that has been artificially dammed - IB9b, see chart 1
   c. adjacent to pond which deposit has incompletely filled - IB9c, see chart 10
10. Deposit in till or glacial outwash on drained pond or lake floor - IB10, see chart 1
11. Deposit on tidal flat; peat generally too shallow to be a resource - IB11
12. Deposit a thin blanket over consolidated or unconsolidated rock slopes; peat too shallow to be a resource - IB12

II. Deposit outside the region of maximum marine invasion

A. Bedrock largely folded sedimentary, metasedimentary or layered volcanics. If not turn to B. Select appropriate number and letter under A or B.

1. Deposit in glacial drift on flat to rolling plain; bedrock limestone, dolomite or marble - IIA1, see chart 1
2. Deposit in ground moraine in hills and mountains at the head of a stream - IIA2, see chart 9
3. Deposit in end or ribbed moraine - IIA3, see chart 9
4. Deposit in kame or kettle topography - IIA4, see chart 9
5. Deposit in till parallel to drumlins or other ice contact deposits - IIA5, see chart 9
6. Deposit in alluvium, till or glacial outwash in valley along stream
   a. behind natural levee or plain subject to stream flooding - IIA6a, see chart 1

Guide continued.

b. deadwater reaches of stream flow on deposit - IIA6b, see chart 7
c. adjacent to esker - IIA6c, see chart 8
d. in drift-dammed bedrock valley; natural levees; deadwater reaches or eskers not conspicuous - IIA6d, see chart 8

7. Deposit in glacial outwash in valley remote from stream; outwash may include eskers - IIA7, see chart 6
8. Deposit in outwash and till on broad plain crossed by streams and eskers - IIA8, see chart 6
9. Deposit in till or glacial outwash along a lake
   a. separated from lake by esker or bedrock - IIA9a, see chart 10
   b. adjacent to lake that has been artificially dammed - IIA9b, see chart 1
   c. adjacent to pond which the deposit has incompletely filled - IIA9c, see chart 10
10. Deposit in till or glacial outwash on drained pond or lake floor - IIA10
11. Deposit a thin blanket over consolidated or unconsolidated rock slopes; peat too shallow to be a resource - IIA11

II. Outside the region of maximum marine invasion

B. Bedrock largely plutonic rock such as granite and gabbro

1. Deposit in glacial drift on flat to rolling plain - IIB1, see chart 1
2. Deposit in ground moraine in hills and mountains at the head of a stream - IIB2, see chart 9
3. Deposit in end or ribbed moraine - IIB3, see chart 9
4. Deposit in kame or kettle topography - IIB4, see chart 9
5. Deposit in till parallel to drumlins or other ice contact deposits - IIB5, see chart 9
6. Deposit in alluvium, till or glacial outwash in valley along stream
   a. behind natural levee or plain subject to stream flooding - IIB6a, see chart 1
   b. deadwater reaches of stream flow on deposit - IIB6b, see chart 7
   c. adjacent to esker - IIB6c, see chart 8
   d. in drift-dammed bedrock valley; natural levees; deadwater reaches or eskers not conspicuous - IIB6d, see chart 8
7. Deposit in glacial outwash in basin remote from stream; outwash may include eskers - IIB7, see chart 6
8. Deposit in outwash and till on broad plain crossed by streams and eskers - IIB8, see chart 6
9. Deposit in till or glacial outwash along a lake
   a. separated from lake by esker or bedrock - IIB9a, see chart 10
   b. adjacent to lake that has been artificially dammed - IIB9b, see chart 1
   c. adjacent to pond which the deposit has incompletely filled - IIA9c, see chart 10
10. Deposit in till or glacial outwash on drained pond or lake floor - IIB10, see chart 1
11. Deposit a thin blanket over consolidated or unconsolidated rock slopes; peat too shallow to be a resource - IIB11

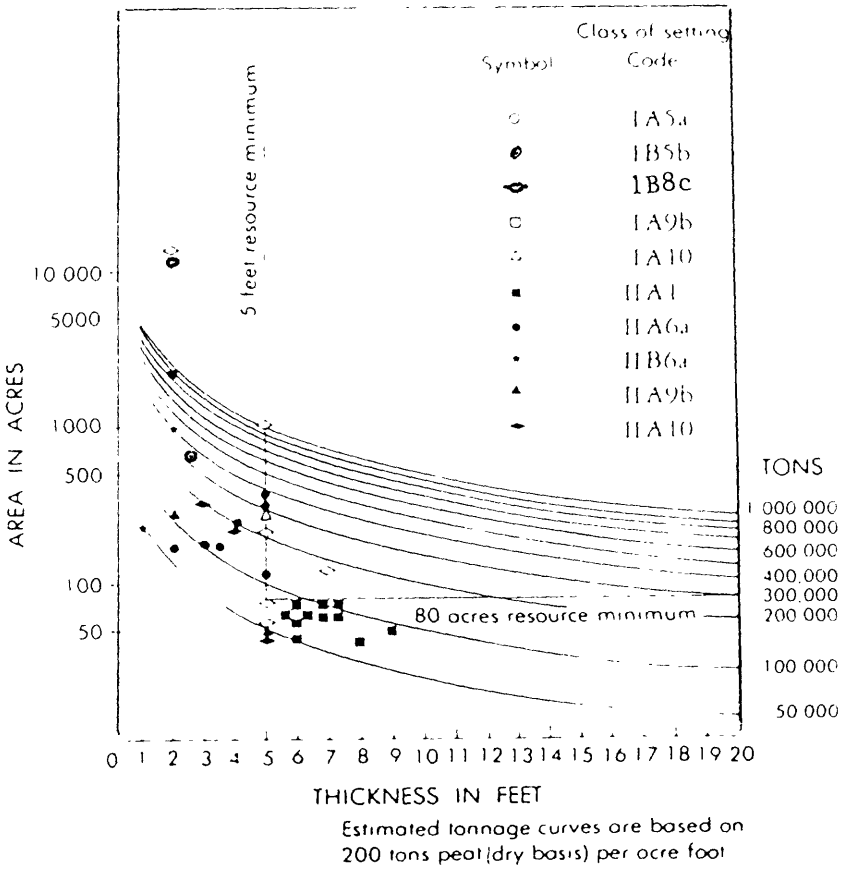

Chart 1 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IA5a, IB5a, IB8c, IA9b, IA10, IA8c, IIA1, IIA6a, IIB6a, IIA9b, and IIA10. The deposits represented by these codes except IBc and IIA6a lack resource potential. They generally are either too thin over a wide area, or if thick enough, the area covered is too small. Codes not shown on the chart include IA8c, IA9a, IB9b, IB10, IIB1, IIB9b, and IIB10. They could represent deposits with probable similar resource potential, but require detailed study.

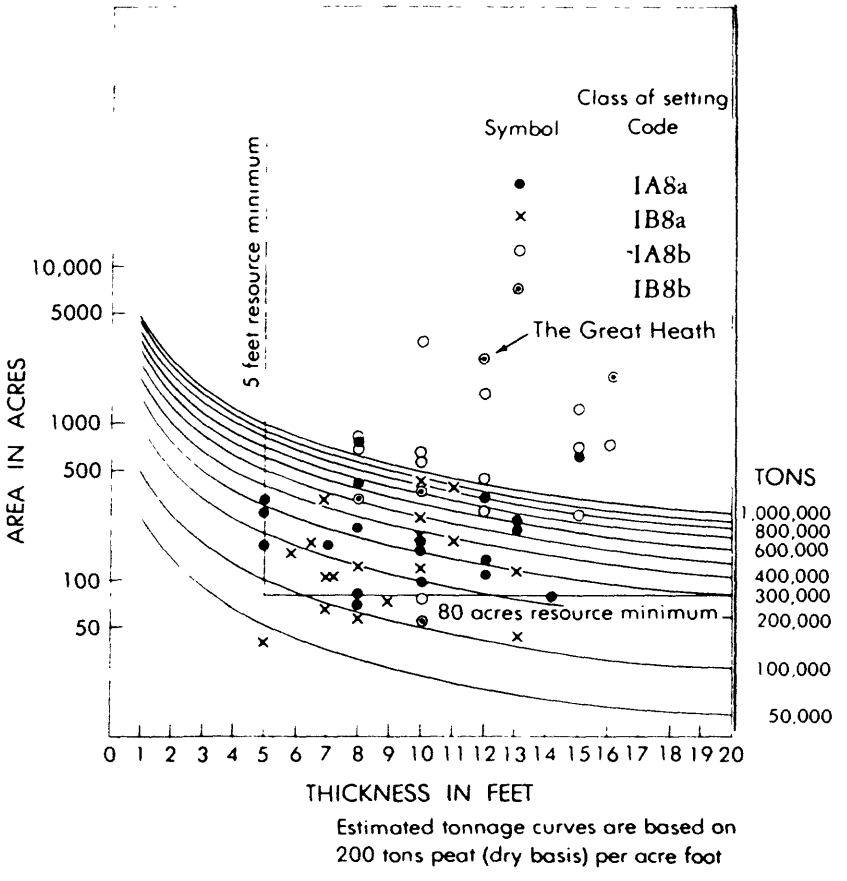

Chart 2 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IA8a, IB8a, IA8b, and IB8b. The deposits represented by these codes generally have satisfactory to excellent resource potential if more than 80 acres in size. Those represented by IA8b and IB8b have the greatest resource potential.

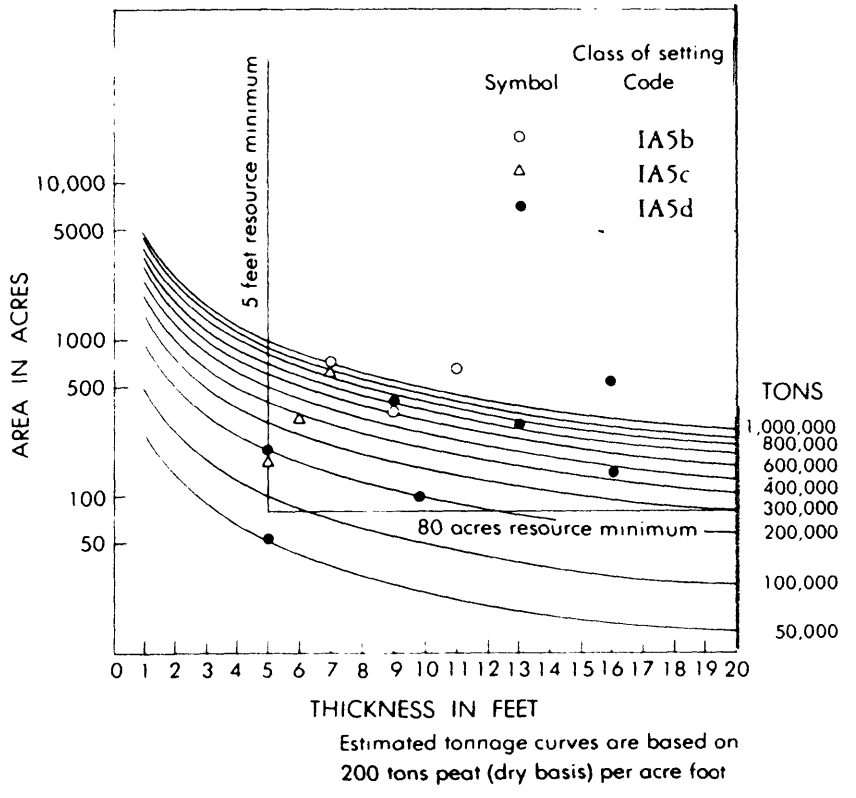

Chart 3 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IA5b, IA5c, and IA5d. The deposits represented by these codes generally have satisfactory to very good resource potential. Codes not shown on the chart include IA7, IB5c, IB5d, IB5b, and IB7. They could represent deposits with probable similar resource potential, but require detailed study.

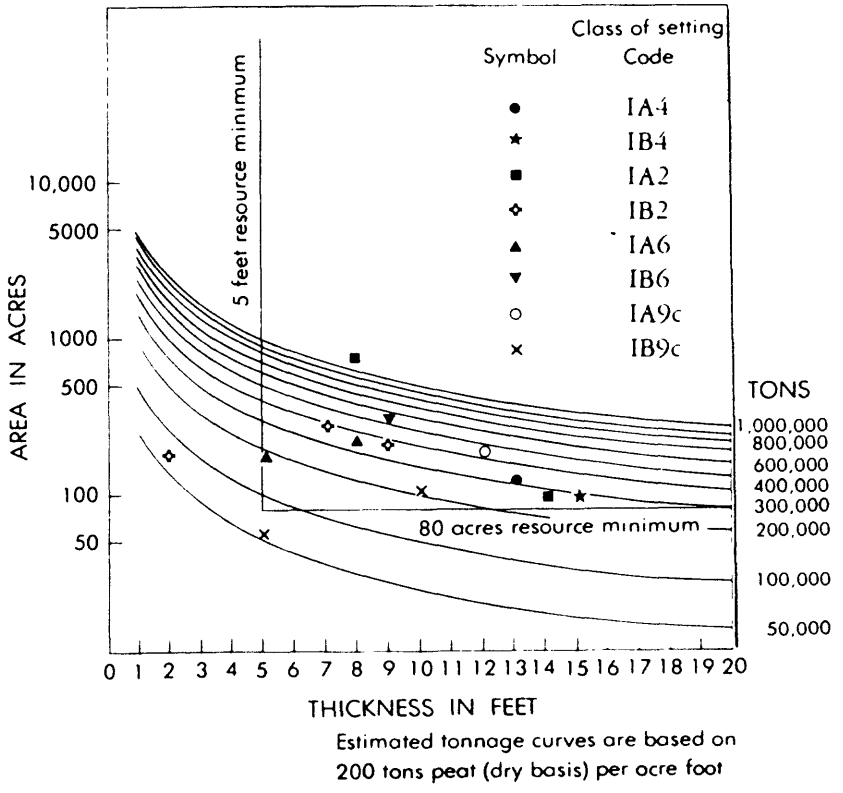

Chart 4 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IA2, IB2, IA4, IB4, IA6, IB6, IA9c, and IB9c. The deposits represented by codes IB2 and IB9c generally have unsatisfactory to satisfactory resource potential; by code IA2, satisfactory to very good, and by the remaining codes, satisfactory to good resource potential. Codes not shown on the chart include IA3 and IB3. They could represent deposits with probable similar resource potential, but require detailed study.

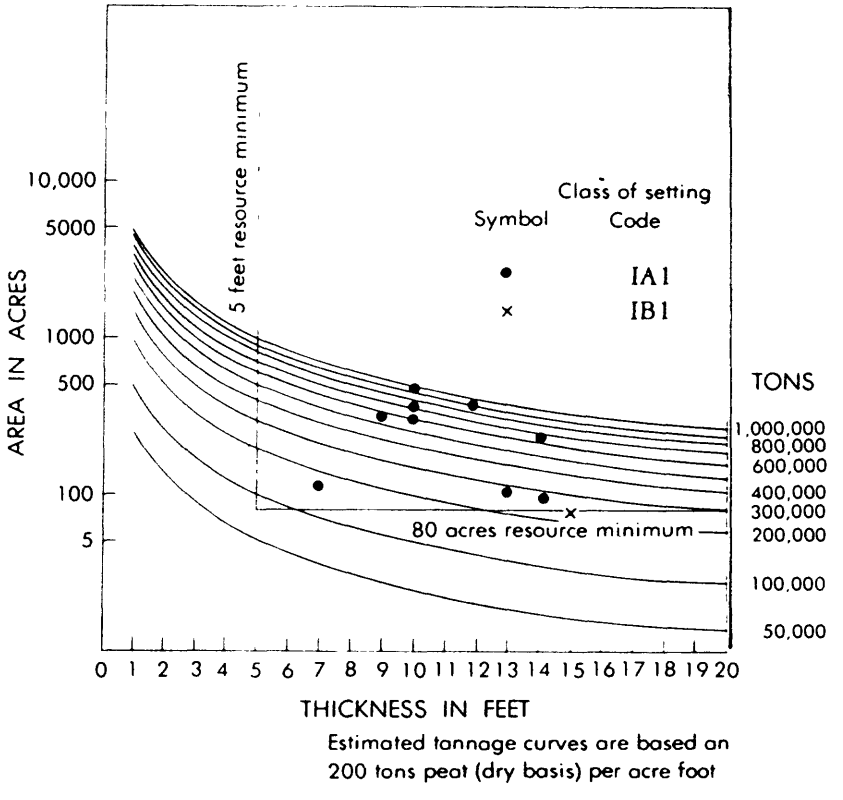

Chart 5 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IA1 and IB1. The deposits represented by these codes generally have satisfactory to very good resource potential.

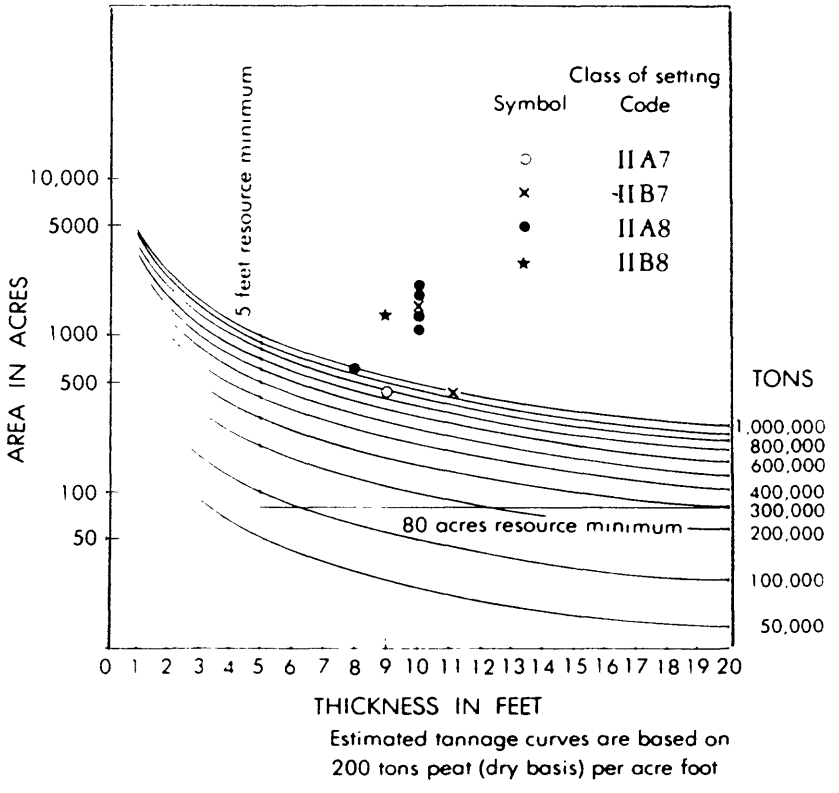

Chart 6 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IIA8, IIB8, IIA7, and IIB7. The deposits represented by these codes generally have excellent resource potential. Code not shown on the chart includes IB7. It could represent deposits with probable similar resource potential, but would require detailed study.

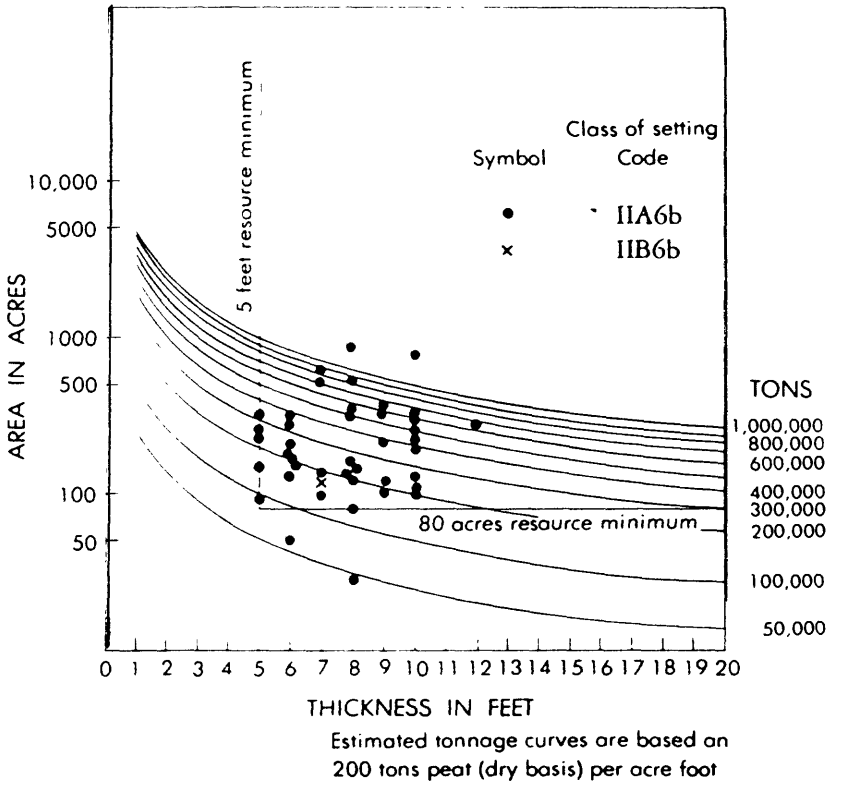

Chart 7 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IIA6b and IIB6b. The deposits represented by these codes meet the thickness requirement for commercial quality peat. Those deposits with areas greater than 80 acres have satisfactory to excellent resource potential.

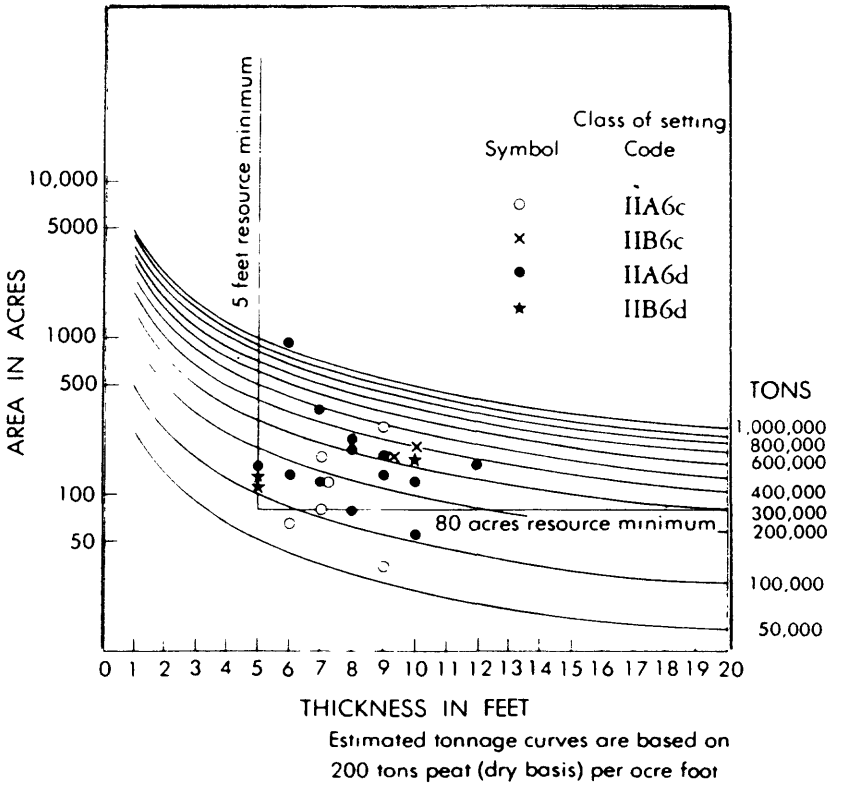

Chart 8 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IIA6c, IIB6c, IIA6d, and IIB6d. The deposits represented by these codes meet the thickness requirement for commercial quality peat. Those with areas greater than 80 acres have satisfactory to very good resource potential.

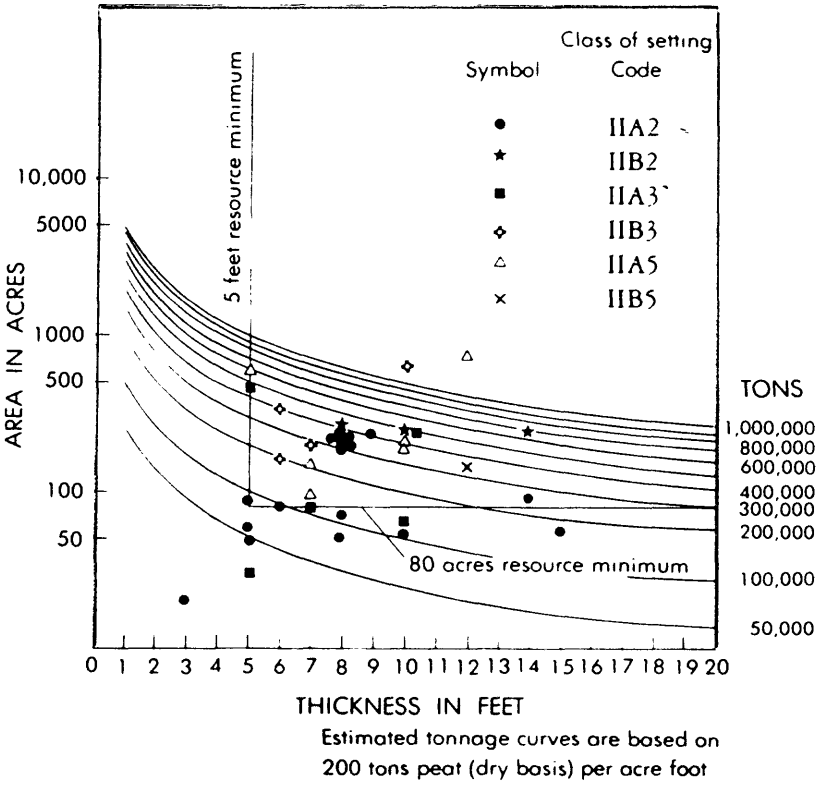

Chart 9 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IIA2, IIB2, IIA3, IIB3, IIA5, and IIB5. The deposits represented by codes IIA5 and IIB3 have satisfactory to excellent resource potential; by IIB2 good to very good resource potential; by IIB5 satisfactory, and by IIA2 and IIA3 unsatisfactory to satisfactory potential. Codes not shown on the chart include IIA4 and IIB4. They could represent deposits with probable similar resource potential, but require detailed study.

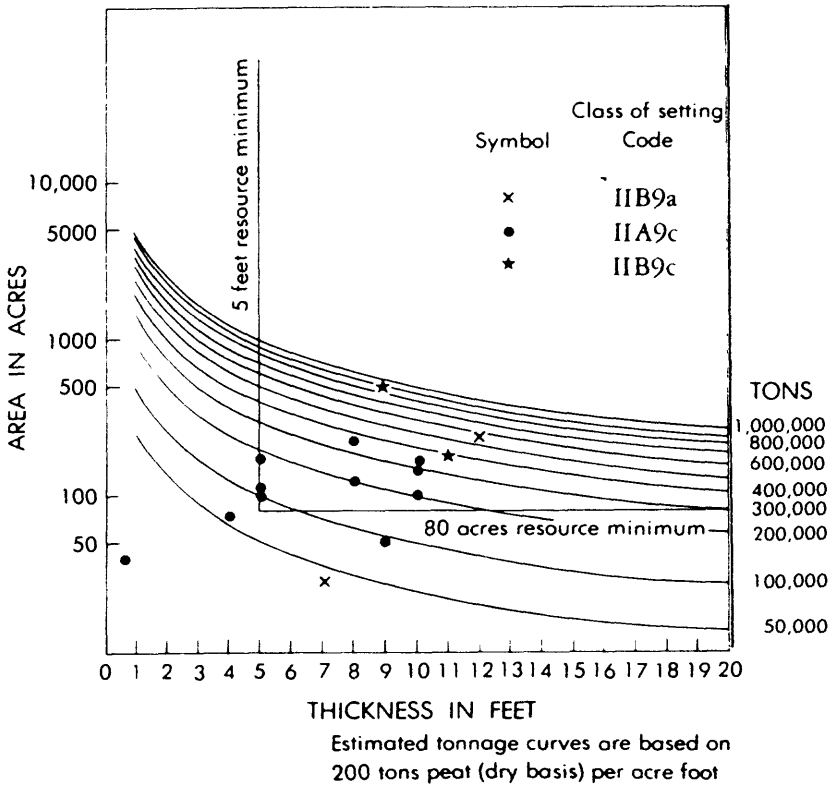

Chart 10 showing area, thickness and estimated tonnage of mapped peat deposits. Symbols indicate the class of setting of each deposit coded as IIB9a, IIA9c, and IIB9c. The deposits represented by codes IIB9c generally have good to very good resource potential. The remainder have unsatisfactory to satisfactory resource potential. Codes not shown on the chart include IA9a, IIA9a, IB9a, and IB9c. It represents deposits with probable similar resource potential, but requires detailed study.

SCOPE OF THIS REPORT

The purpose of this report is to make sketch maps of the 51 areas in Washington and Aroostook Counties in eastern Maine immediately available for use in assessing peat resources of the State. Locations of the mapped deposits are shown in the index map (figure 1) and described in more detail in the captions of the individual deposit maps (figures 2-52). Cores and their locations are also shown as well as locations of samples taken from the cores. All estimates of amounts of commercial quality peat given in figures 2-52 are in short tons air-dried peat. Amounts of resources in each of the mapped deposits together with its geologic setting are shown in Table 1. Laboratory analyses of samples from the cores are shown in tables 2-52.

RESOURCES AND GEOLOGIC SETTINGS OF DEPOSITS

Peat resources having a minimum thickness of 5 feet and ash content of less than 10 percent and generally less than 5 percent occupy a total of 12,340 acres; potential yield is 23,104,600 short tons air-dried peat mostly of the sphagnum moss or fibric type. Heating value falls in the 8,500-10,000 BTU range.

Twelve areas of single or multiple deposits within close proximity are 80 acres or less in size and are generally considered to be too small for commercial potential. Half of these areas contain an estimated 89,000 to 125,000 tons of commercial quality air-dried peat because thickness averages more than 5 feet and even as much as 13 feet. All lie in glaciomarine sediments in valleys and basins between till ridges, glacial outwash, or till covered bedrock walls. The remaining six contain a resource estimate of less than 89,000 tons. Two of the areas are outside the region of maximum marine invasion in alluvium or glacial drift in a valley along a stream adjacent to an esker and in glacial drift adjacent to a lake that has been artificially dammed. The remaining areas are mostly on a plain adjacent to a large stream.

Nineteen areas of single or multiple deposits within close proximity are 80 to 200 acres in size and have a potential yield estimated at 90,000-401,000 tons. Twelve of these areas lie outside the region of maximum marine invasion. Of these, 6 are in till or glacial outwash in a valley in which deadwater reaches of the stream flow on the deposit, 3 are in ground moraine in hills and mountains at the head of a stream, and 3 are in till parallel to drumlins or other ice contact deposits. The remaining 7 areas are within the region of maximum marine invasion and are on glaciomarine sediments in valleys, basins, and plains generally between ridges of drift or till covered bedrock walls.

Sixteen areas of single or multiple deposits within close proximity are 200 to 500 acres in size and have a potential yield estimated at 260,000-800,000 tons. Eleven of these areas lie outside the region of maximum marine invasion. Of this number, three are in ground moraine in hills and mountains at the head of a stream, two are in drift-dammed bedrock valleys, one is adjacent to a pond which the deposit incompletely filled, one is along the deadwater reaches of a stream that flows on the deposit, one is in till parallel to drumlins, one is in a stream valley adjacent to an esker, one is in glacial drift separated from lake by esker or bedrock, and one is in glacial outwash in valley remote from any stream.

Table 1. Estimated peat resources and geologic settings of the deposits in eastern Maine.

Index Map (Fig. 1) Loc. No.	Average Thickness (feet)	Acres	Air-dried peat (short tons)	Ash content (percent)	BTU	Geologic Setting Code	Field Guide Chart
80,acres and less and 40,000-117,000 tons							
3	5-7	65	81,000	1.8	9,604	IIA6C	8
23	6	65	78,000	0.7	8,761	IIA9b	1
33	10	55	110,000	2.6	9,650	IB8b	2
36	13	45	117,000	1.5	9,517	IB8a	2
37	5-10	74	127,200	1.9	9,823	IB8a	2
40	8	70	112,000	0.8	8,548	IA8a	2
42	5	40	40,000	2.1	8,897	IB8a	2
43	5	65	65,000	1.1	8,760	IB8c	1
44	5-8	68	89,000	3.6	9,389	IB8b	2
48	5	55	55,000	2.7	8,749	IA8c	3
49	5	75	75,000	1.4	8,939	IA8c	3
50	5-10	75	125,000	1.4	8,295	IA8a	2
80-200 acres and 90,000-401,000 tons							
1	6-8	150	208,000	9.0	9,684	IIA2	9
2	5-9	145	241,000	2.1	9,344	IIA6b	7
4	5	90	90,000	2.2	9,746	IIA6b	7
6	8	160	256,000	1.9	9,433	IIA6b	7
8	5-7	130	162,000	5.6	9,050	IIA6b	7
10	5-10	95	140,000	2.5	9,984	IIA5	9
11	7-17	158	386,200	1.0	9,254	IIB5	9
13	7-10	105	183,000	2.5	9,589	IIA6b	7
16	12-15	100	279,000	2.0	9,131	IIA2	9
18	7	150	210,000	2.3	9,294	IIA5	9
19	5-15	120	240,000	2.8	9,232	IIA2	9
29	5-10	120	179,000	2.7	9,566	IIB6b	7
32	5-15	120	300,000	4.2	9,046	IB8b	2
38	7-15	175	374,000	2.0	9,374	IB8a	2
39	10	120	240,000	7.4	9,239	IB8a	2
41	7	120	168,000	1.3	8,978	IA8c	3
46	5-8	110	146,000	1.8	9,904	IB8a	2
47	5-11	197	401,000	2.4	8,978	IB8a	2
51	7-15	129	335,800	1.4	9,133	IA8a	2

Table 1 (continued).

Index Map (Fig. 1) Loc. No.	Average Thickness (feet)	Acres	Air-dried peat (short tons)	Ash content (percent)	BTU	Geologic Setting Code	Field Guide Chart
			200-500 acres and 260,000-800,000 tons				
5	10	365	730,000	4.7	8,976	IIA9c	10
7	10	320	640,000	5.7	9,427	IIA6b	7
9	5-17	260	489,000	1.4	9,684	IIA6d	8
15	5-15	220	410,000	3.4	9,431	IIA2	9
17	5-14	209	402,600	1.6	9,645	IIA5	9
20	6-17	470	836,000	1.5	9,297	IIA6c	8
21	10	306	600,000	0.9	8,686	IA1	5
24	5	260	260,000	2.7	8,940	IA8a	2
25	5-9	225	341,000	2.7	8,774	IIB6d	8
26	8-15	240	573,000	1.4	9,353	IIB9a	10
28	5-20	255	631,000	7.5	9,399	IIB2	9
30	5-15	460	790,000	2.4	8,871	IIB7	6
31	5-20	240	695,000	1.2	9,355	IIB2	9
34	5-13	300	530,000	0.9	8,901	IB6	4
35	5-10	320	479,000	2.6	9,517	IB8a	2
45	8-19	330	800,000	2.7	9,058	IA8a	2
			500-1,000 acres and 964,000-1,465,000 tons				
12	5-15	755	1,465,000	2.2	9,243	IIA5	9
14	5-15	590	964,000	1.5	9,633	IIA8	6
22	5-14	890	1,423,000	2.0	9,236	IIA6b	7
			1,000-2,000+ acres and almost 6,000,000 tons				
27	6-16	2,080	5,876,000	0.9	9,592	IB8b	2

Five of the sixteen areas are within the region of maximum marine invasion. Of these, three are on glaciomarine sediments in valleys between till ridges, glacial outwash, or till-covered bedrock walls; one is in glacial drift in hills and mountains at the head of a stream; and the east is in glacial outwash remote from any stream.

Three deposits fall into the 500-1,000 acre size category, and have a potential yield estimated at 964,000-1,465,000 tons. All are outside the region of maximum marine invasion; bedrock is layered. The deposit near Vanceboro (number 12) lies in till parallel to drumlins or other ice contact deposits. The deposit east of Baskahegan Stream (number 14) rests in outwash and till on a broad plain crossed by streams and eskers. The deposit near Fourth Machias Lake (number 22) is till and glacial outwash in a valley along a stream with deadwater reaches flowing on deposit.

Meddybemps Heath is the only deposit exceeding 1,000 acres in size. Its 2,080 acres are estimated to have almost 6,000,000 tons of air-dried peat. This deposit is within the region of maximum marine invasion on glaciomarine sediments in a basin between till covered bedrock walls and glacial outwash. Estimated resources are 5,876,000 short tons air-dried peat.

PLACE OF THIS REPORT IN THE MAINE PEAT RESOURCE EVALUATION PROGRAM

In July 1979, the Maine Office of Energy Resources, in conjunction with the Maine Geological Survey, began the Maine Peat Resource Evaluation Program. The Program, which is funded by the U.S. Department of Energy (DOE), was undertaken to determine the amount and location of fuel-grade peat deposits that may be harvested and utilized in an environmentally acceptable manner in Maine. Similar DOE/State Peat Resource Evaluation Programs are also being carried out in twelve other states, including Alaska, Michigan, Minnesota, North Carolina, and South Carolina, whose programs began in 1979. Georgia, Florida, Louisiana, Massachusetts, New York, and Rhode Island initiated programs in 1980 and 1981.

Research on the fuel potential of Maine's peat resources began early in the twentieth century. The first investigations were conducted by Bastin and Davis (1909), and Soper and Osbon (1922) of the U.S. Geological Survey. They were followed by Trefethen and Bradford (1944) of the Maine Geological Survey. The Maine Peat Resource Evaluation Program was designed to build upon the peat research and inventory conducted in Maine by the Maine and U.S. Geological Surveys in the 1970's (Cameron, 1975; Cameron and Massey, 1978; Cameron and Anderson, 1979).

A total of 235 deposits was evaluated under the Program (Table 53). During the first field season (1979), 57 deposits in Aroostook, Penobscot, Piscataquis, and Washington Counties were investigated (Cameron and Anderson, 1980a, 1980b; Davis and Anderson, 1980). Fifty deposits in Piscataquis, Somerset, Aroostook, Kennebec, and Waldo Counties were evaluated during the 1980 field season (Cameron and Mullen, 1982; Cameron and others, 1982). In 1981, research efforts were concentrated in the western and southern counties where 56 deposits were surveyed (Cameron and Mullen, 1983), and in 1982, 51 deposits in Washington and southern Aroostook Counties were

evaluated (Cameron, in preparation). During a brief field season in 1983, 21 deposits in southern Penobscot County were investigated (Cameron, in preparation). The results on a county by county basis of earlier peat resource surveys as well as of the Maine Peat Resource Evaluation Program are shown in Table 54.

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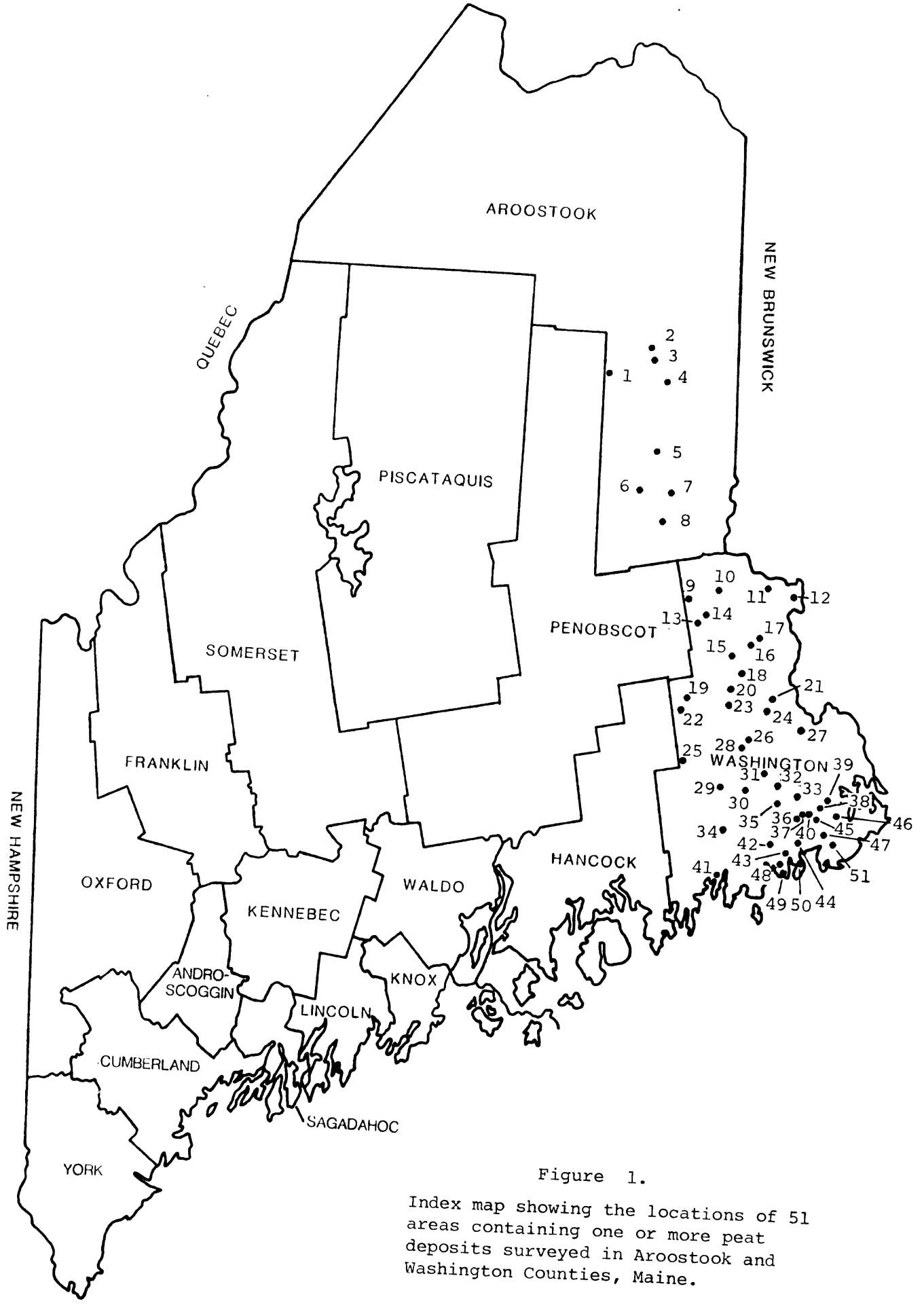


Figure 1.

Index map showing the locations of 51 areas containing one or more peat deposits surveyed in Aroostook and Washington Counties, Maine.

Explanation of section shown in all figures.

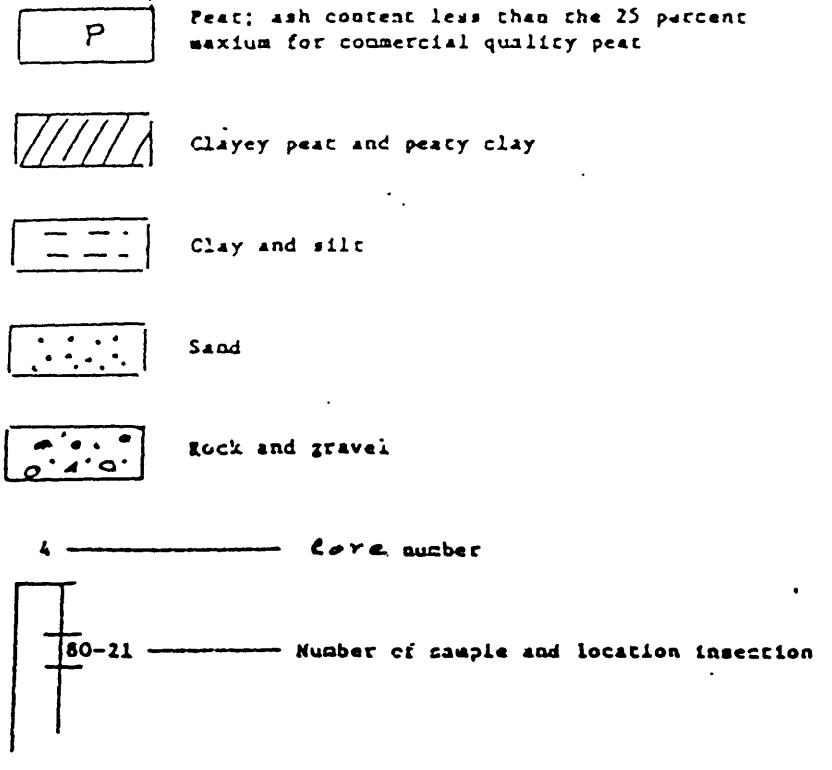
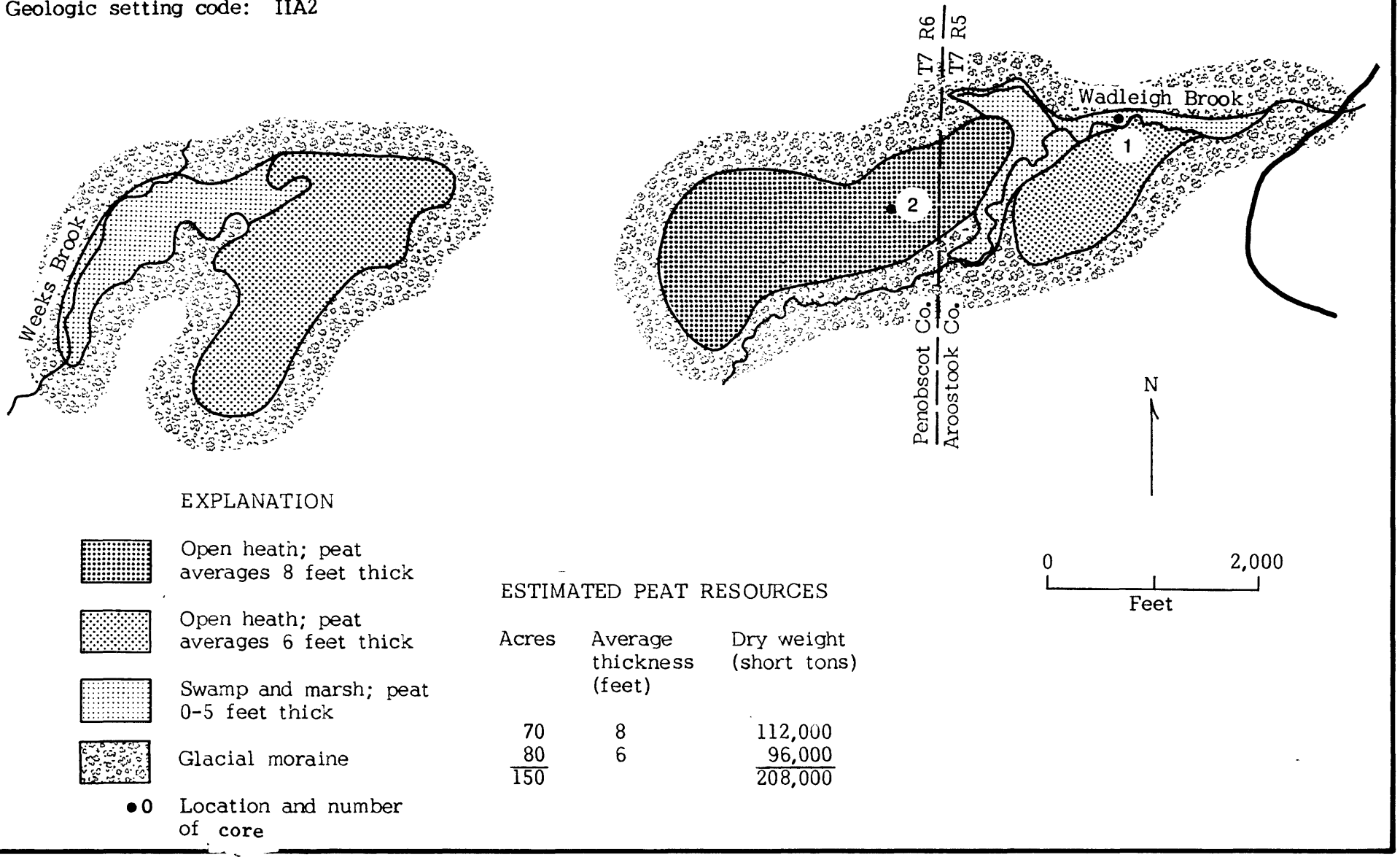


Figure 1a.

Geologic setting code: IIA2



EXPLANATION

- Open heath; peat averages 8 feet thick
- Open heath; peat averages 6 feet thick
- Swamp and marsh; peat 0-5 feet thick
- Glacial moraine
- ●0 Location and number of core

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
70	8	112,000
80	6	96,000
150		208,000

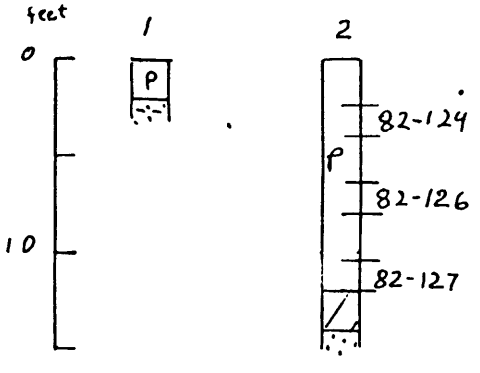
Figure 2. Sketch map, cores, and sample analyses of bogs on Penobscot-Aroostook County line, T7 R6 WELS and T7 R5 WELS, Oxbow 15 minute Quadrangle, Maine (Number 1 on Index Map).

Table 2.--Analyses of samples in cores located in figure 2a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
124	56.95	4.76	1.93	0.15	2.0	93.5	64.8	9,586
126	57.24	5.16	1.96	0.16	1.1	90.4	64.8	9,782
127	---	---	---	---	23.9	---	---	---
Average commercial quality peat (ash content less than 25%)	57.09	4.96	1.945	0.55	9.0	91.45	64.8	9,684

Figure 2a .-- Cores and sample locations.



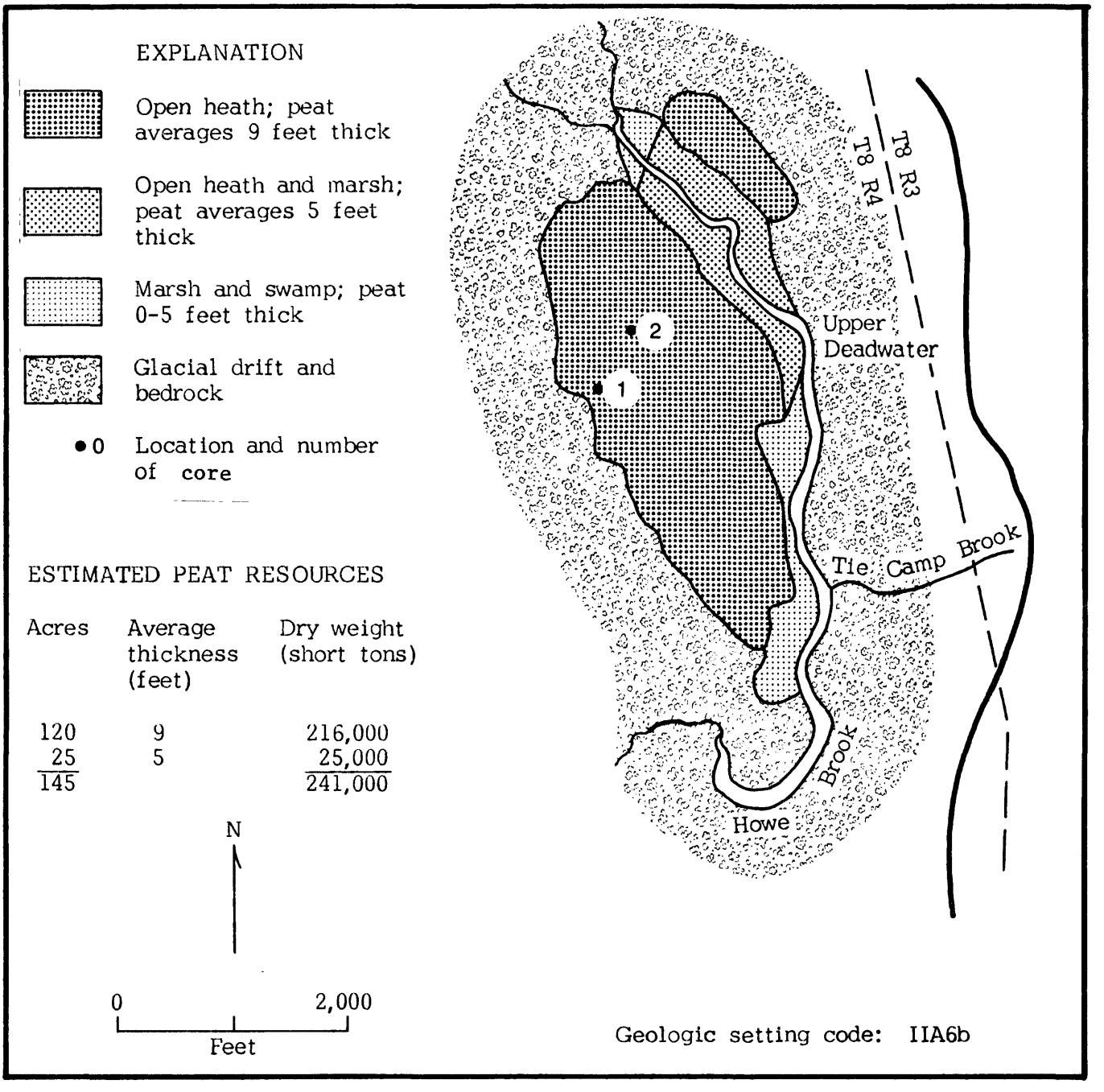


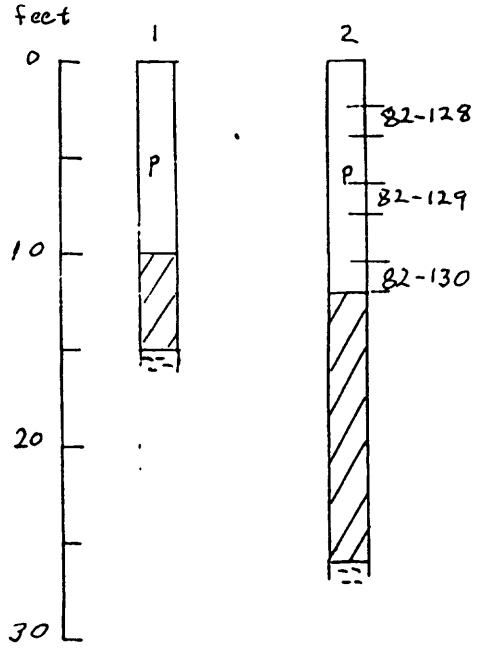
Figure 3. Sketch map, cores, and sample analyses of bog at Upper Deadwater on Howe Brook, T8 R4 WELS (St. Croix Twp.), Howe Brook 15 minute Quadrangle, Aroostook County, Maine (Number 2 on Index Map).

Table 3.--Analyses of samples in cores located in figure 3a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
128	54.20	5.24	2.05	0.14	1.3	91.9	72.6	9,331
129	55.26	4.50	0.90	0.11	0.7	91.2	65.5	9,092
130	55.50	4.45	2.24	0.30	4.3	92.6	65.8	9,609
Average commercial quality peat (ash content less than 25%)	54.99	4.73	2.60	0.18	2.1	91.9	67.9	9,344

Figure 3a.--Sores and sample locations.



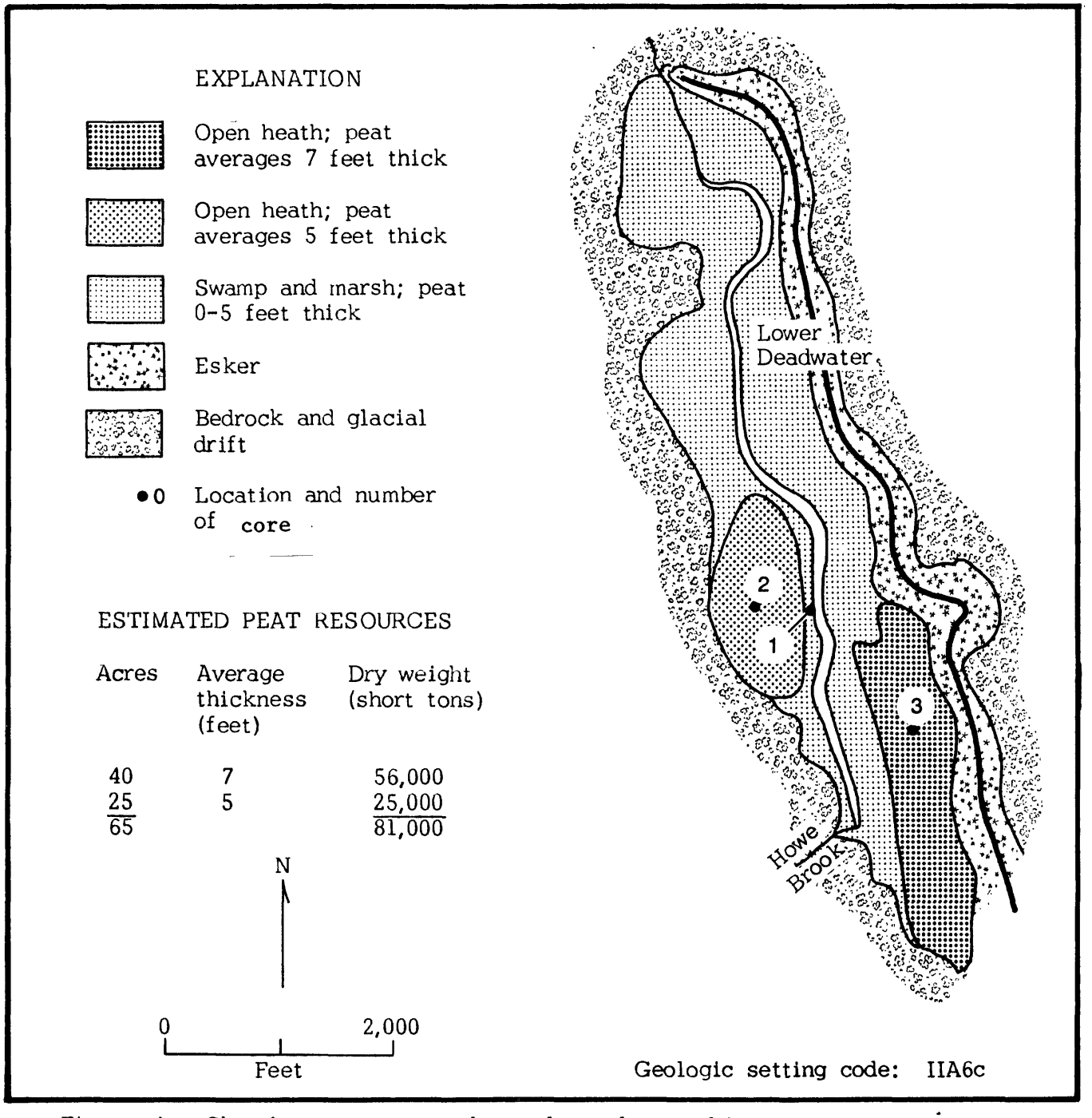


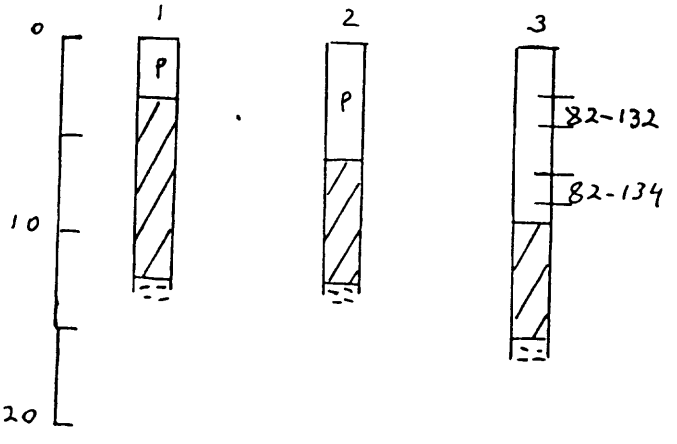
Figure 4. Sketch map, cores, and sample analyses of bogs at Lower Deadwater on Howe Brook, T8 R4 WELS (St. Croix Twp.), Howe Brook 15 minute Quadrangle, Aroostook County, Maine (Number 3 on Index Map).

Table 4.--Analyses of samples in cores located in figure 4a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
132	55.61	4.32	1.53	0.14	1.2	91.2	69.3	9,353
134	56.82	5.00	2.72	0.29	2.4	90.5	68.7	9,854
Average commercial quality peat (ash content less than 25%)	56.21	4.66	2.13	0.22	1.8	90.8	69.0	9,604

Figure 4a.-- Cores and sample locations.



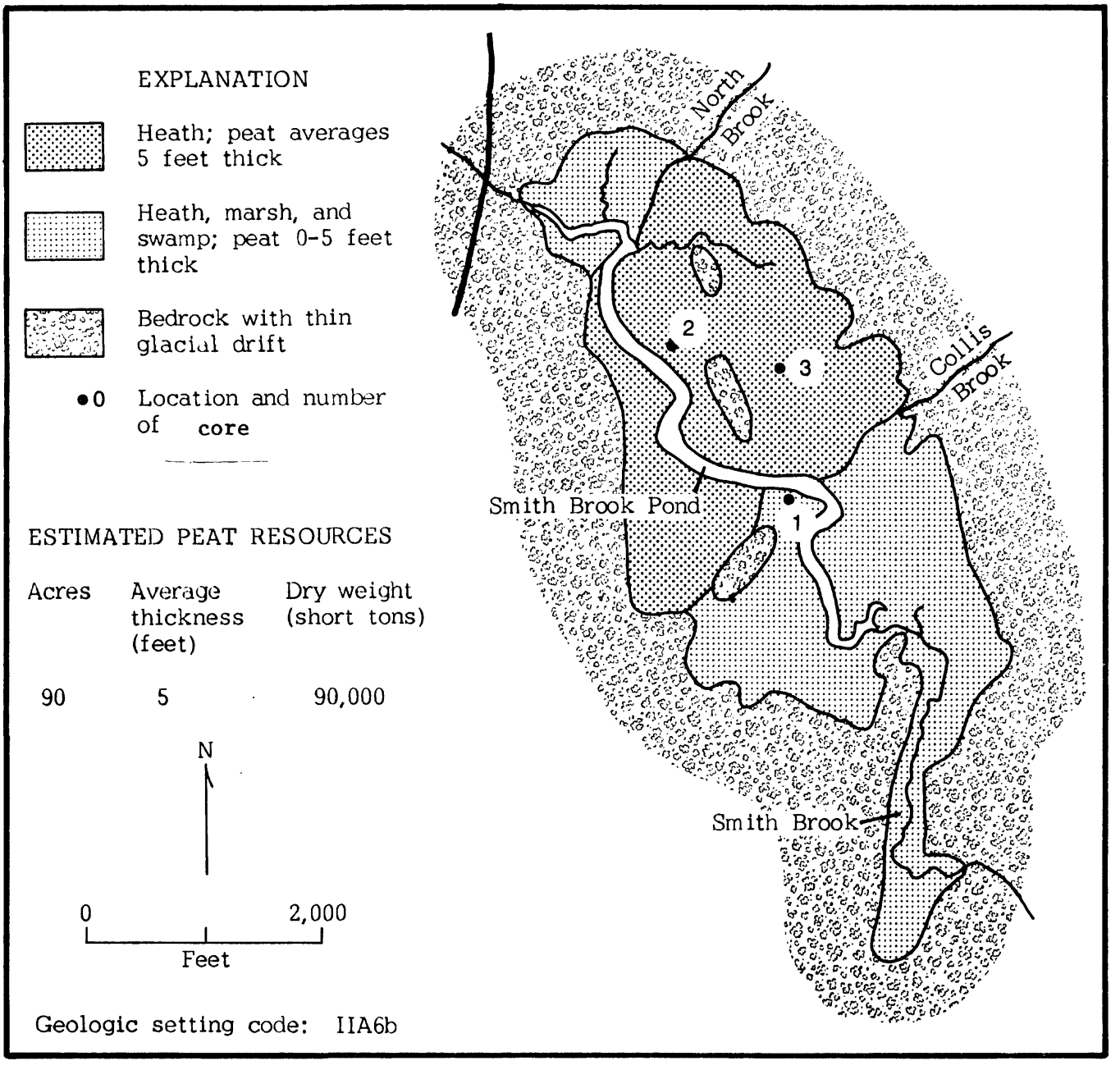


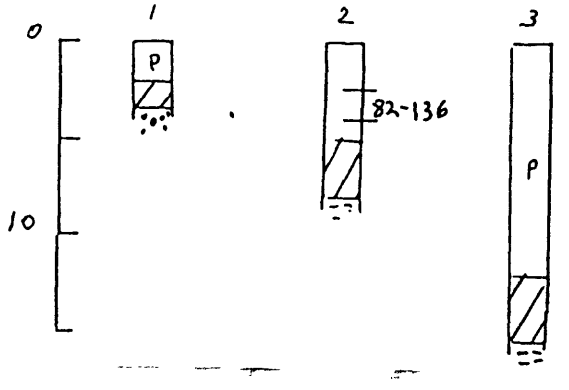
Figure 5. Sketch map, cores, and sample analyses of bog at Smith Brook Pond, T7 R3 WELS (Dudley Twp.), Howe Brook and Smyrna Mills 15 minute Quadrangles, Aroostook County, Maine (Number 4 on Index Map).

Table 5.--Analyses of samples in cores located in figure 5a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
136	57.44	4.45	1.38	0.33	2.2	90.3	62.3	9,746
Average commercial quality peat (ash content less than 25%)	57.44	4.45	1.38	0.33	2.2	90.3	62.3	9,746

Figure 5a .-- Cores and sample locations.



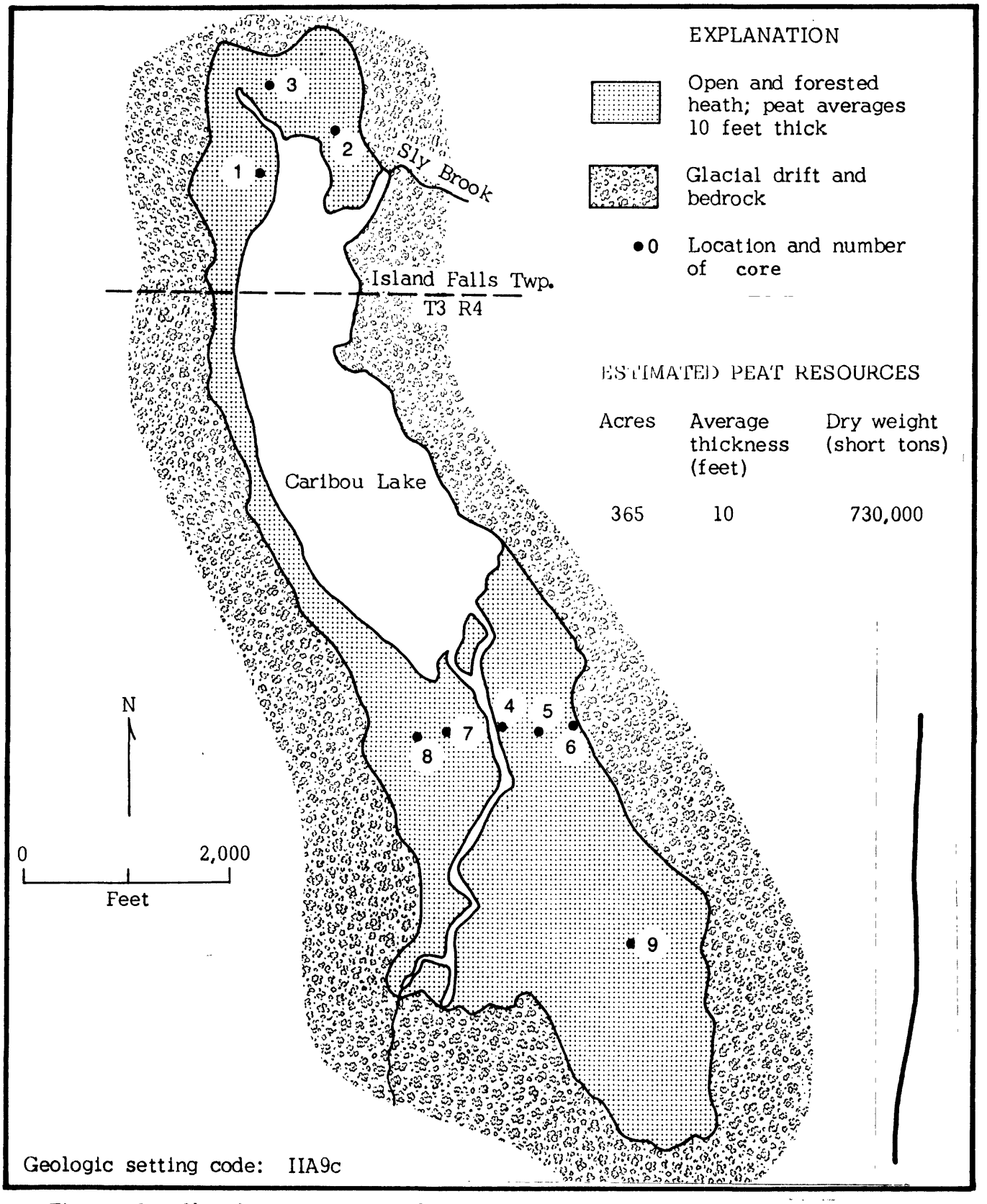


Figure 6. Sketch map, cores, and sample analyses of bog at Caribou Lake, Island Falls Twp. and T3 R4 WELS, Mattawamkeag Lake 15 minute Quadrangle, Aroostook County, Maine (Number 5 on Index Map).

Figure 6a.-- Cores and sample locations.

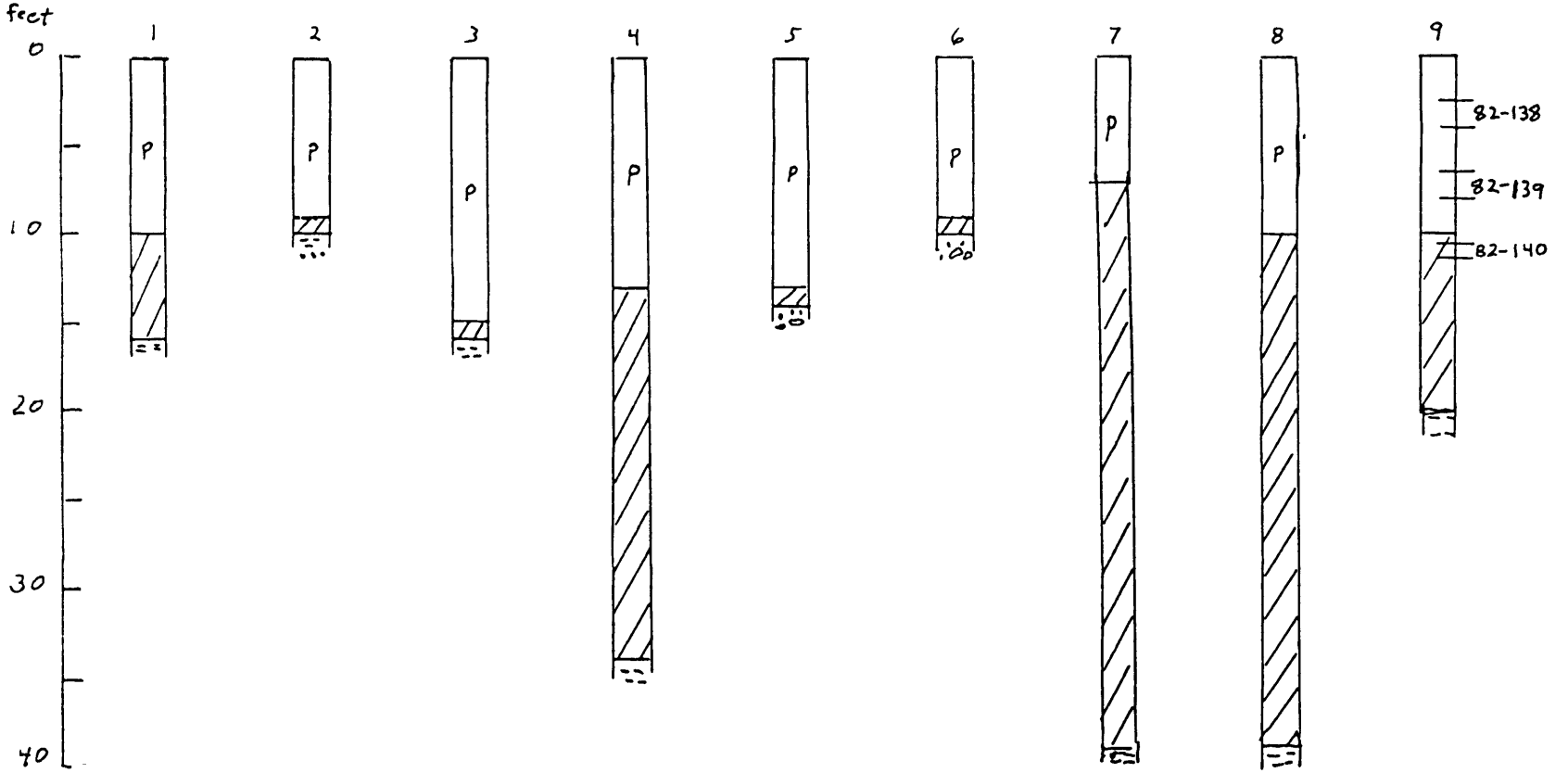


Table 6.--Analyses of cores in sections located in figure 6a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
138	54.41	4.07	2.28	0.70	5.4	89.1	62.6	8,686
139	55.31	4.21	1.49	0.39	4.0	85.7	63.9	9,267
140	---	---	---	---	27.1	---	---	---
Average commercial quality peat (ash content less than 25%)	54.86	4.14	2.38	0.54	4.7	87.4	63.25	8,976

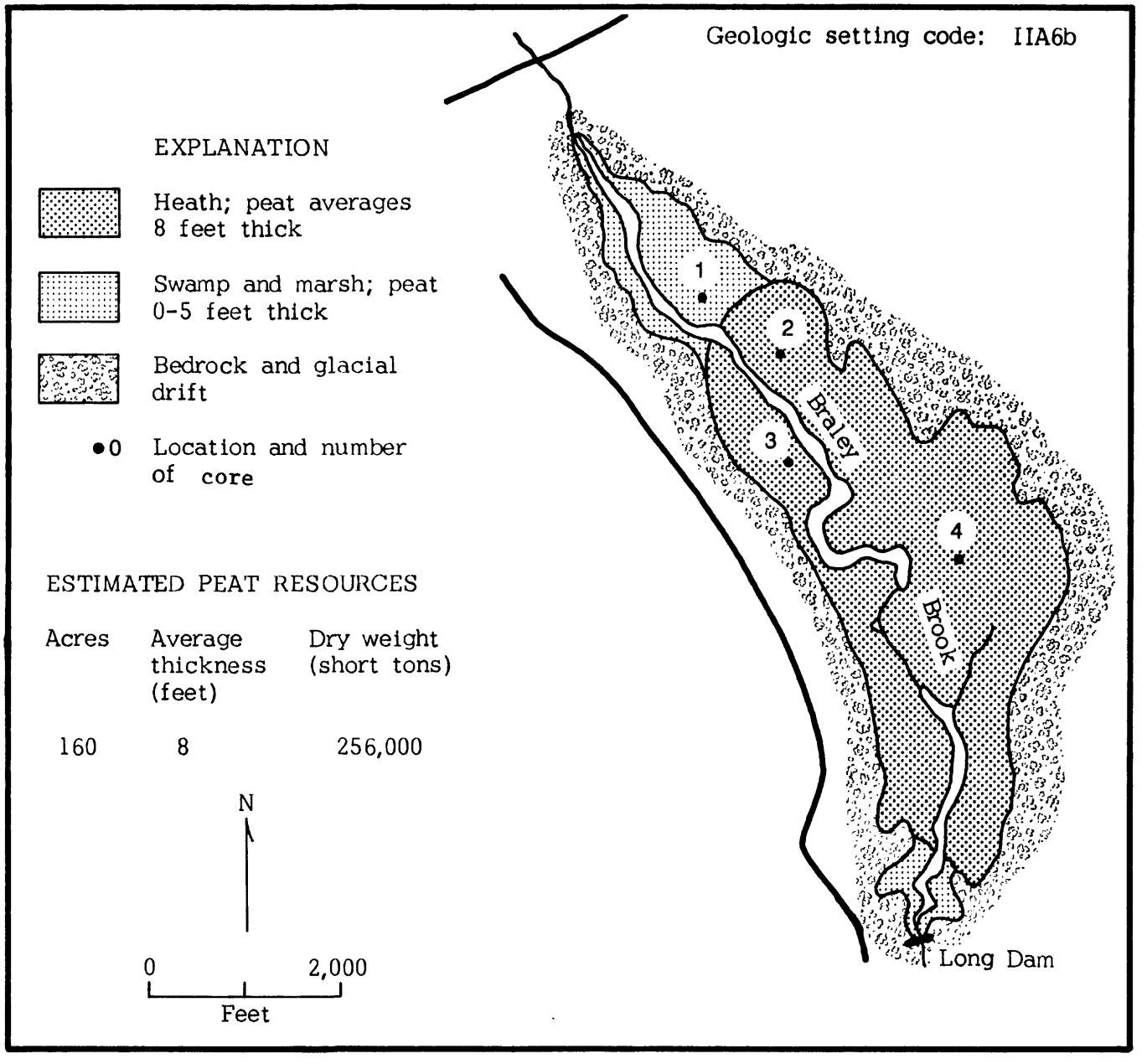


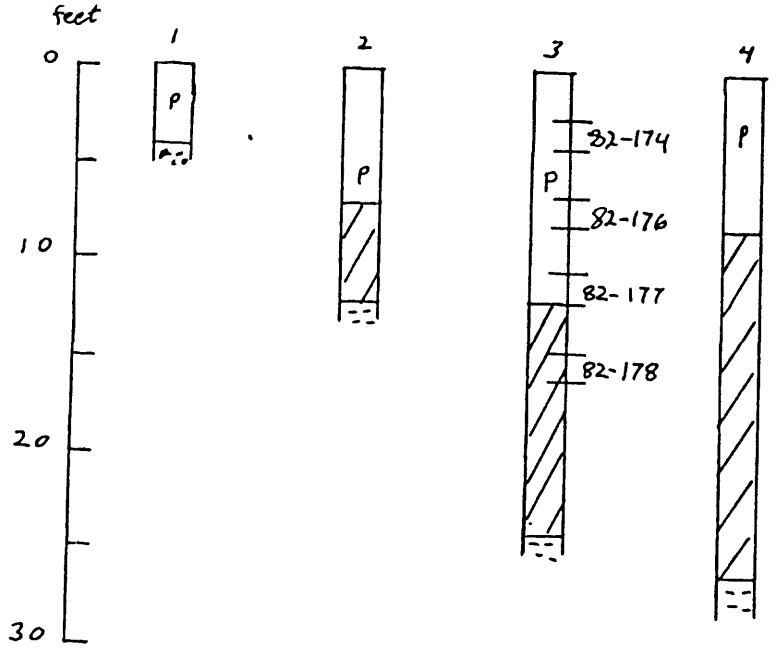
Figure 7. Sketch map, cores, and sample analyses of bog along Braley Brook, T2 R4 WELS, Mattawamkeag Lake 15 minute Quadrangle, Aroostook County, Maine (Number 6 on Index Map).

Table 7.--Analyses of samples in cores located in figure 7a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
174	56.21	4.71	1.28	0.12	0.8	91.9	68.0	9,469
176	55.57	4.45	0.92	0.12	1.4	91.0	68.0	9,396
177	---	---	---	---	3.5	---	---	---
178	---	---	---	---	33.7	---	---	---
Average commercial quality peat (ash content less than 25%)	55.89	4.58	1.10	0.12	1.9	91.45	68.0	9,433

Figure 7a .— Cores and sample locations.



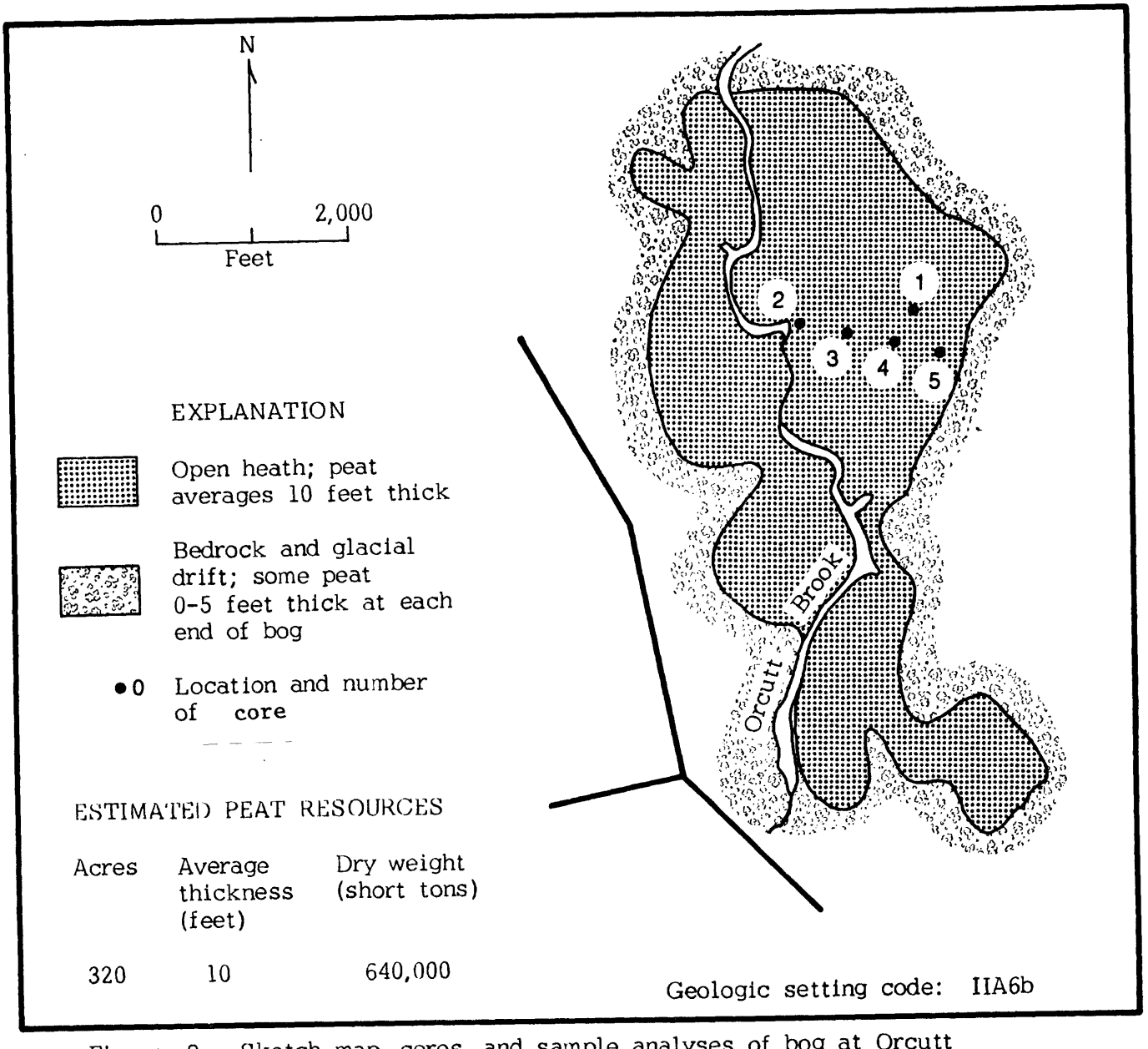


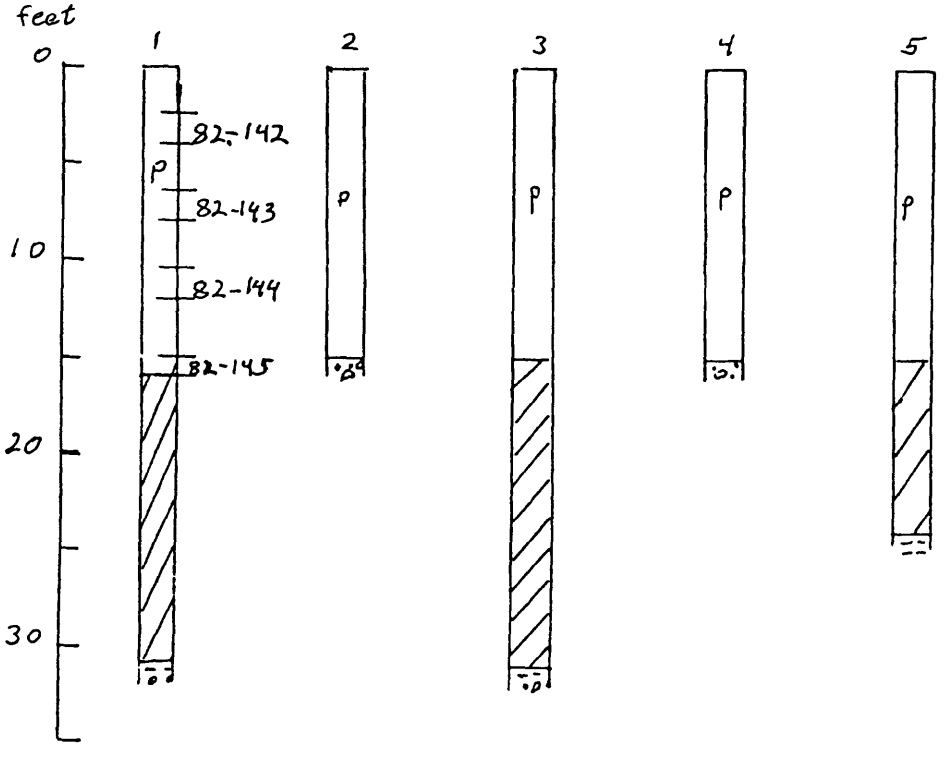
Figure 8. Sketch map, cores, and sample analyses of bog at Orcutt Brook, Glenwood Plantation, Mattawamkeag Lake 15 minute Quadrangle, Aroostook County, Maine (Number 7 on Index Map).

Table 8.--Analyses of samples in sections cores in figure 8a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
142	56.24	4.62	1.44	0.14	1.7	91.9	66.4	9,531
143	55.35	3.89	1.53	0.30	3.7	91.6	62.6	9,120
144	56.69	4.70	1.71	0.23	2.3	92.0	66.2	9,630
145	---	---	---	---	15.0	---	---	---
Average commercial quality peat (ash content less than 25%)	56.09	4.40	1.56	0.22	5.7	91.8	65.1	9,427

Figure 8a.- Cores and sample locations.



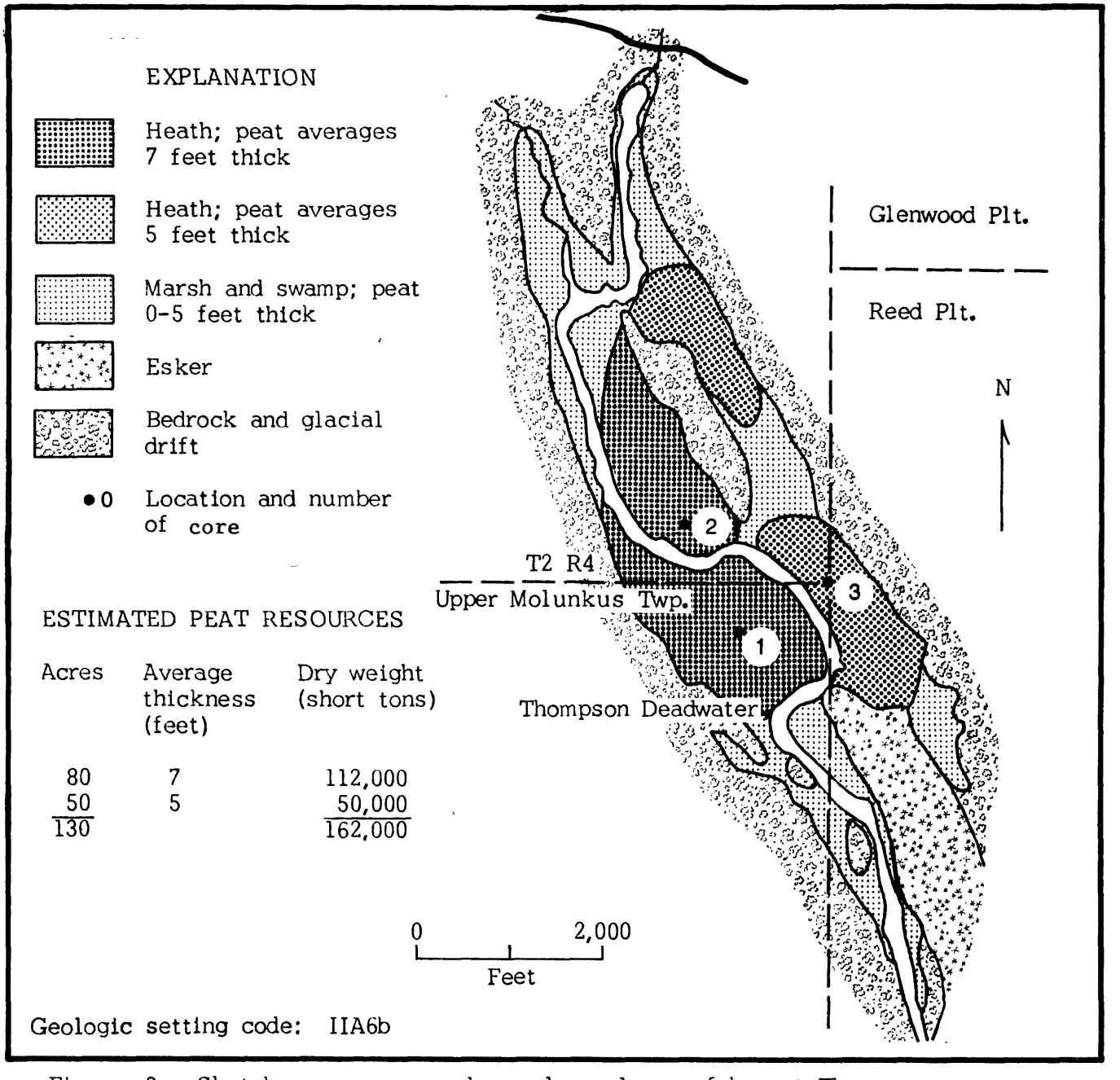


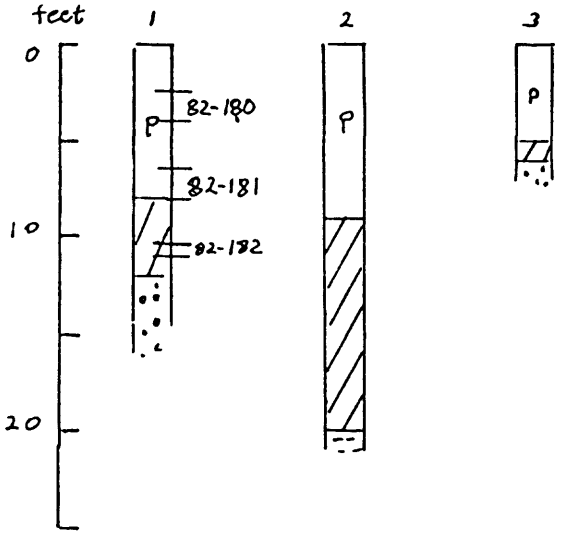
Figure 9. Sketch map, cores, and sample analyses of bog at Thompson Deadwater, T2 R4 WELS, T1 R4 WELS (Upper Molunkus Twp.), and Reed Plantation, Mattawamkeag Lake and Wytopitlock 15 minute Quadrangles, Aroostook County, Maine (Number 8 on Index Map).

Table 9.--Analyses of samples in cores located in figure 9a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
180	---	---	---	---	9.3	---	---	---
181	53.21	4.20	0.99	0.23	1.8	91.2	69.3	9,050
182	---	---	---	---	30.7	---	---	---
Average commercial quality peat (ash content less than 25%)	53.21	4.20	0.99	0.23	5.6	91.2	69.3	9,050

Figure 9a.-- Cores and sample locations.



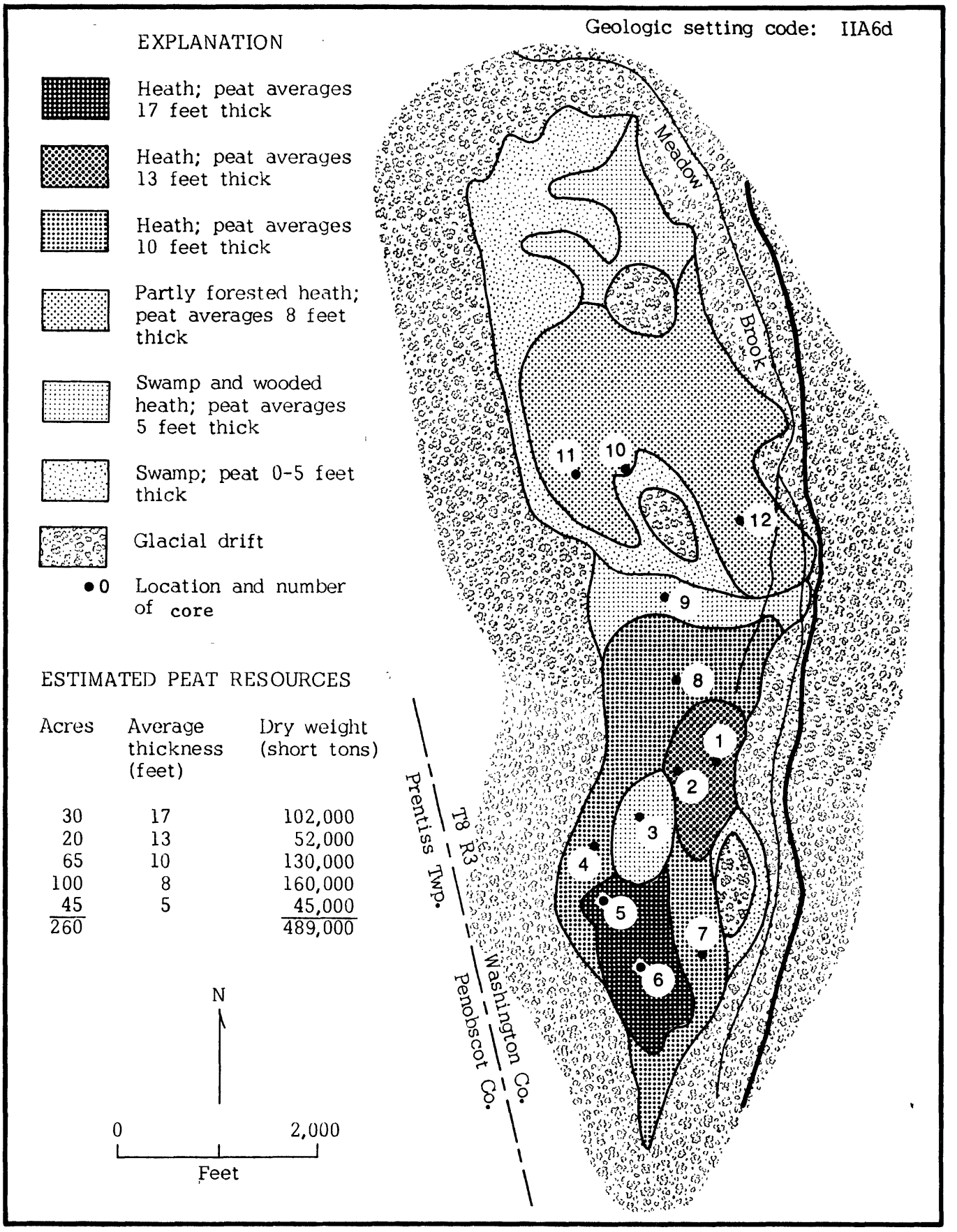


Figure 10. Sketch map, cores, and sample analyses of bog west of Stetson Mountain, T8 R3 NBPP, Wytopitlock and Danforth 15 minute Quadrangles, Washington County, Maine (Number 9 on Index Map).

Figure 10a.— Cores and sample locations.

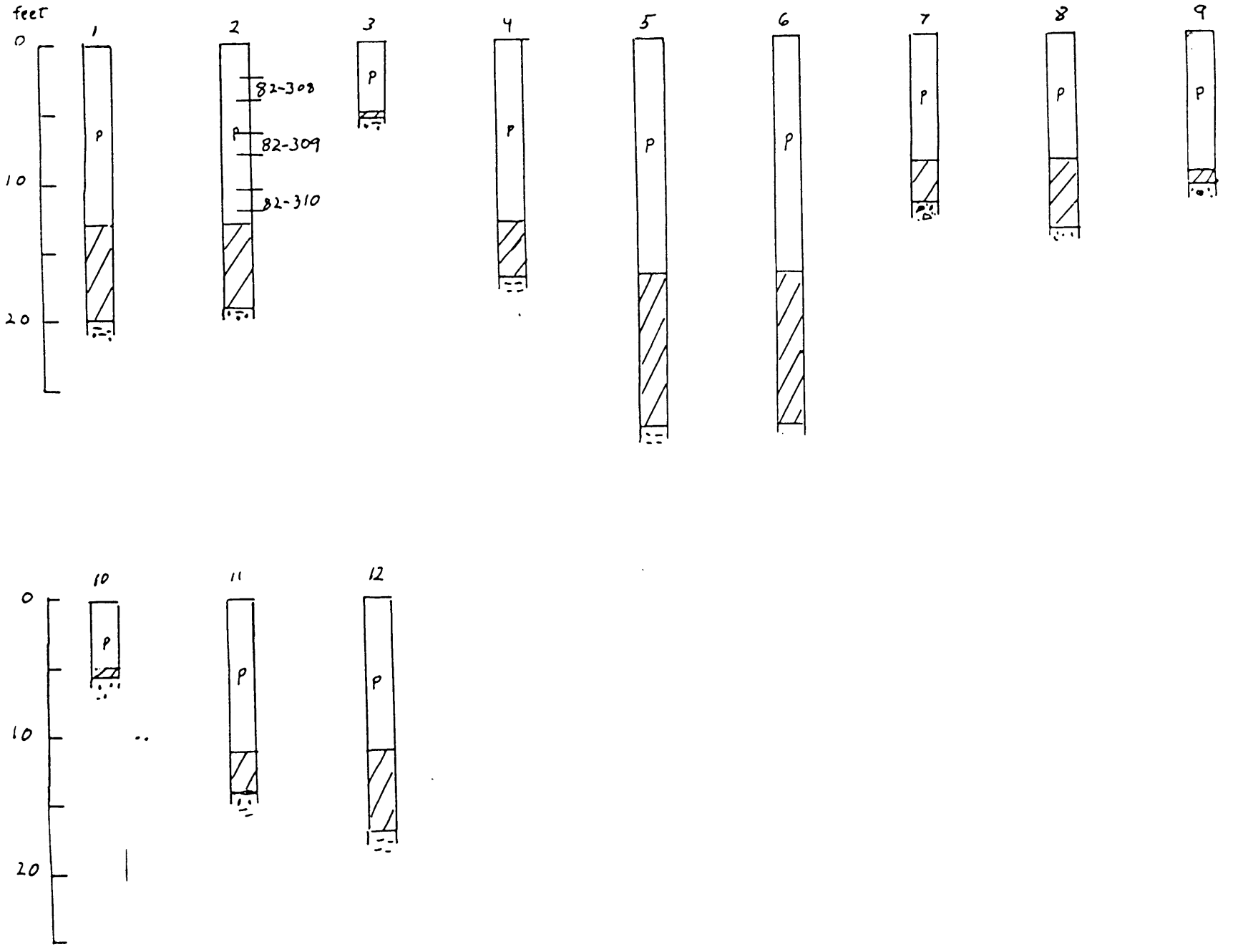


Table 10.--Analyses of samples in cores located in figure 10a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
308	55.09	4.42	0.92	0.11	0.6	91.9	67.8	9,226
309	---	---	---	---	1.3	---	---	---
310	57.92	4.97	1.84	0.25	2.2	94.3	67.4	10,142
Average commercial quality peat (ash content less than 25%)	56.50	4.69	1.38	0.18	1.4	93.1	67.6	9,684

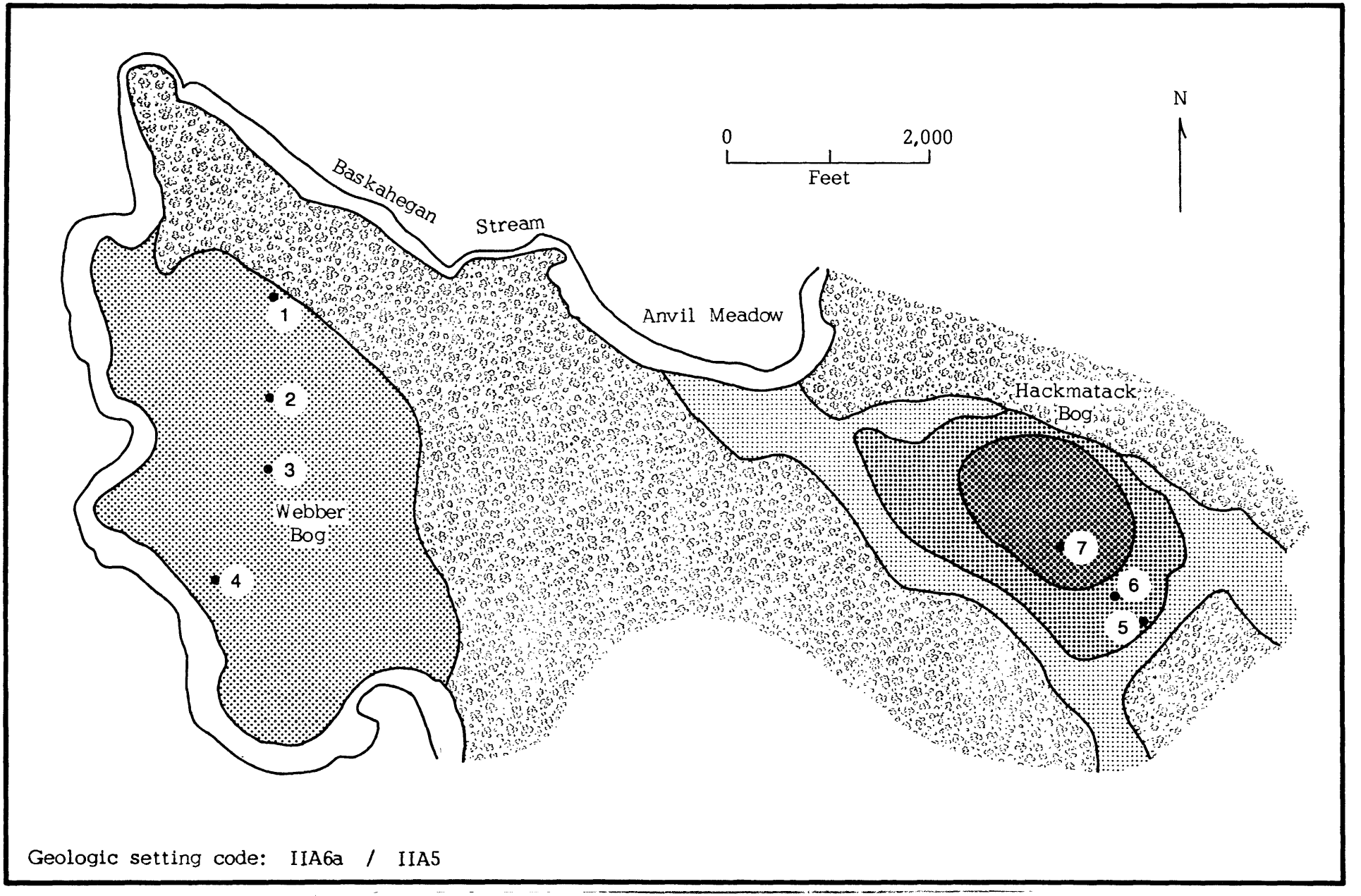


Figure 11. Sketch map, cores, and sample analyses of Webber Bog and Hackmatack Bog north of Baskahegan Lake, Brookton Twp., Danforth 15 minute Quadrangle, Washington County, Maine (Number 10 on Index Map).

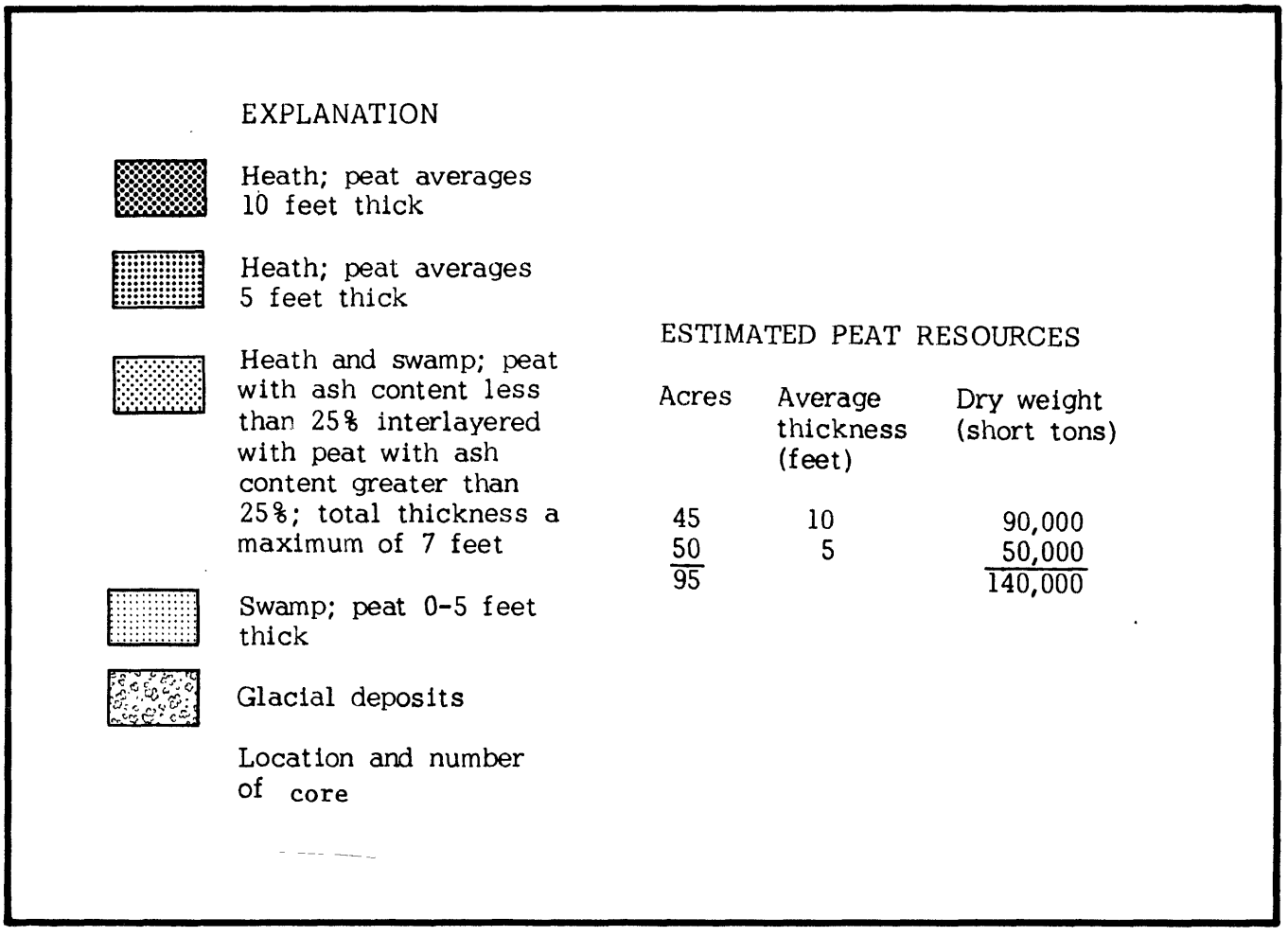


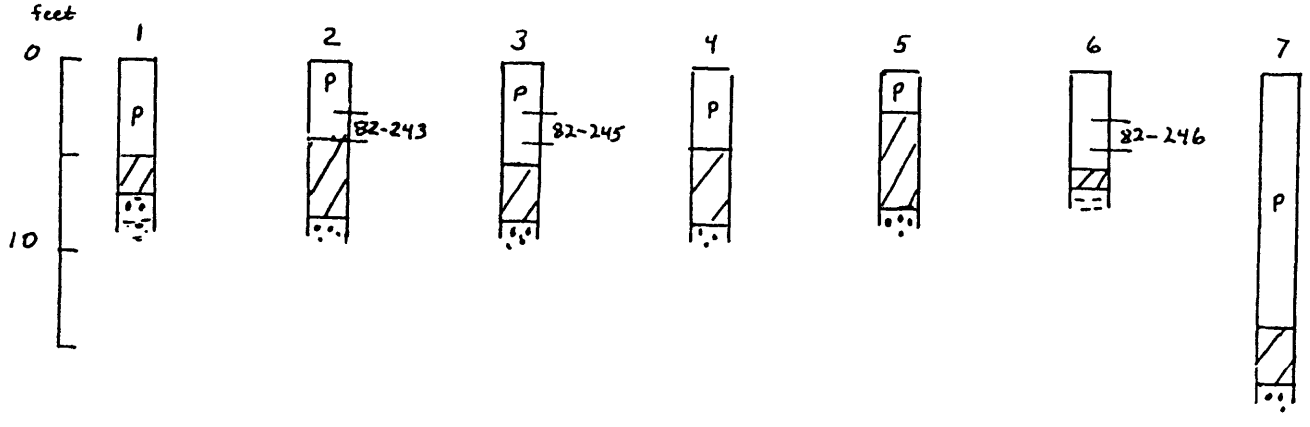
Figure 11. Continued.

Table 11.--Analyses of samples in cores located in figure 11a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
243	---	---	---	---	4.2	---	---	---
245	59.41	4.40	0.87	0.19	2.0	83.8	62.0	9,961
246	57.35	5.31	1.50	0.15	1.4	91.5	68.6	10,007
Average commercial quality peat (ash content less than 25%)	58.38	4.86	1.185	0.17	2.5	87.55	65.3	9,984

Figure 11a .-- Cores and sample locations.



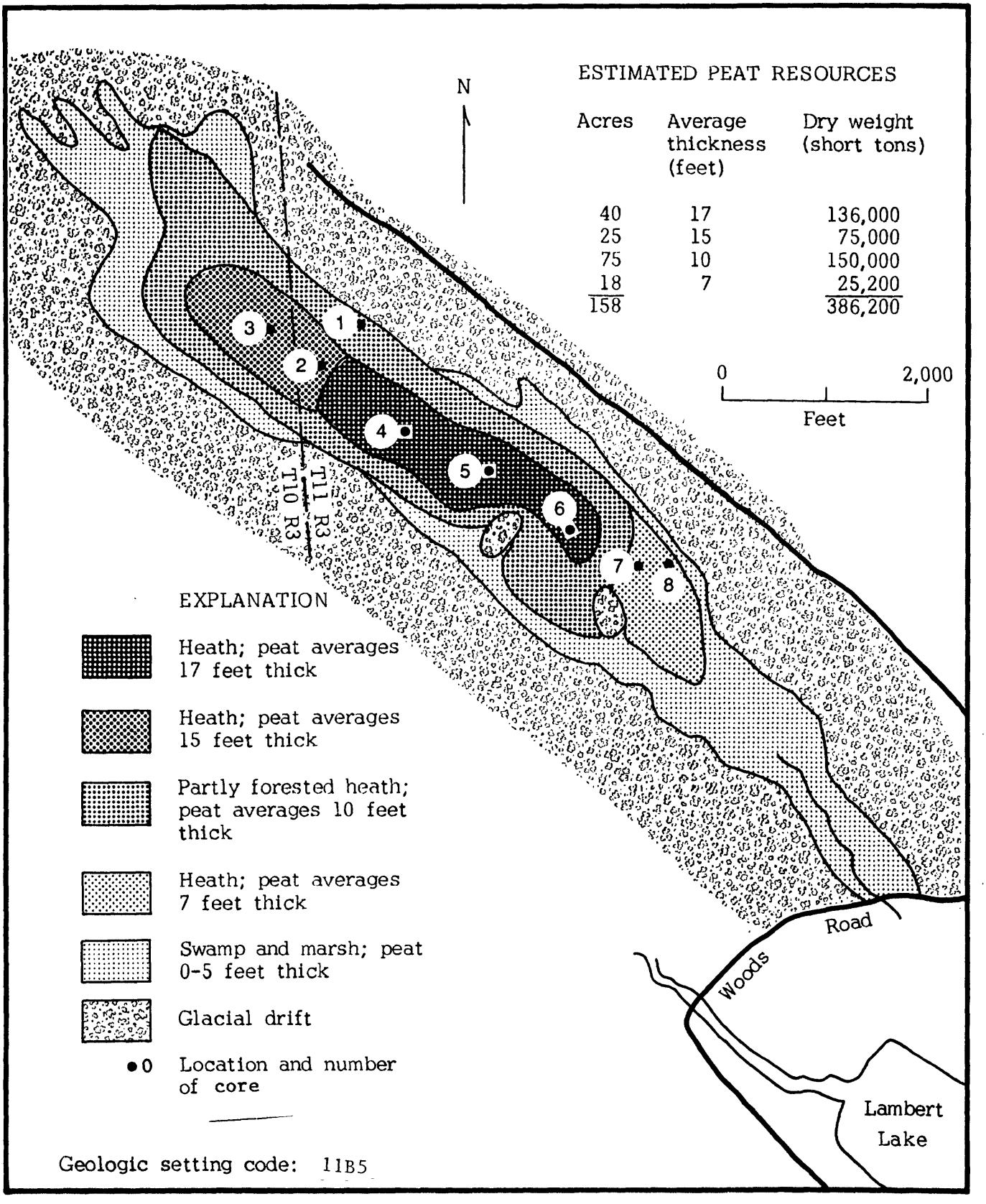


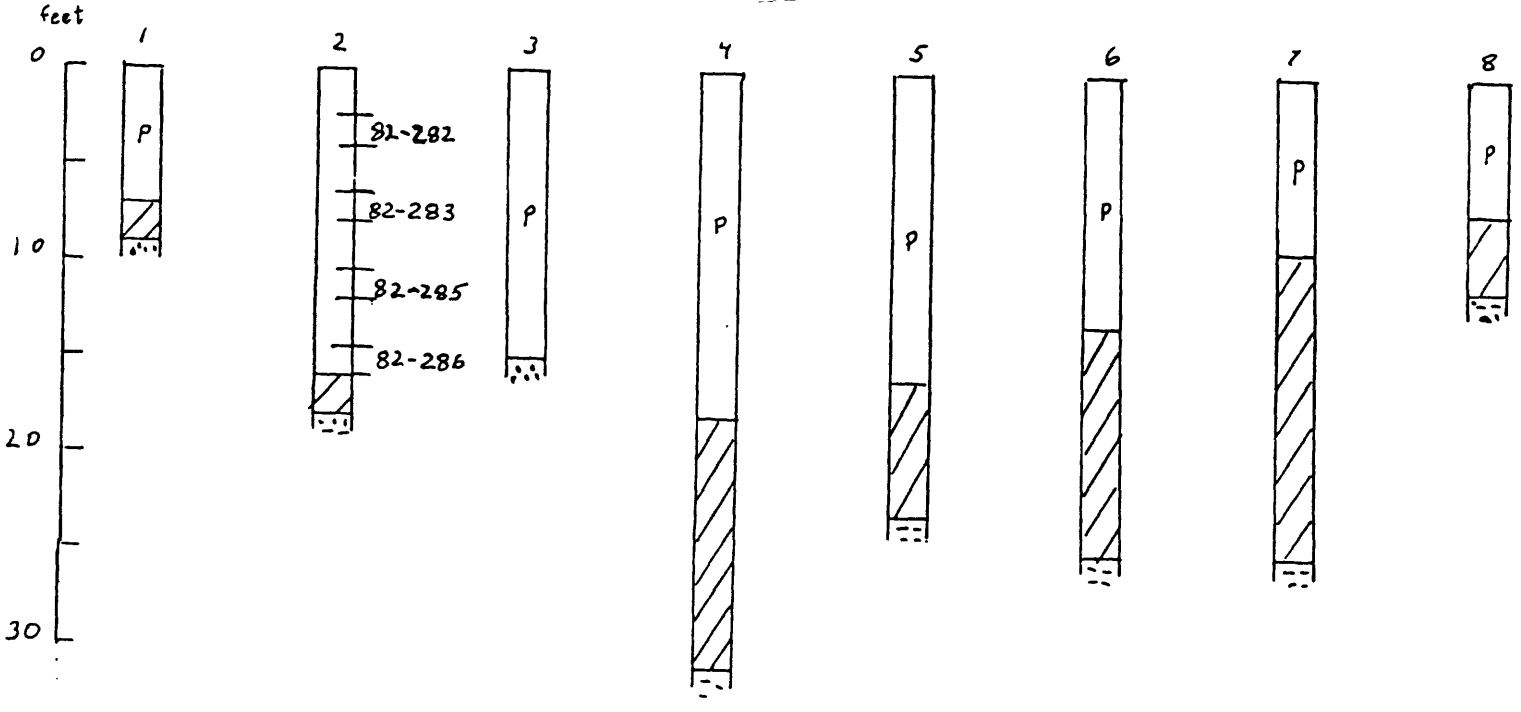
Figure 12. Sketch map, cores, and sample analyses of bog northwest of Lambert Lake, T11 R3 NBPP and T10 R3 NBPP (Forest Twp.), Forest 15 minute Quadrangle, Washington County, Maine (Number 11 on Index Map).

Table 12.--Analyses of samples in cores located in figure 12a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
282	51.78	4.35	0.59	0.10	0.3	92.7	71.2	8,621
283	---	---	---	---	1.0	---	---	---
285	57.82	4.75	1.09	0.13	0.9	90.7	67.0	9,886
286	---	---	---	---	1.8	---	---	---
Average commercial quality peat (ash content less than 25%)	54.80	4.55	0.84	0.115	1.0	91.7	69.1	9,254

Figure 12a.— Cores and sample locations.



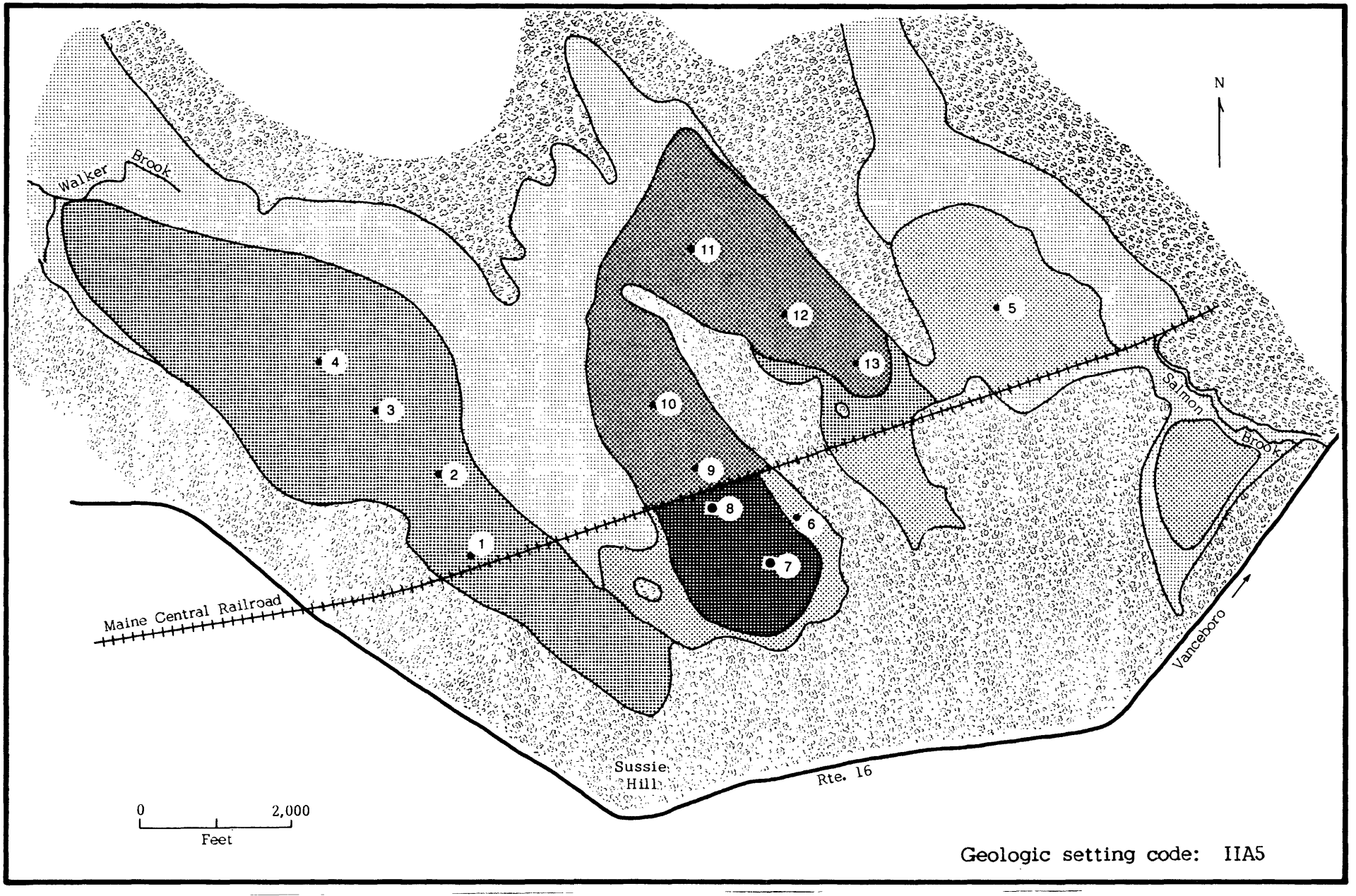
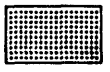


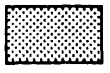
Figure 13. Sketch map, cores, and sample analyses of bog 1 mile west of Vanceboro along Maine Central Railroad, Vanceboro Twp., Vanceboro 15 minute Quadrangle, Washington County, Maine (Number 12 on Index Map).

Heath; peat averages 15 feet thick

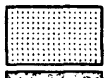
Heath; peat averages 12 feet thick



Heath; peat averages 10 feet thick



Heath; peat averages 5 feet thick



Swamp and marsh; peat 0-5 feet thick

Glacial drift

•0 Location and number of core

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
70	15	210,000
125	12	300,000
395	10	790,000
165	5	165,000
755		1,465,000

Figure 13. Continued.

Figure 13a.-- Cores and sample locations.

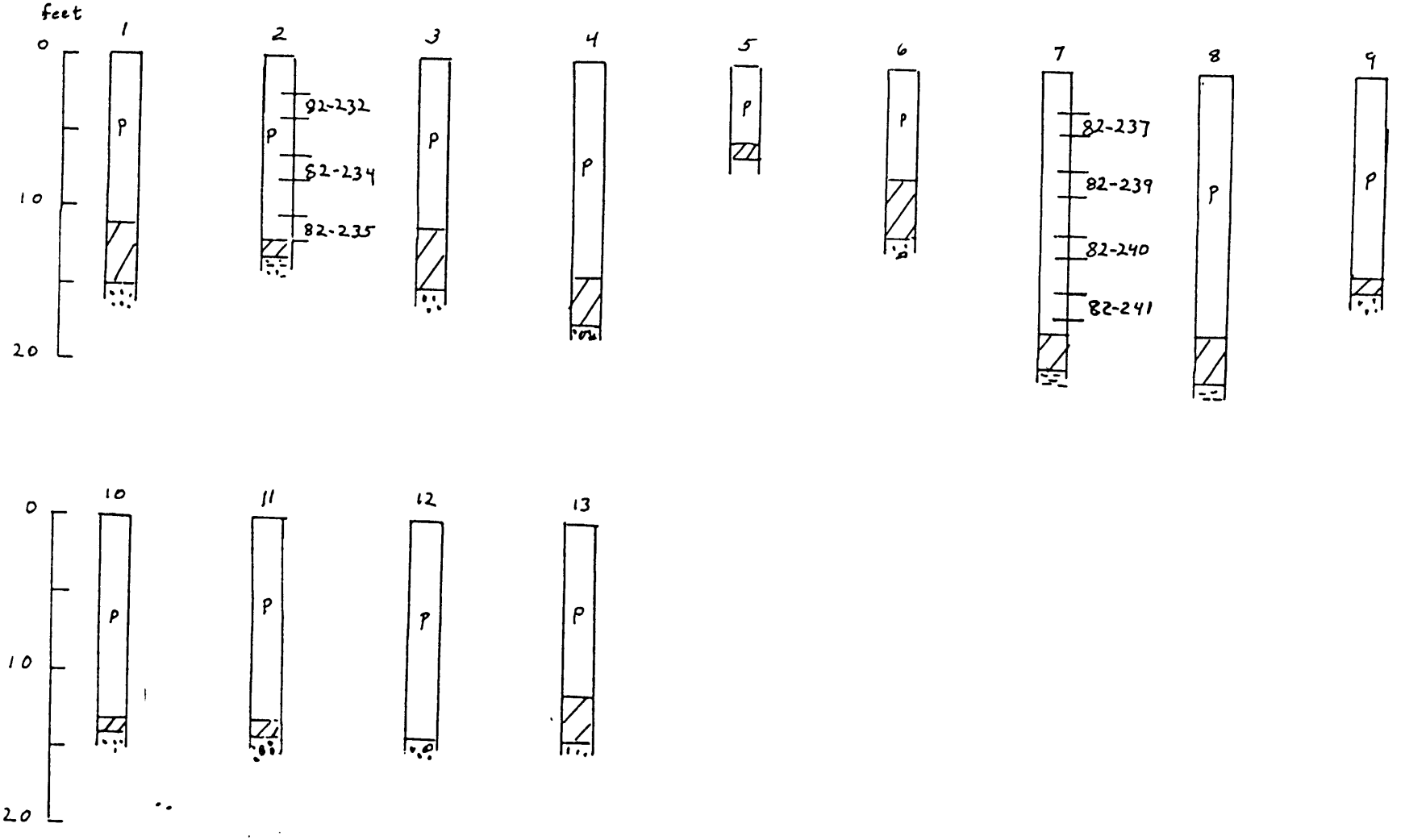


Table 13.--Analyses of samples in cores located in figure 13a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
232	55.01	4.57	0.08	0.10	0.8	92.4	66.3	9,123
234	57.11	4.92	1.43	0.15	1.8	92.2	66.4	9,709
235	---	---	---	---	6.8	---	---	---
237	54.37	4.59	0.72	0.11	0.4	92.1	67.1	8,991
239	---	---	---	---	1.1	---	---	---
240	55.34	4.38	0.80	0.21	1.2	92.3	67.2	9,149
241	---	---	---	---	3.9	---	---	---
Average commercial quality peat (ash content less than 25%)	55.46	4.62	0.76	0.14	2.2	92.25	66.8	9,243

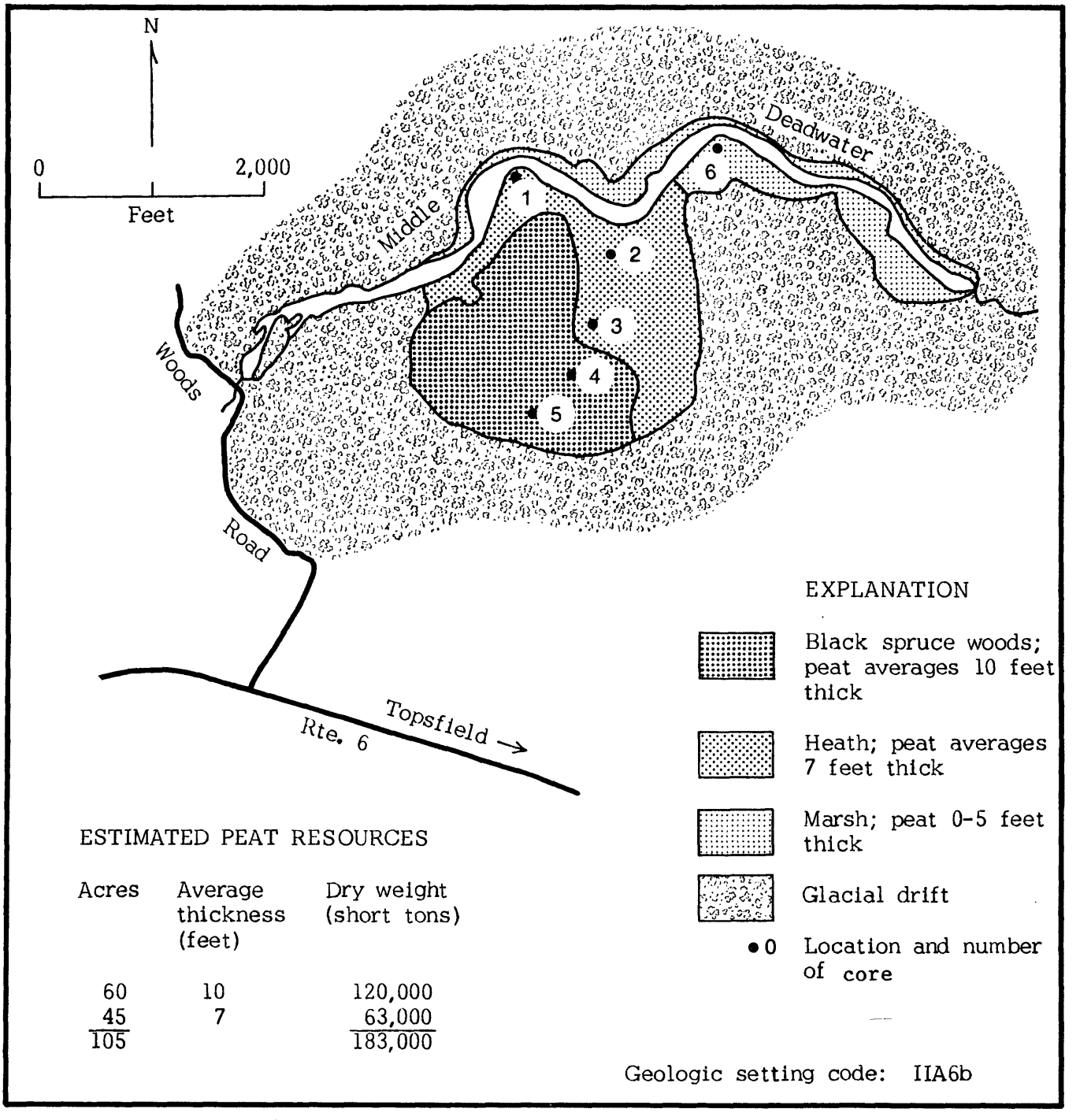


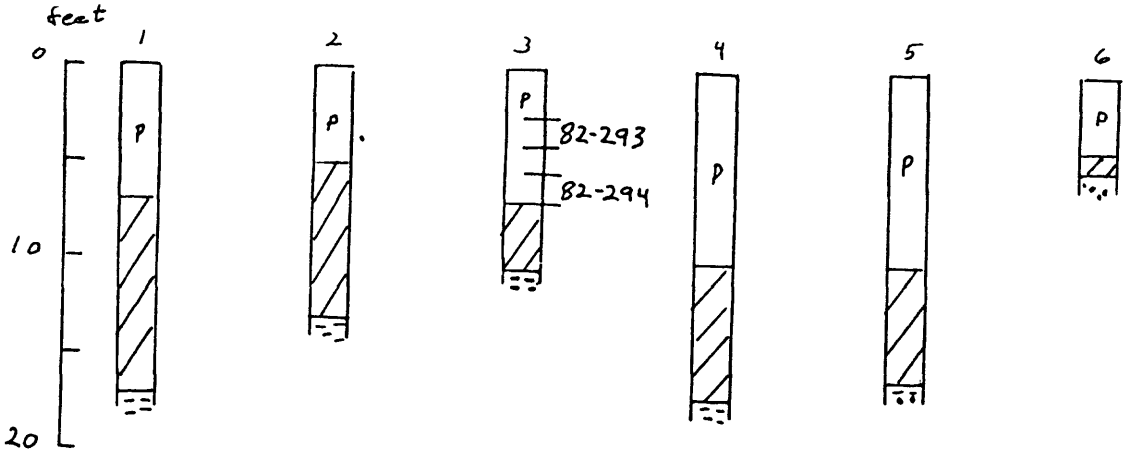
Figure 14. Sketch map, cores, and sample analyses of bog along Middle Deadwater on Baskahegan Stream, T7 R2 NBPP (Kossuth Twp.), Scraggly Lake 15 minute Quadrangle, Washington County, Maine (Number 13 on Index Map).

Table 14.--Analyses of samples in cores located in figure 14a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
293	55.88	4.56	0.87	0.13	0.9	90.0	66.8	9,589
294	---	---	---	---	4.1	---	---	---
Average commercial quality peat (ash content less than 25%)	---	---	---	---	2.5	---	---	---

Figure 14a.-- Cores and sample locations.



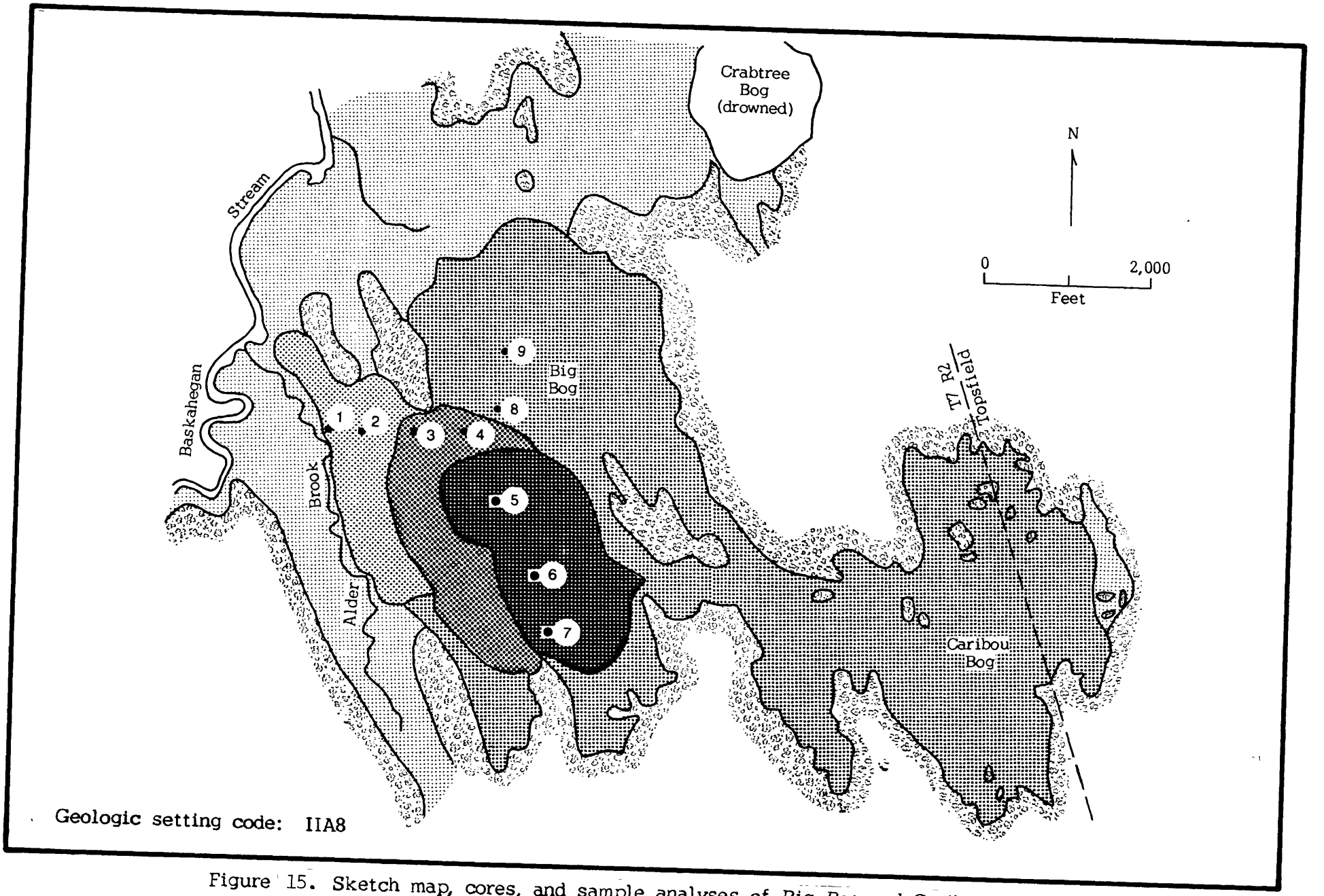


Figure 15. Sketch map, cores, and sample analyses of Big Bog and Caribou Bog east of Baskahegan Stream, T7 R2 NBPP (Kossuth Twp.), Scraggly Lake 15 minute Quadrangle, Washington County, Maine (Number 14 on Index Map).

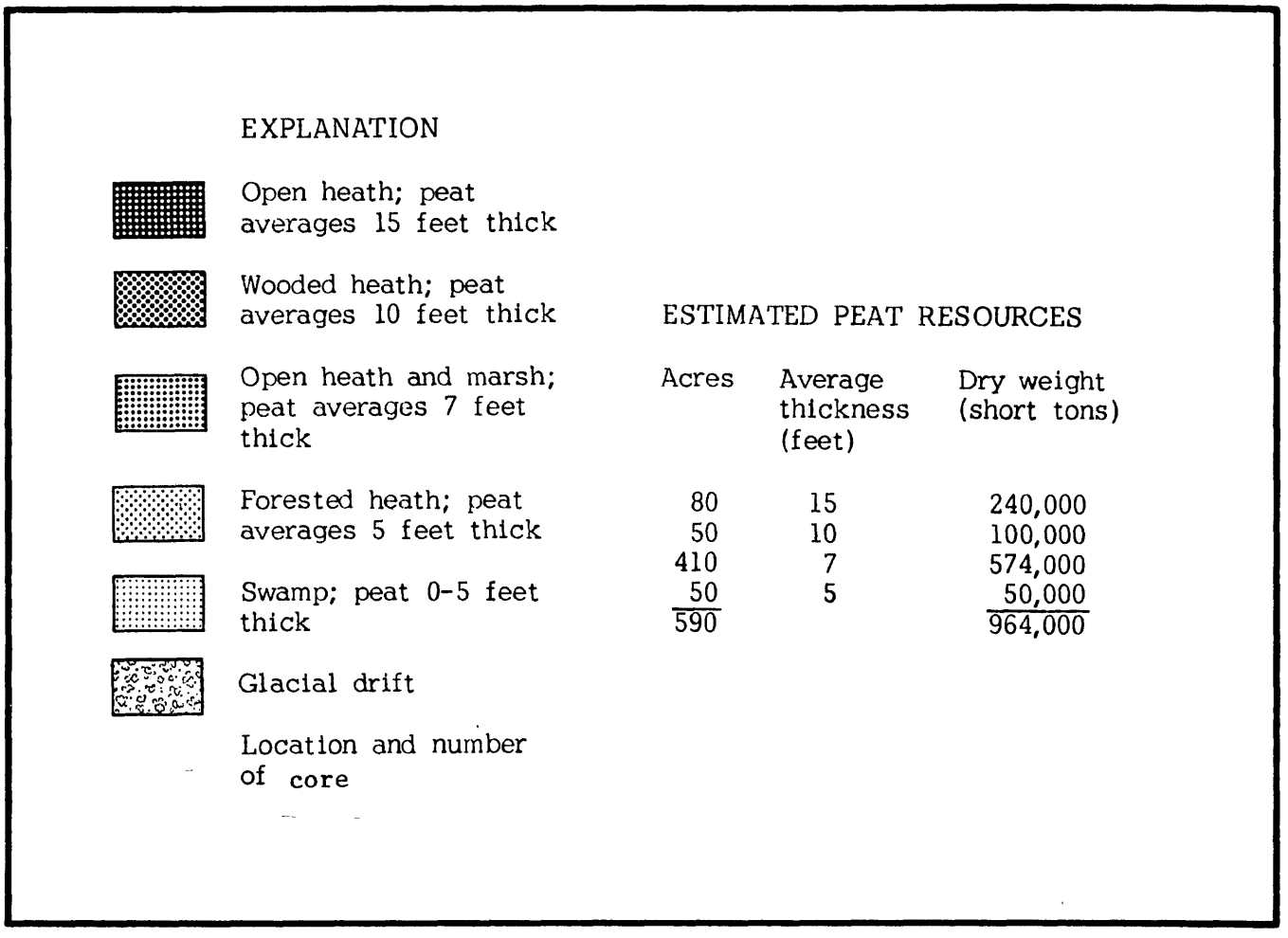


Figure 15. Continued.

Figure 15a.--Cores and sample locations.

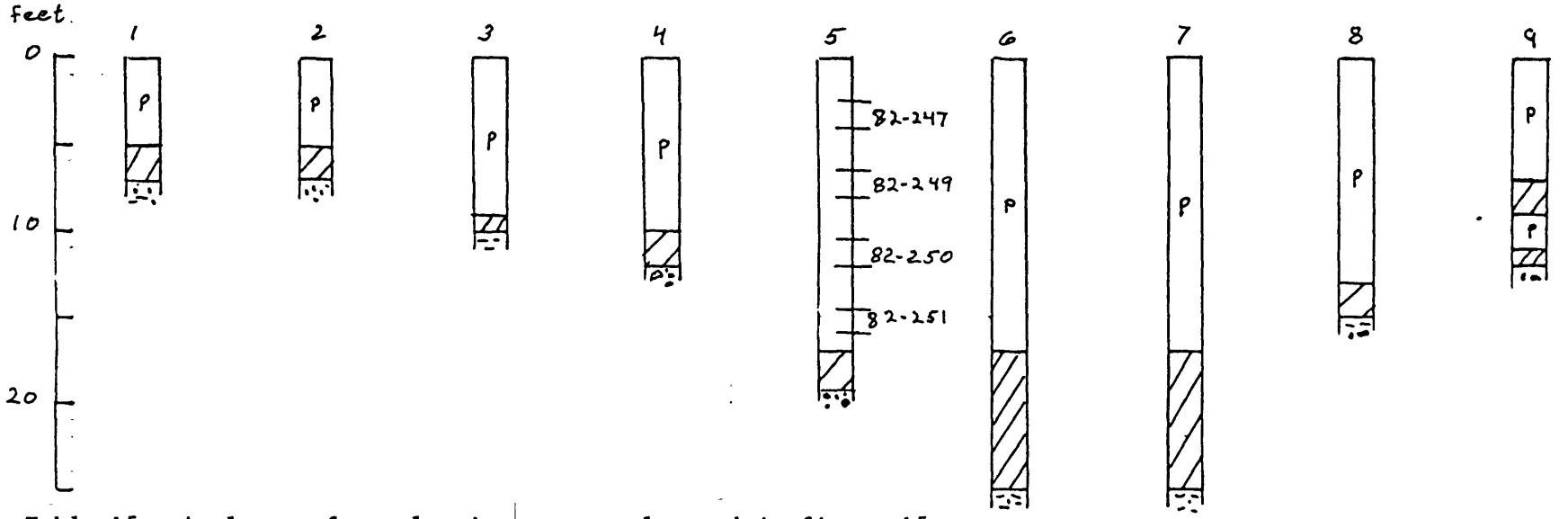
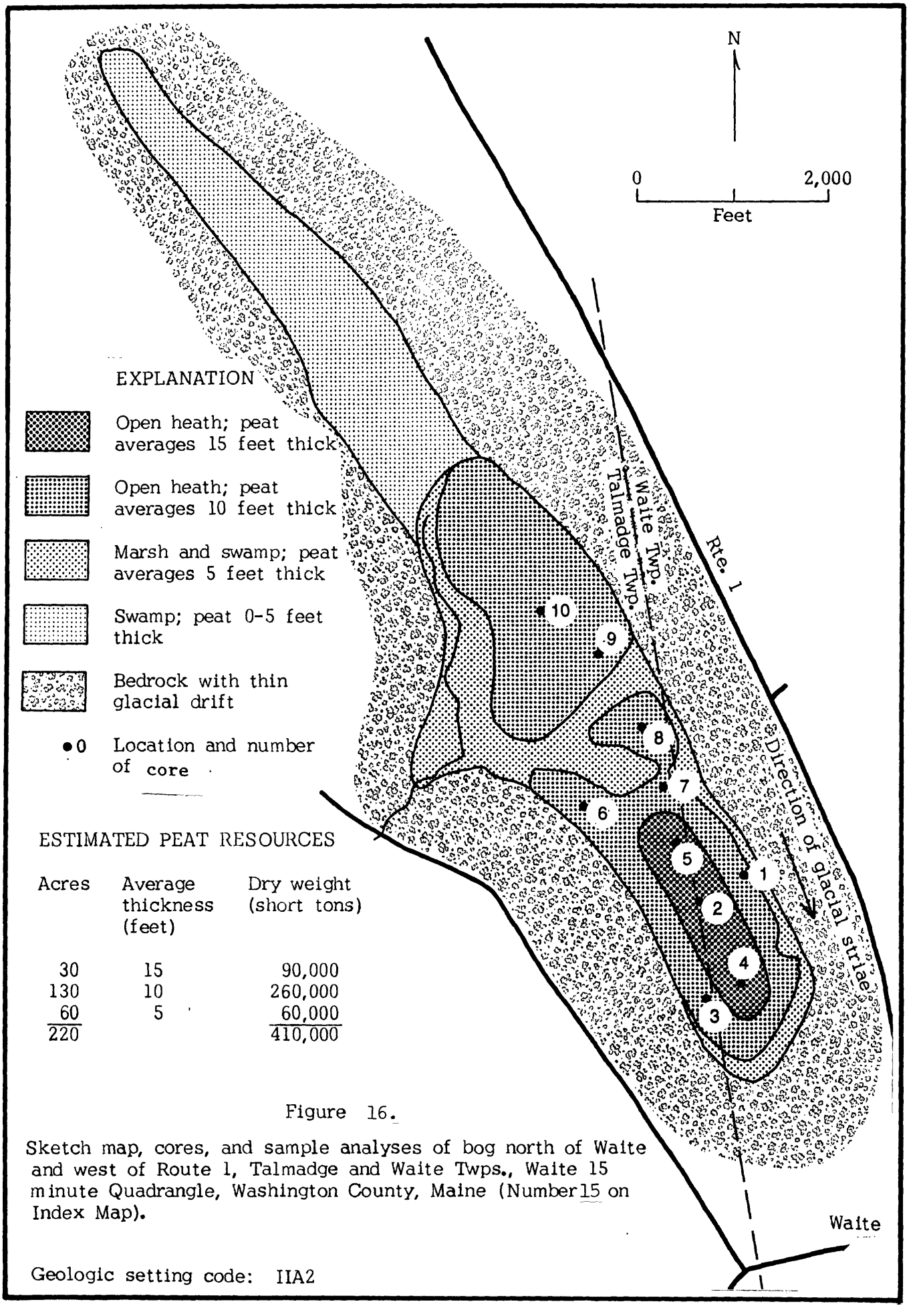


Table 15.--Analyses of samples in cores located in figure 15a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
247	55.95	4.76	1.15	0.11	0.5	92.1	68.1	9,435
249	---	---	---	---	1.1	---	---	---
250	---	---	---	---	1.7	---	---	---
251	57.59	4.98	1.50	0.19	2.8	92.1	65.9	9,830
Average commercial quality peat (ash content less than 25%)	56.77	4.87	1.325	0.15	1.5	92.1	67.0	9,633



ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
30	15	90,000
130	10	260,000
60	5	60,000
220		410,000

Figure 16.

Sketch map, cores, and sample analyses of bog north of Waite and west of Route 1, Talmadge and Waite Twps., Waite 15 minute Quadrangle, Washington County, Maine (Number15 on Index Map).

Geologic setting code: IIA2

Figure 16a.— Cores and sample locations.

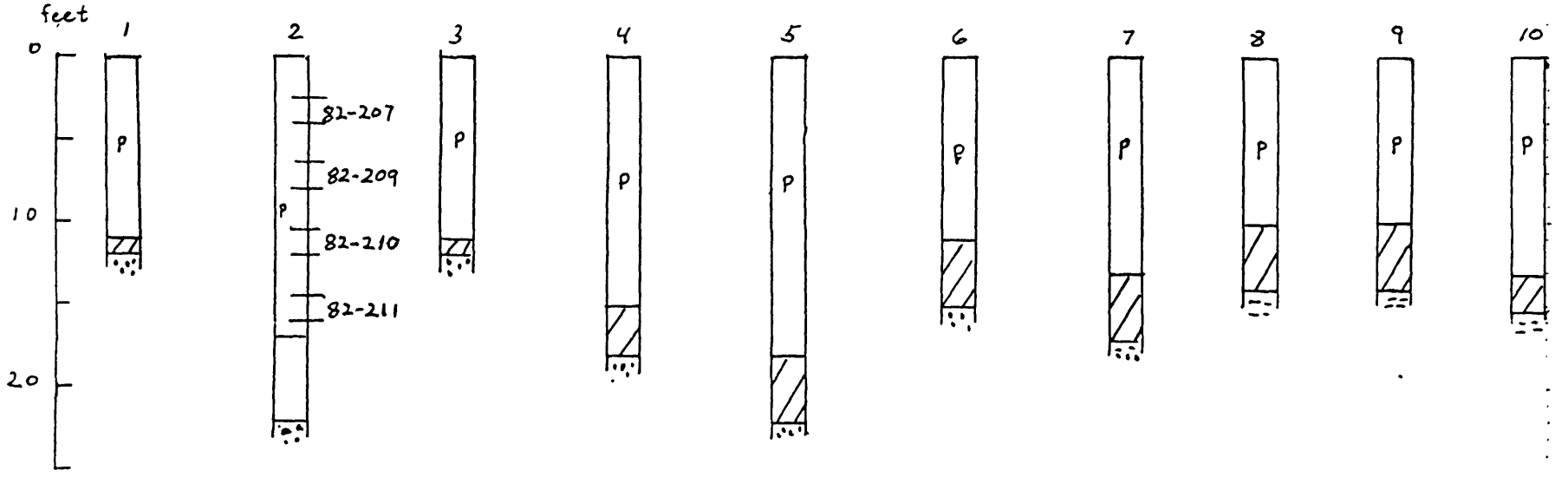


Table 16.--Analyses of samples in cores located in figure 16a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
207	53.34	4.22	0.86	0.11	0.9	91.1	67.5	8,903
209	57.23	4.09	1.11	0.19	2.2	87.4	60.8	9,396
210	---	---	---	---	7.1	---	---	---
211	57.95	4.80	2.40	0.50	3.3	90.9	62.2	9,994
Average commercial quality peat (ash content less than 25%)	56.17	4.39	1.46	0.27	3.4	89.8	63.5	9,431

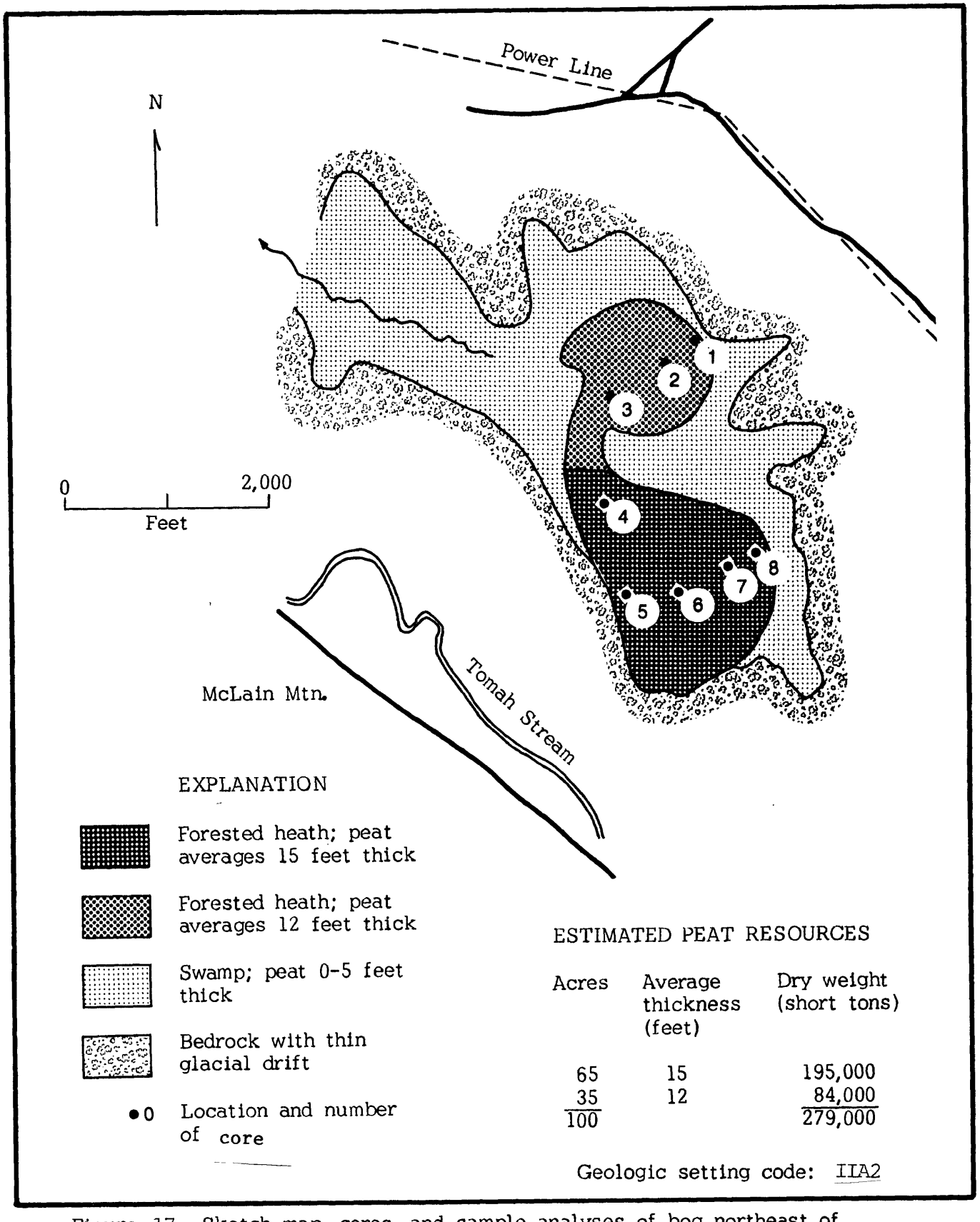


Figure 17. Sketch map, cores, and sample analyses of bog northeast of McLain Mountain and east of Tomah Stream, Waite Twp., Waite 15 minute Quadrangle, Washington County, Maine (Number 16 on Index Map).

Figure 17a.— Cores and sample locations.

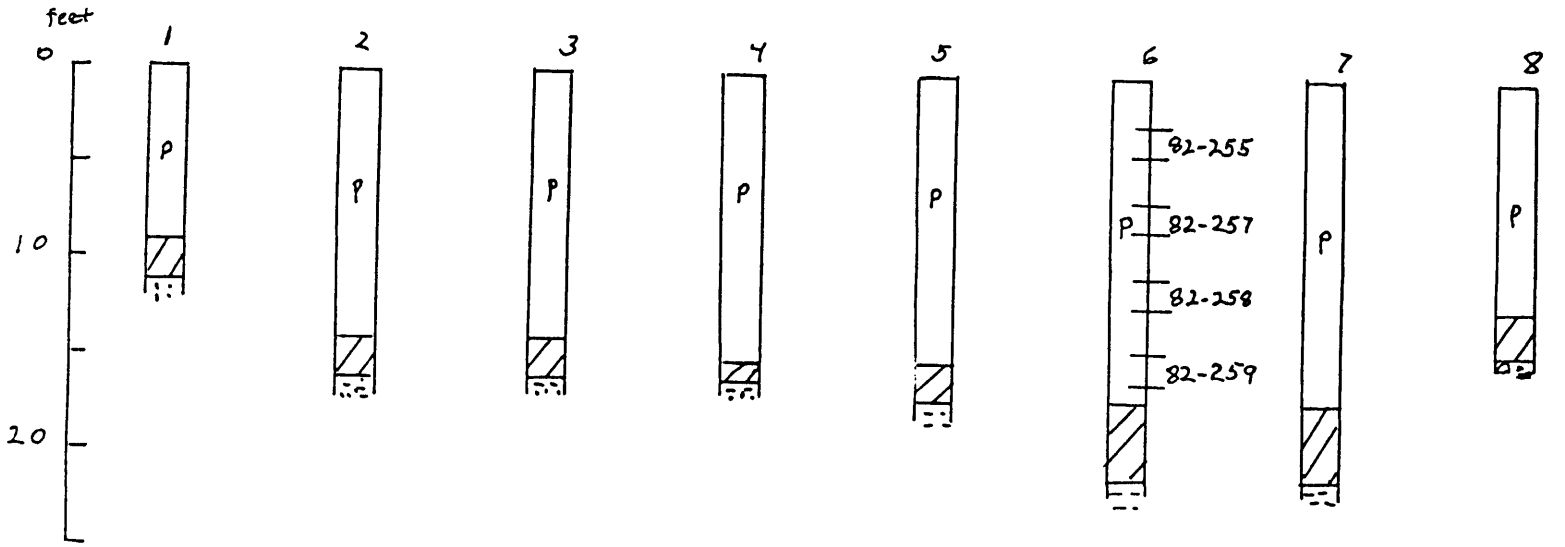


Table 17.--Analyses of samples in cores located in figure 17a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
255	54.15	4.45	0.44	0.11	0.7	90.6	69.9	9,021
257	---	---	---	---	1.8	---	---	---
258	55.93	4.80	0.88	0.11	1.4	93.1	67.4	9,241
259	---	---	---	---	4.0	---	---	---
Average commercial quality peat (ash content less than 25%)	55.04	4.625	0.66	0.11	2.0	91.85	68.65	9,131

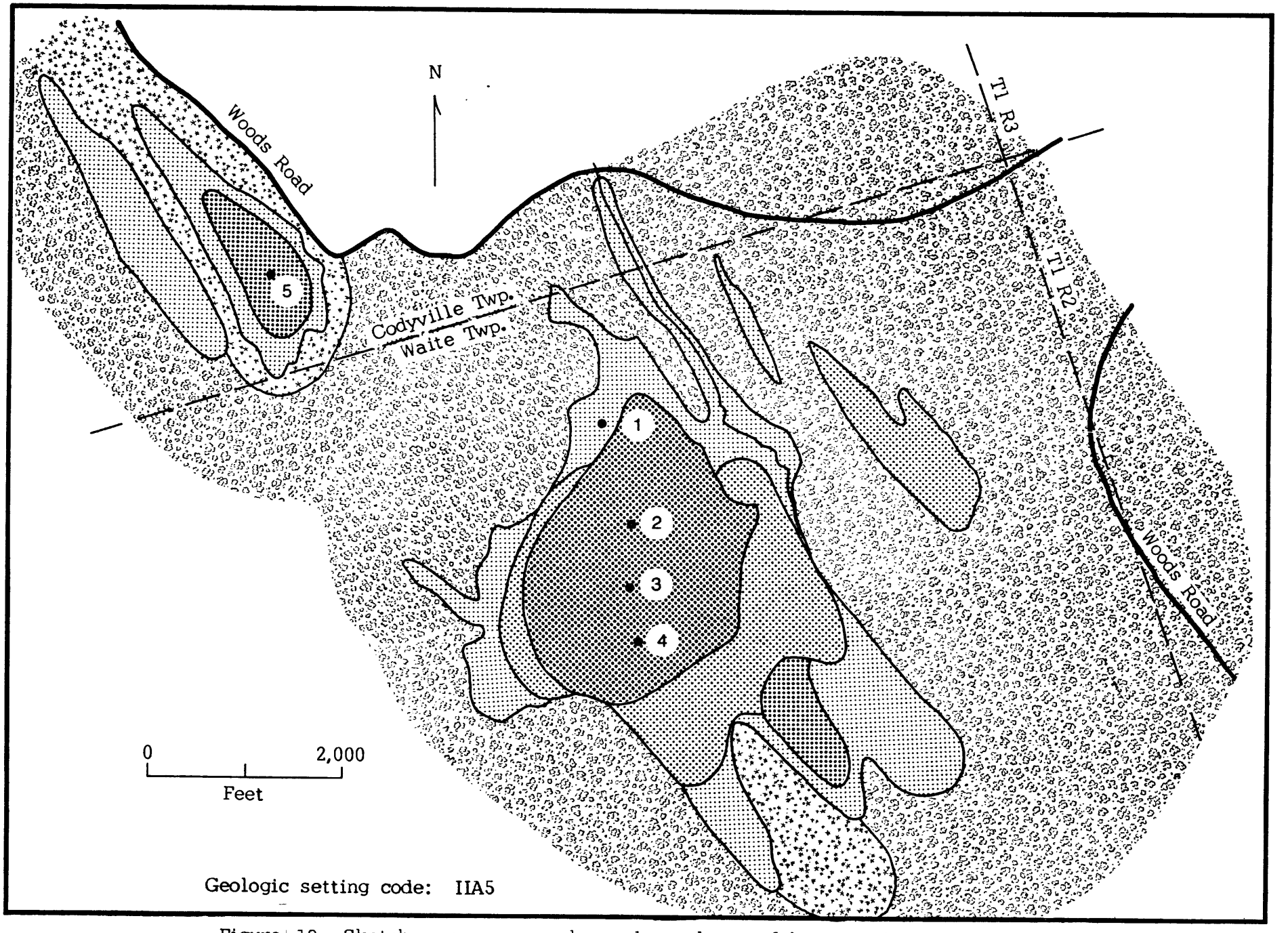
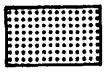


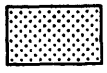
Figure 18. Sketch map, cores, and sample analyses of bogs northeast of Stony Brook, Waite Twp. and Codyville Plantation, Waite 15 minute Quadrangle, Washington County, Maine (Number 17 on Index Map).

EXPLANATION

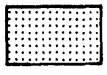
Open heath; peat averages 14 feet thick



Open and wooded heath; peat averages 7 feet thick



Heath and swamp; peat averages 5 feet thick



Swamp; peat 0-5 feet thick

Kames and eskers

Glacial drift and bedrock

•0 Location and number of core

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
100	14	280,000
34	7	47,600
75	5	75,000
209		402,600

Figure 18. Continued.

Figure 18a.--- Cores and sample locations.

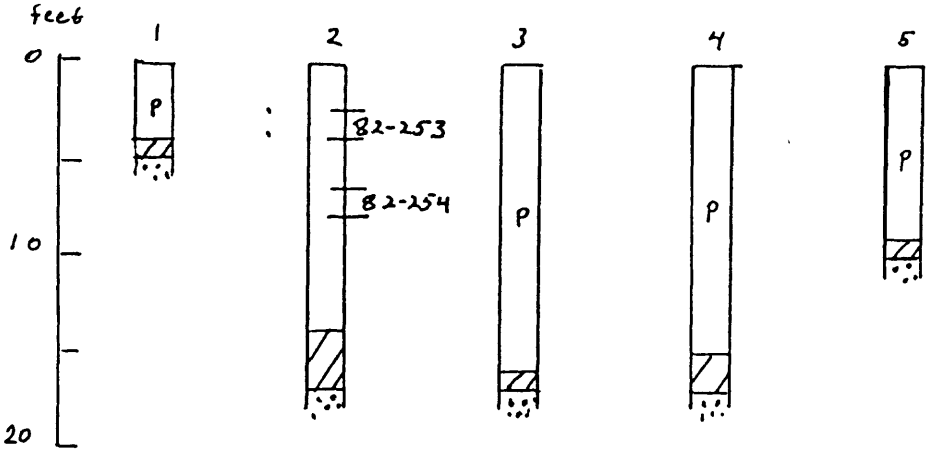


Table 18.--Analyses of samples in cores located in figure 18a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
253	57.21	4.68	1.19	0.20	1.8	89.3	65.2	9,616
254	57.45	4.79	0.91	0.14	1.4	91.4	66.5	9,673
Average commercial quality peat (ash content less than 25%)	57.33	4.74	1.05	0.17	1.6	90.35	65.85	9,645

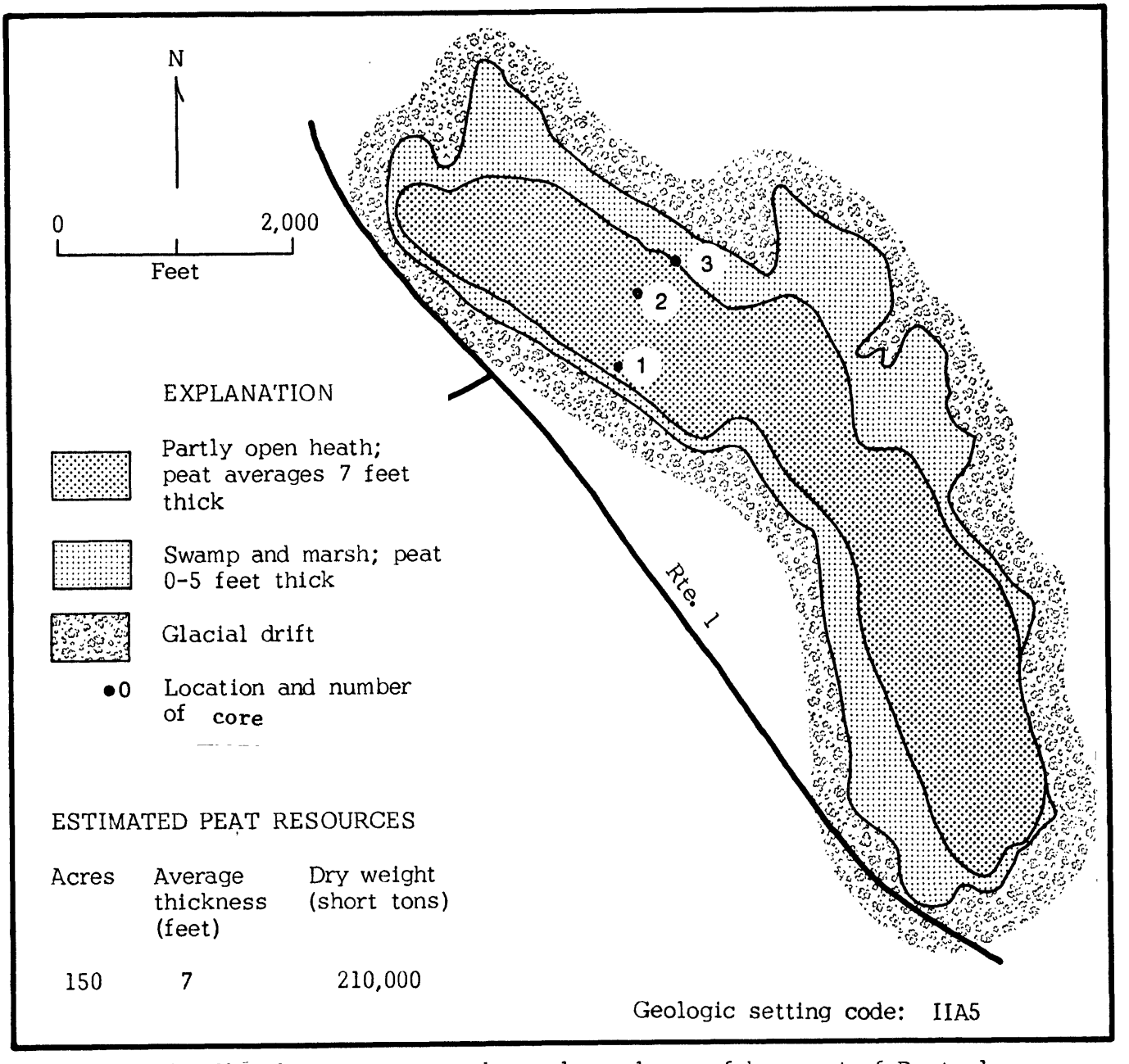


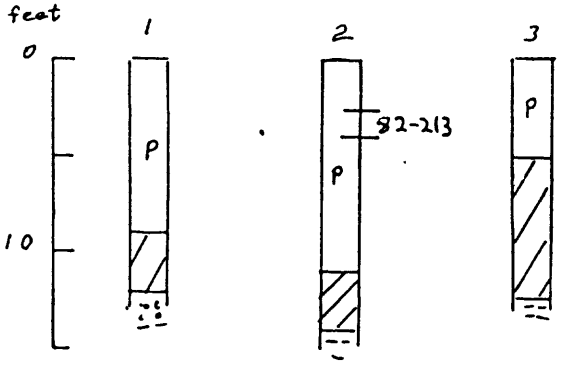
Figure 19. Sketch map, cores, and sample analyses of bog east of Route 1 and 3 miles southeast of Waite, Indian Twp., Waite 15 minute Quadrangle, Washington County, Maine (Number 18 on Index Map).

Table 19.--Analyses of samples in core located in figure 19a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
213	56.04	4.15	1.01	0.14	2.3	89.5	64.0	9,294
Average commercial quality peat (ash content less than 25%)	56.04	4.15	1.01	0.14	2.3	89.5	64.0	9,294

Figure 19a.-- Cores and sample locations.



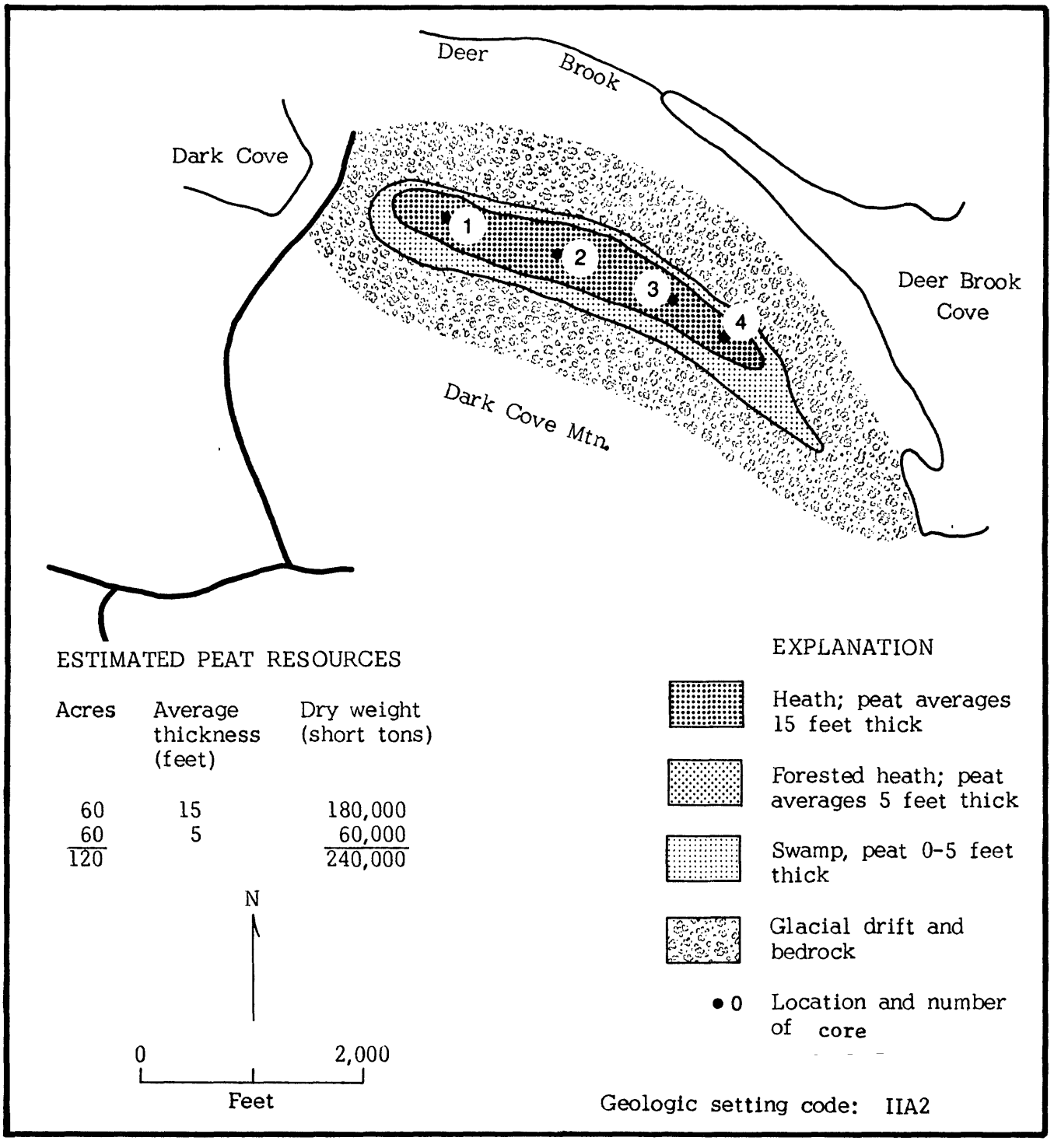


Figure 20. Sketch map, cores, and sample analyses of bog north of Dark Cove Mountain and bog at north end of Fourth Machias Lake, T5 ND BPP, Wabassus Lake 15 minute Quadrangle, Washington County, Maine (Number 19 on Index Map).

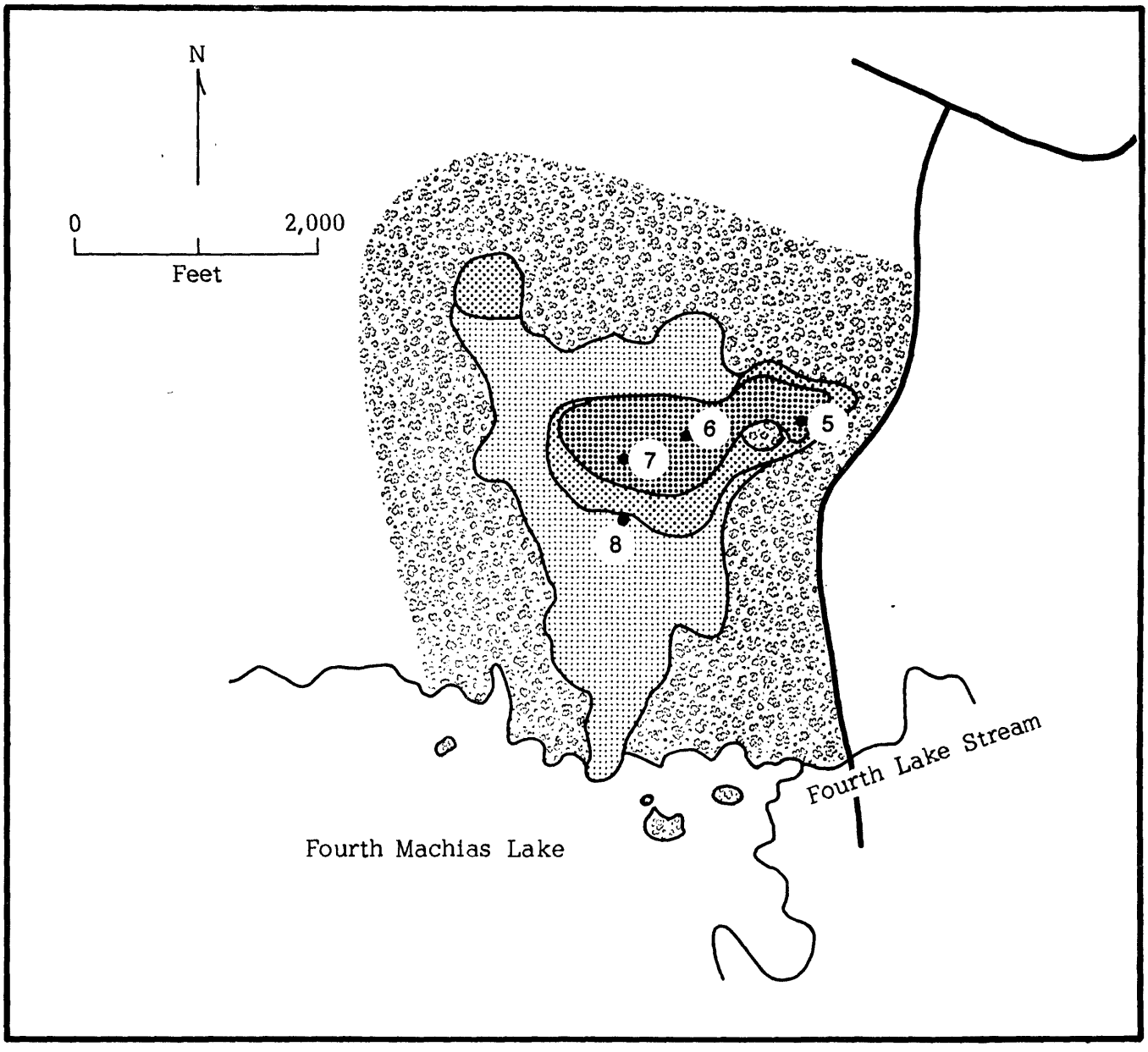


Figure 20. Continued.

Figure 20.— Cores and sample locations.

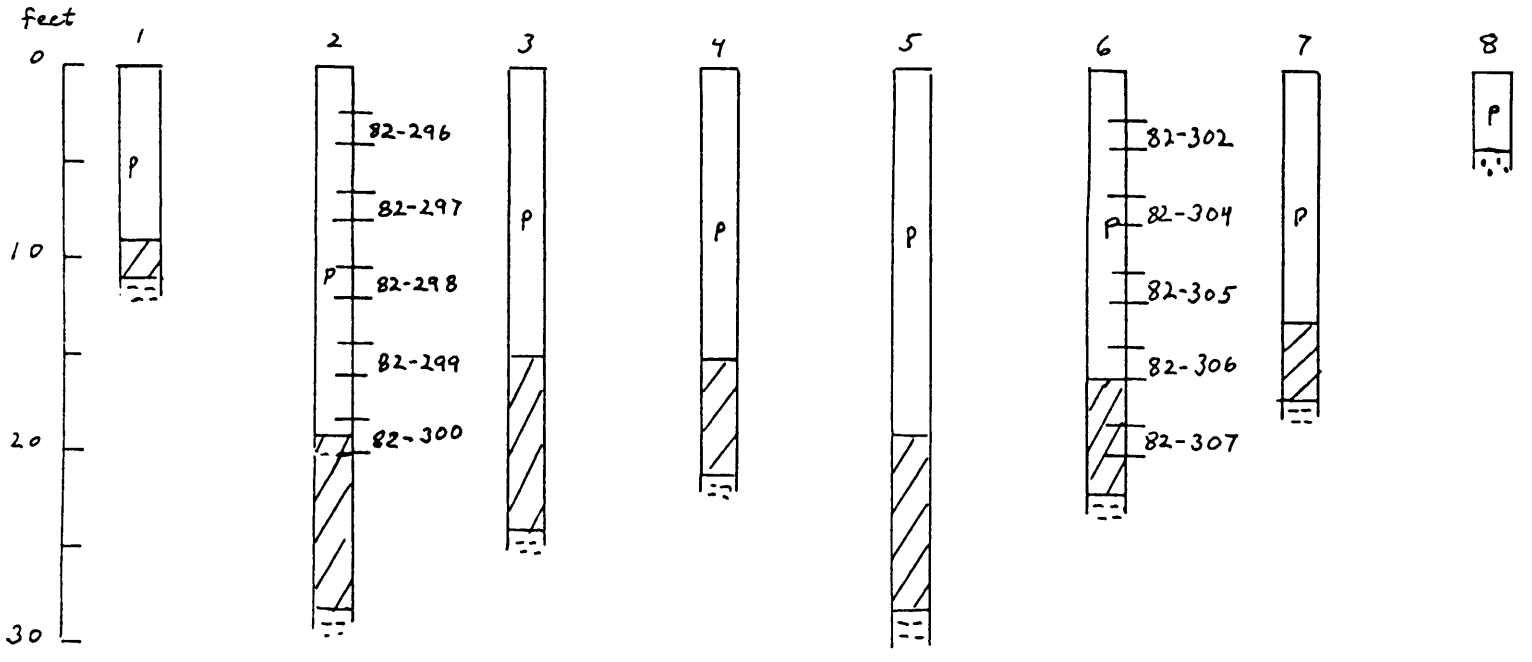


Table 20.--Analyses of samples in cores located in figure 20a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
296	---	---	---	---	2.4	---	---	---
297	55.68	4.41	0.87	0.13	1.9	90.9	66.9	9,197
298	---	---	---	---	3.6	---	---	---
299	55.18	4.09	2.47	0.85	7.5	94.8	64.2	9,622
300	---	---	---	---	25.9	---	---	---
302	52.67	4.17	0.68	0.09	0.5	83.5	70.7	8,614
304	---	---	---	---	1.6	---	---	---
305	56.52	4.48	0.89	0.13	1.6	90.6	66.5	9,496
306	---	---	---	---	3.9	---	---	---
307	---	---	---	---	40.9	---	---	---
Average commercial quality peat (ash content less than 25%)	55.01	4.28	1.22	0.3	2.8	90.0	67.1	9,232

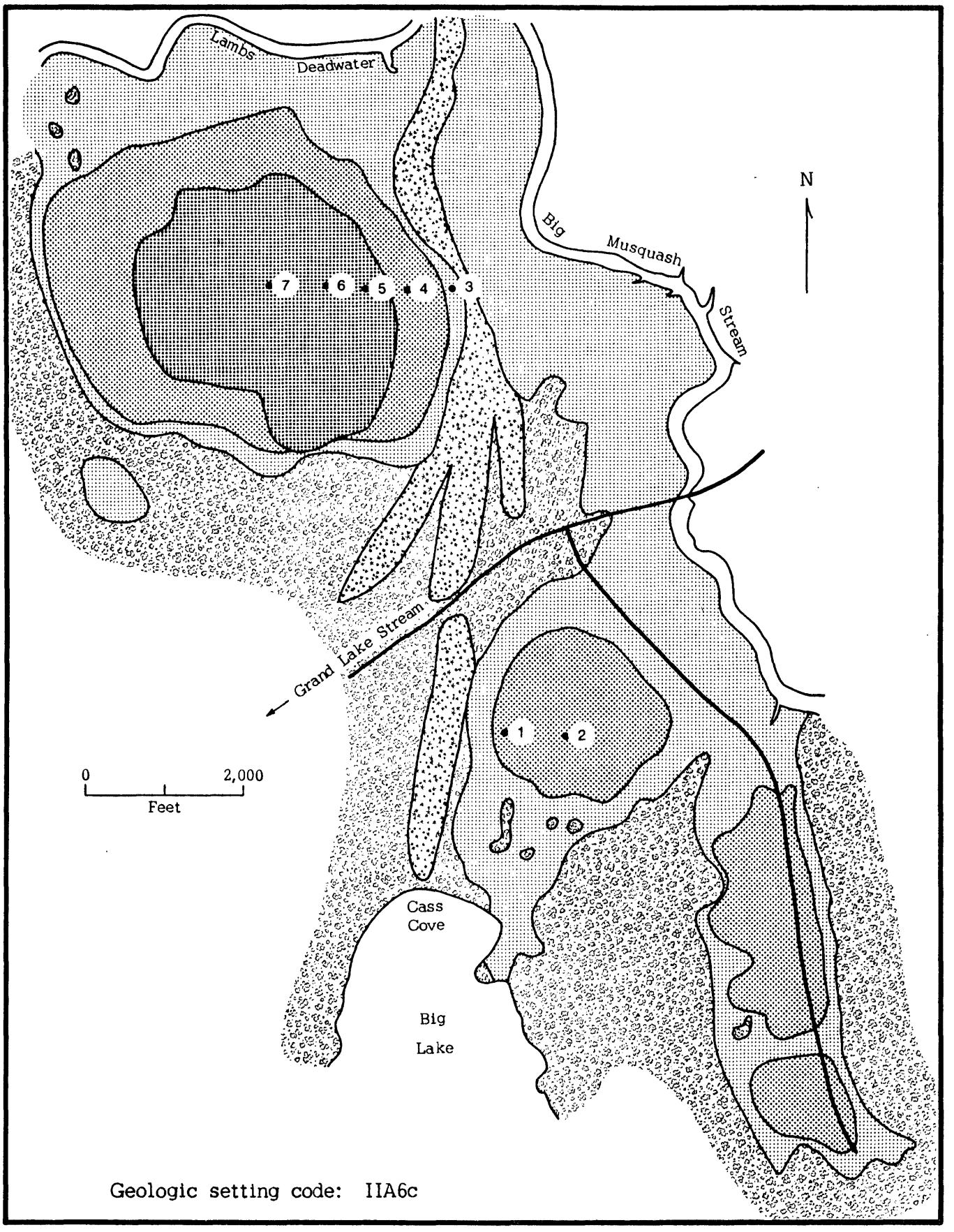


Figure 21. Sketch map, cores, and sample analyses of bogs north of Big Lake and west of Musquash Stream, Grand Lake Stream Plantation, Big Lake 15 minute Quadrangle, Washington County, Maine (Number 20 on Index Map).

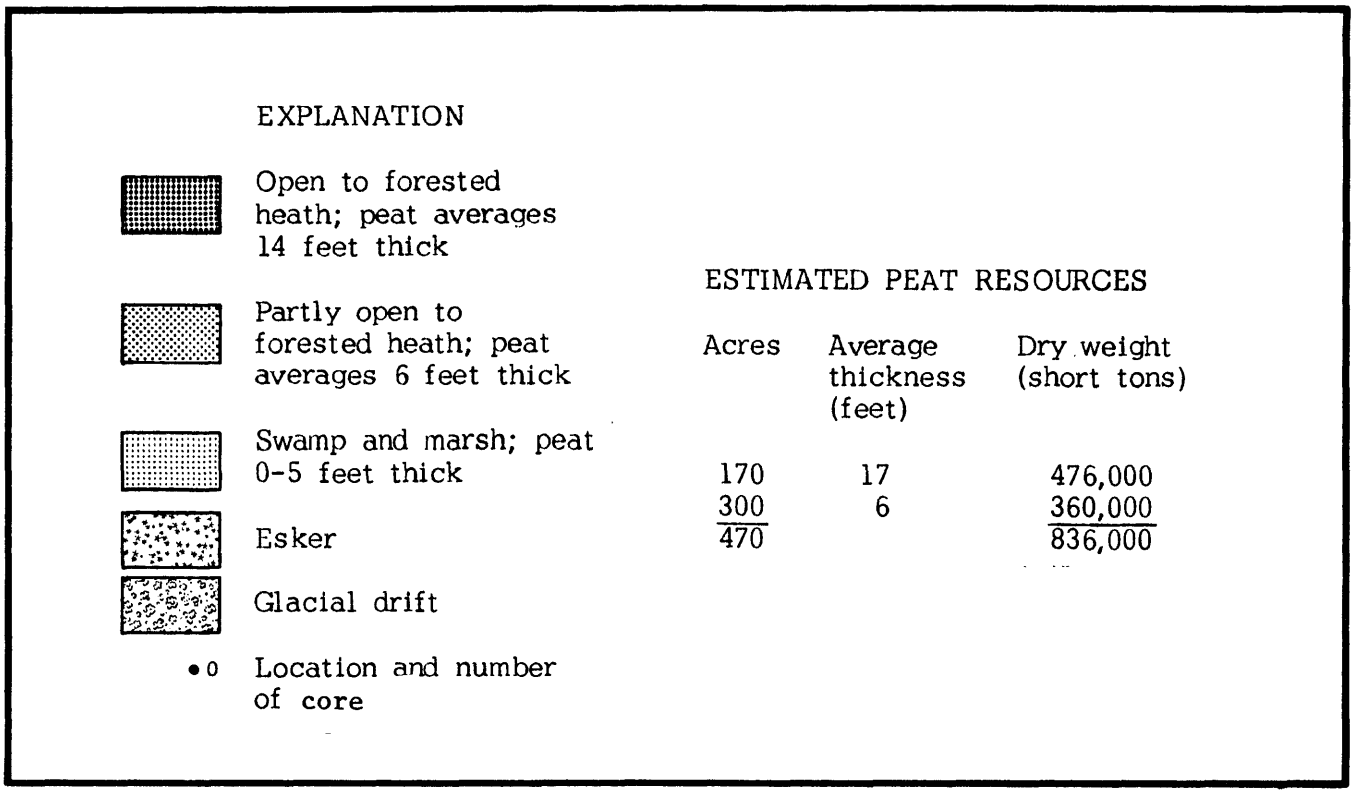


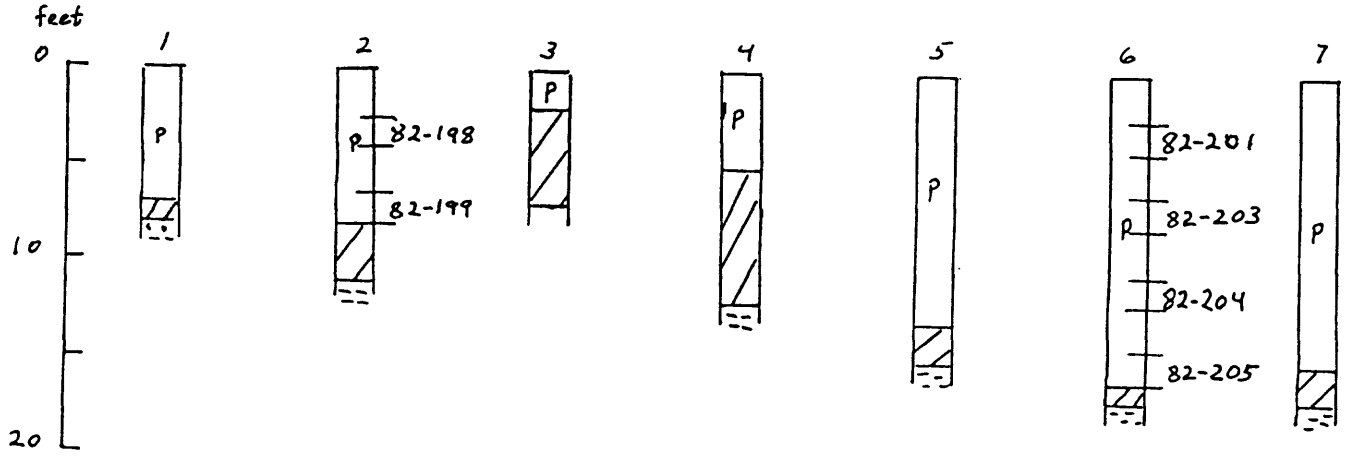
Figure 21. Continued.

Table 21.--Analyses of cores in sections located in figure 21a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
198	51.88	4.32	0.55	0.10	0.7	92.3	70.9	8,733
199	58.63	4.57	1.15	0.19	1.6	86.6	65.2	9,978
201	53.94	4.69	0.74	0.10	0.6	93.2	67.5	8,884
203	---	---	---	---	0.9	---	---	---
204	56.10	4.60	0.91	0.12	1.2	92.1	67.3	9,594
205	---	---	---	---	4.2	---	---	---
Average commercial quality peat (ash content less than 25%)	55.14	4.55	0.84	0.13	1.5	91.05	67.7	9,297

Figure 21a.-- Cores and sample locations.



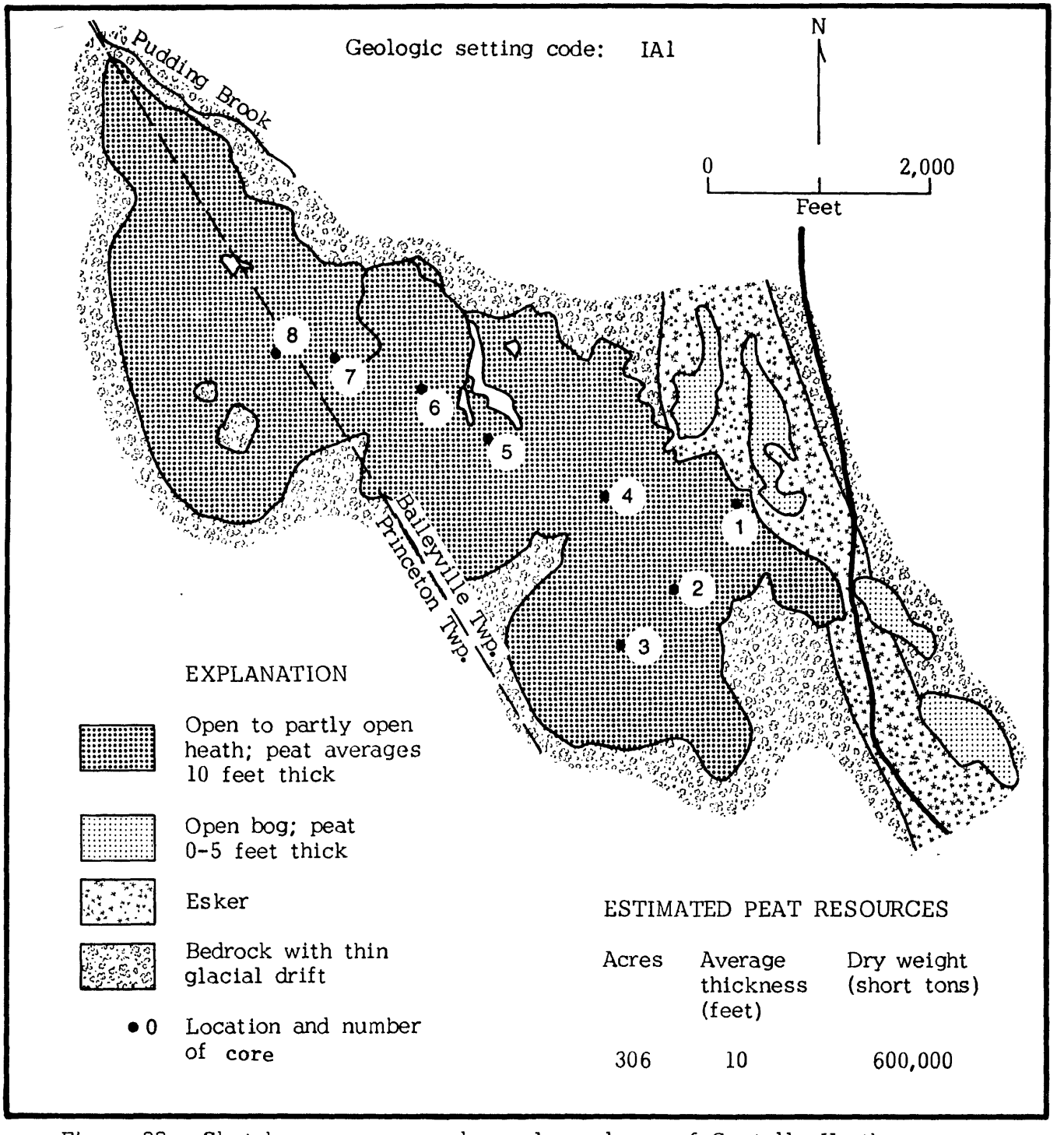


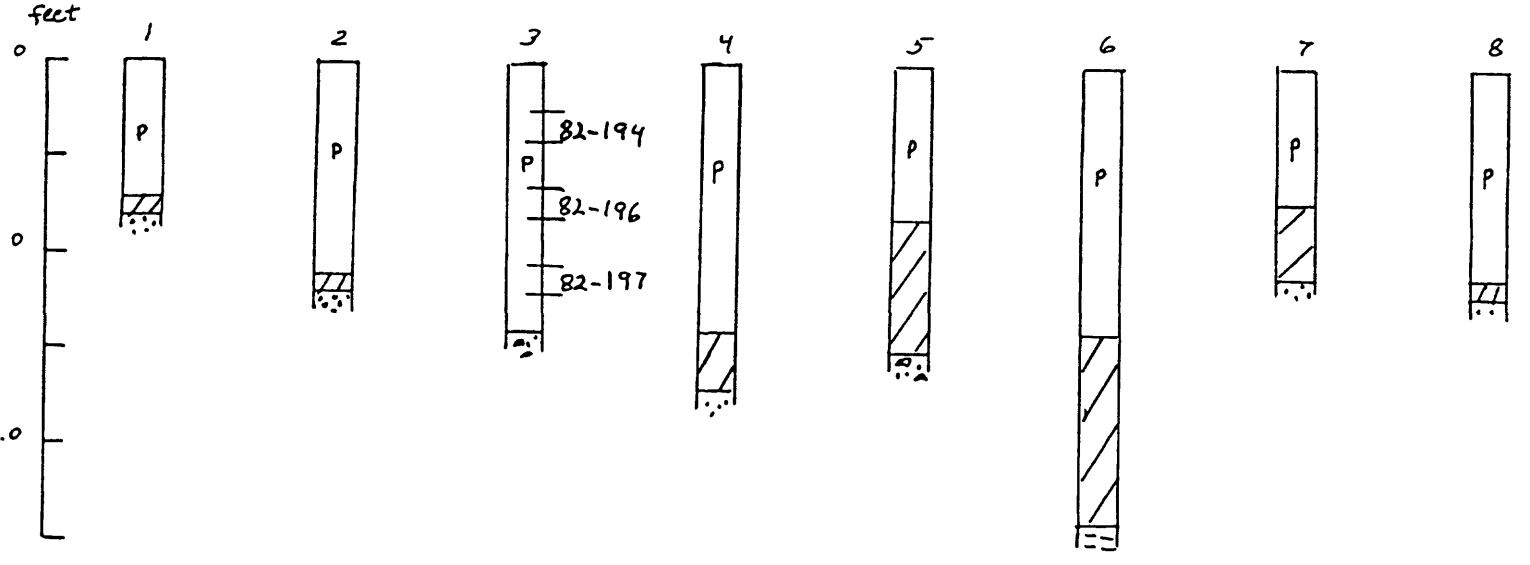
Figure 22. Sketch map, cores, and sample analyses of Sawtelle Heath north of Route 1, Baileyville and Princeton Twps., Big Lake and Calais 15 minute Quadrangles, Washington County, Maine(Number 21 on Index Map).

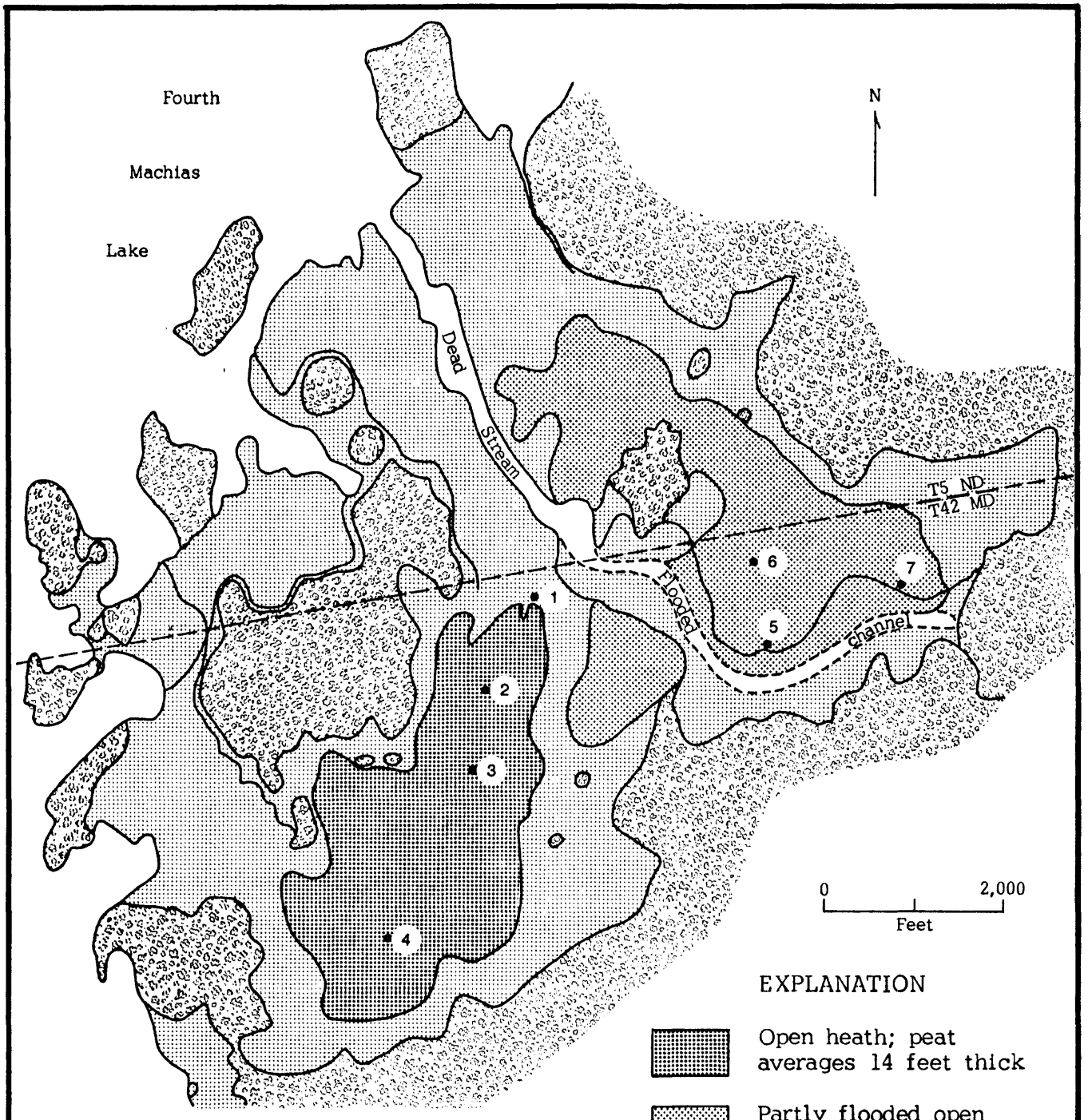
Table 22.--Analyses of cores in sections located in figure 22a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
194	52.02	4.39	0.46	0.11	0.6	89.9	69.1	8,587
196	53.38	4.61	0.58	0.10	0.5	90.2	68.0	8,786
197	---	---	---	---	1.5	---	---	---
Average commercial quality peat (ash content less than 25%)	52.70	4.50	0.52	0.105	0.9	90.05	68.55	8,686.5

Figure 22a.— Cores and sample locations.





ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
160	14	448,000
175	12	420,000
555	5	555,000
890		1,423,000

Geologic setting code: IIA6b

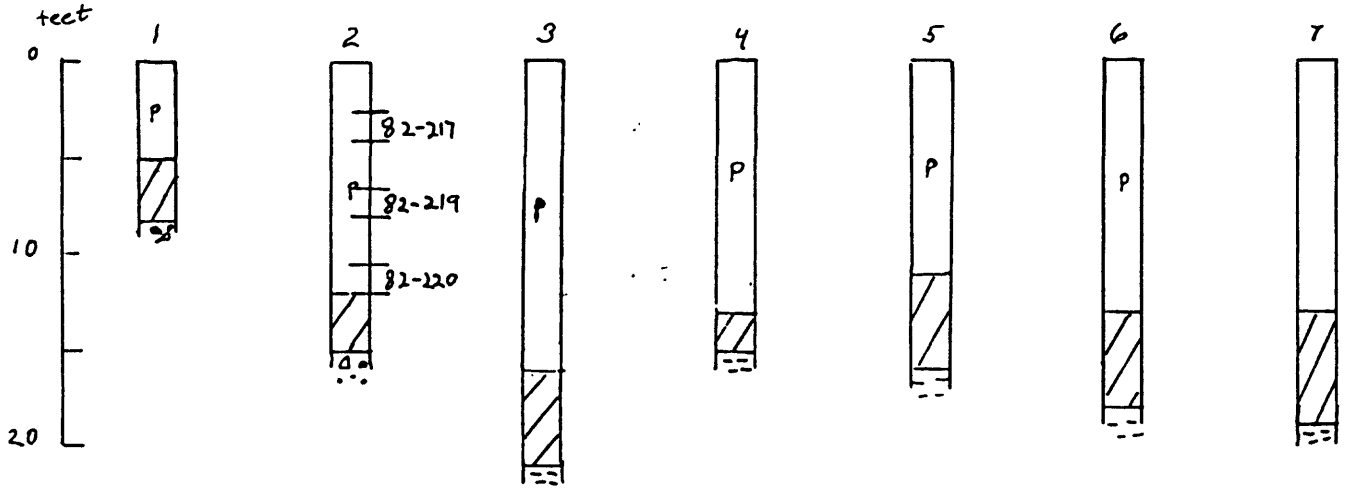
Figure 23. Sketch map, cores, and sample analyses of bog along Dead Stream at Fourth Machias Lake, T5 ND BPP and T42 MD BPP, Wabassus Lake 15 minute Quadrangle, Washington County, Maine(Number 22 on Index Map).

Table 23.--Analyses of cores in sections located in figure 23a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
217	53.19	4.42	0.44	0.09	0.5	92.6	71.4	8,822
219	---	---	---	---	1.0	---	---	---
220	54.08	4.46	1.86	0.46	4.5	90.8	63.5	9,651
Average commercial quality peat (ash content less than 25%)	53.635	4.44	1.15	0.275	2.0	91.7	67.45	9,236.5

Figure 23a.— Cores and sample locations.



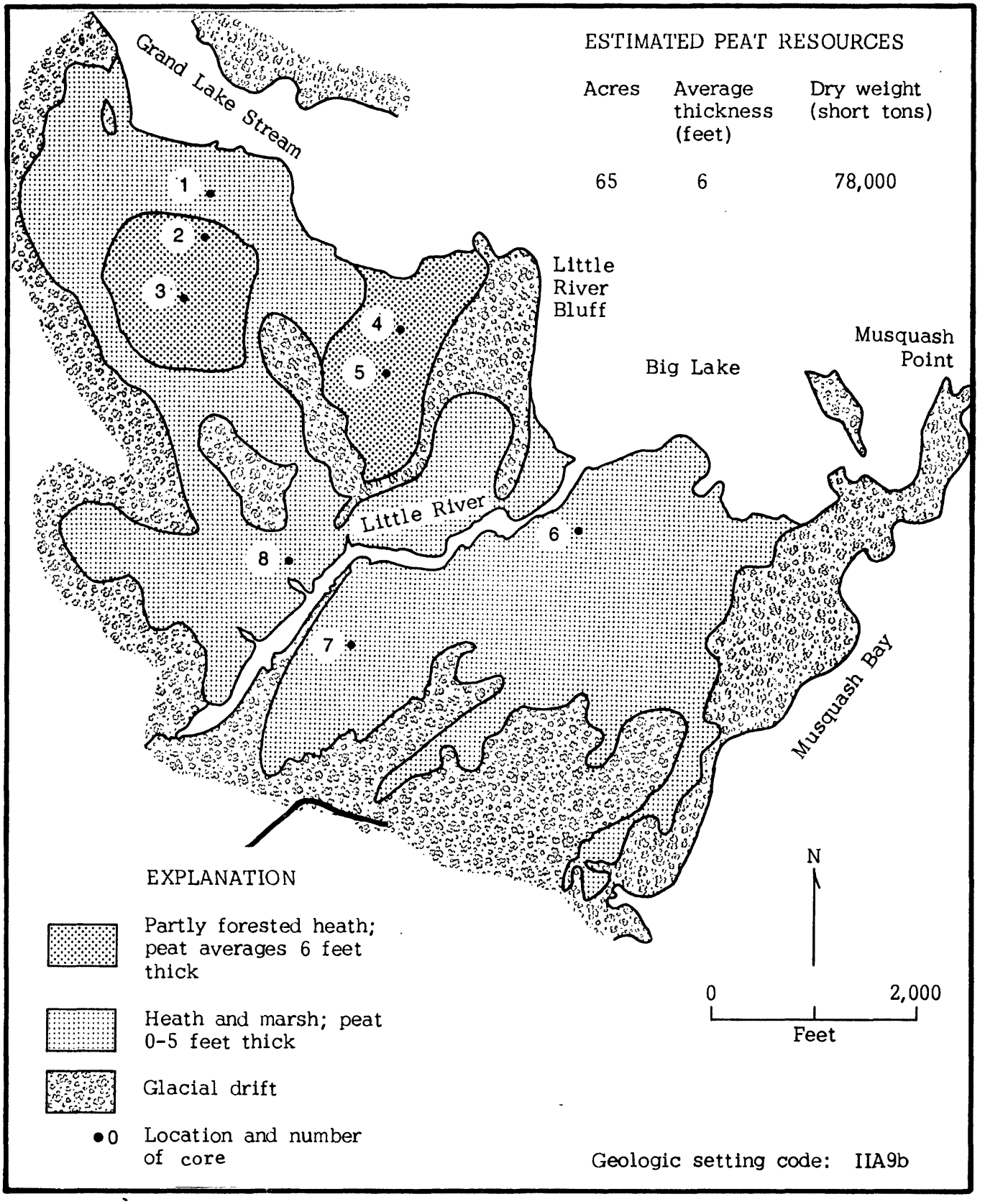


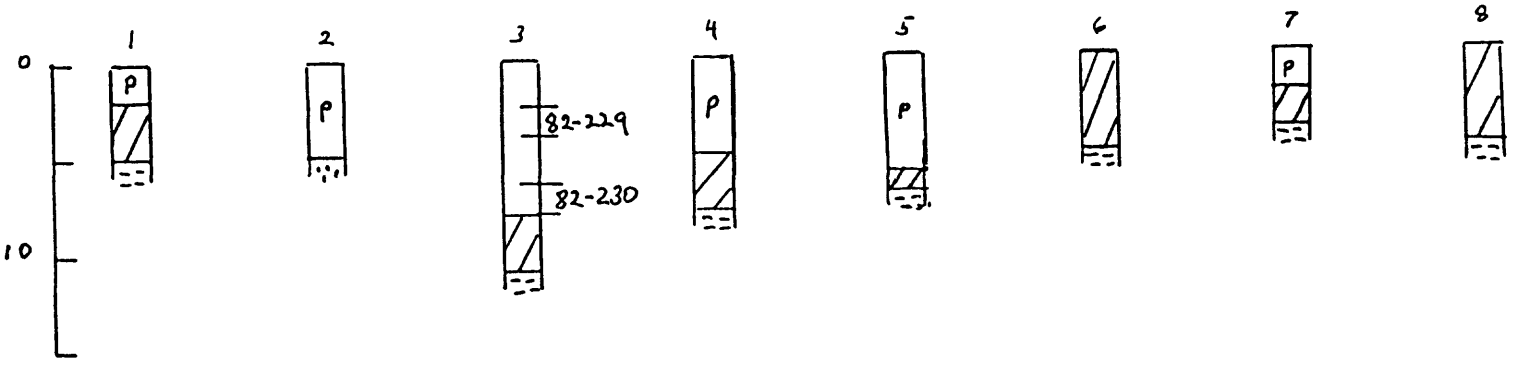
Figure 24. Sketch map, cores, and sample analyses of bogs at mouths of Grand Lake Stream and Little River, T27 ED BPP, Big Lake 15 minute Quadrangle, Washington County, Maine (Number 23 on Index Map).

Table 24.--Analyses of samples in cores located in figure 24a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
229	52.78	4.42	0.73	0.11	0.7	94.1	68.8	8,761
230	---	---	---	---	66.3	---	---	---
Average commercial quality peat (ash content less than 25%)	52.78	4.42	0.73	0.11	0.7	94.1	68.8	8,761

Figure 24a.— Cores and sample locations.



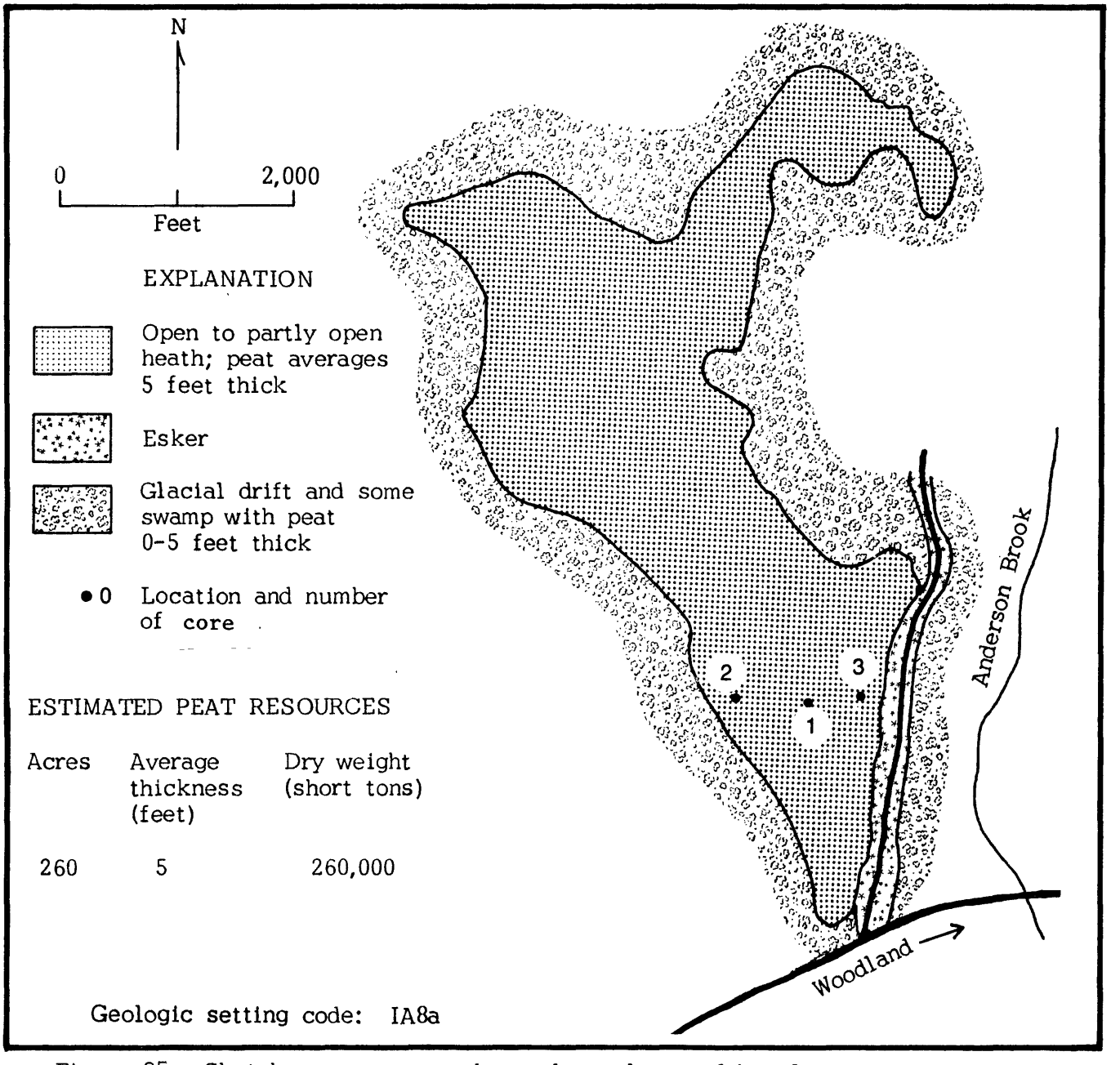


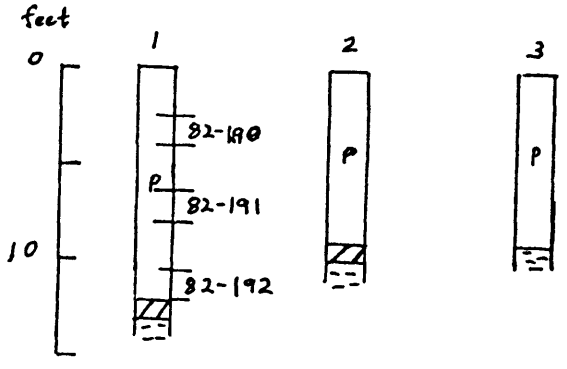
Figure 25. Sketch map, cores, and sample analyses of bog 1 mile east of South Princeton, Princeton Twp., Calais 15 minute Quadrangle, Washington County, Maine (Number 24 on Index Map).

Table 25.--Analyses of cores in sections located in figure 25a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
190	52.48	4.29	0.63	0.10	0.6	93.6	69.8	8,611
191	---	---	---	---	1.9	---	---	---
192	55.49	4.31	2.18	0.24	5.6	90.7	60.7	9,268
Average commercial quality peat (ash content less than 25%)	53.99	4.30	1.41	0.17	2.7	92.2	65.25	8,940

Figure 25a.--S Cores and sample locations.



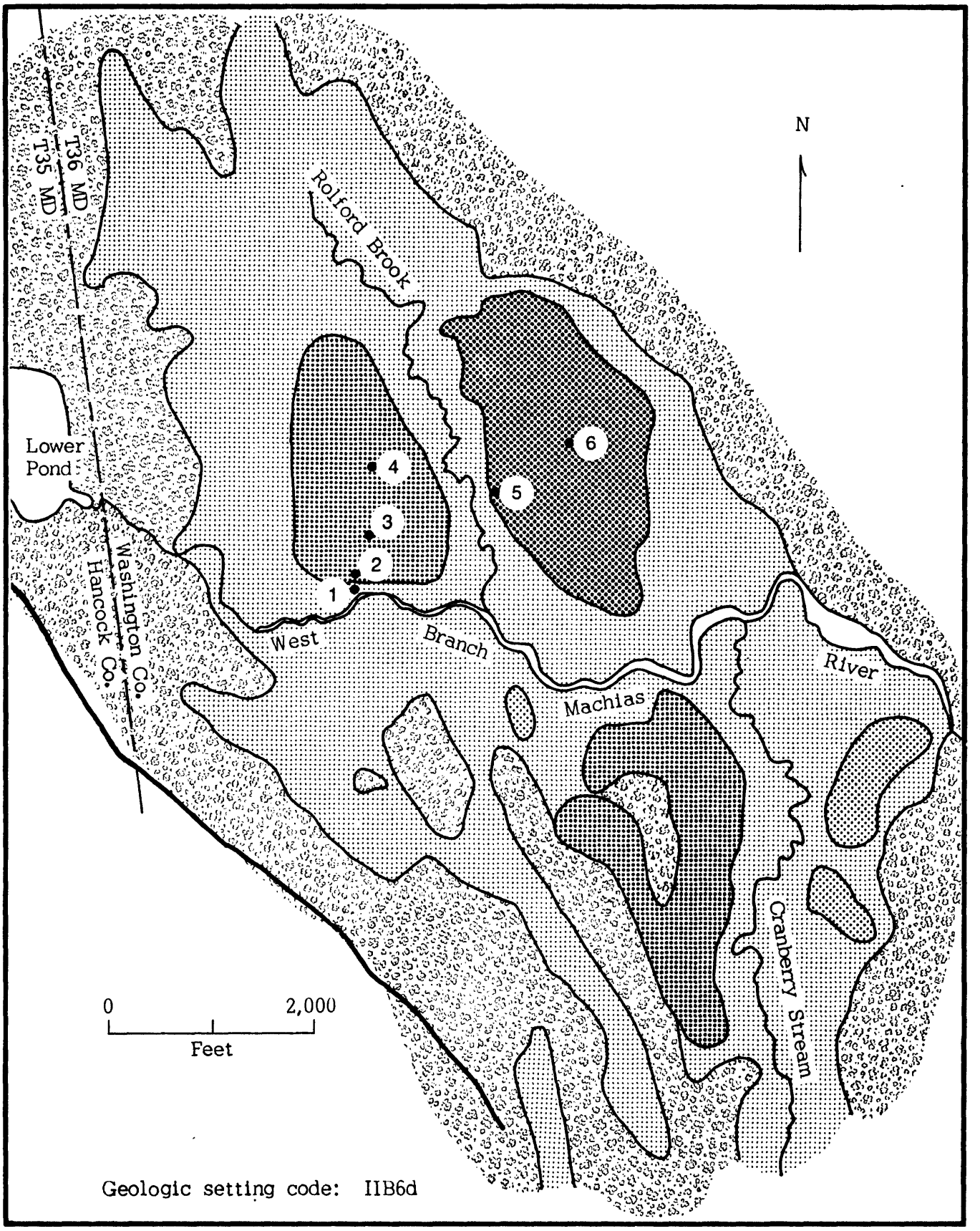


Figure 26. Sketch map, cores, and sample analyses of bogs along West Branch Machias River at junctions of Rolford Brook and Cranberry Stream, T36 MD BPP, Tug Mountain 15 minute Quadrangle, Washington County, Maine (Number 25 on Index Map).

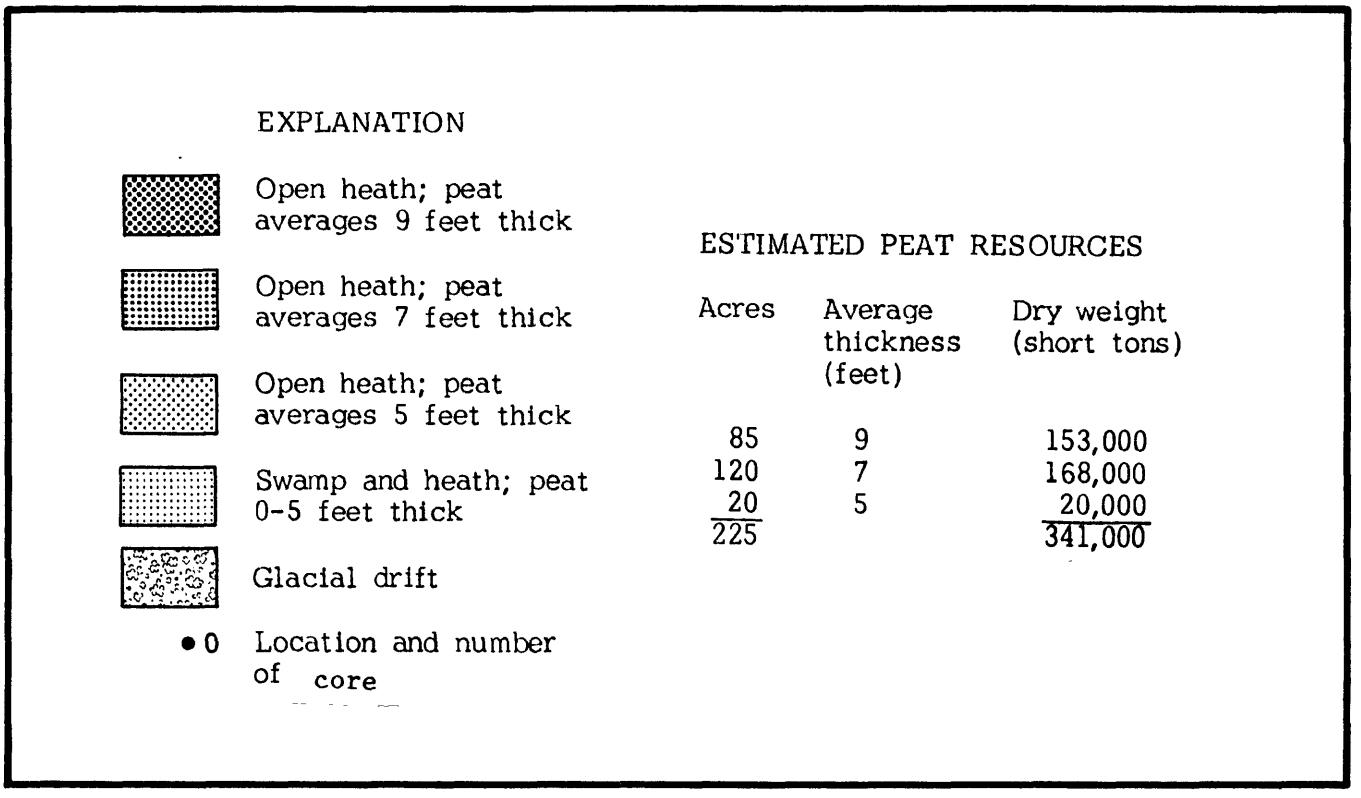


Figure 26. Continued.

Figure 26a.--Cores and sample locations.

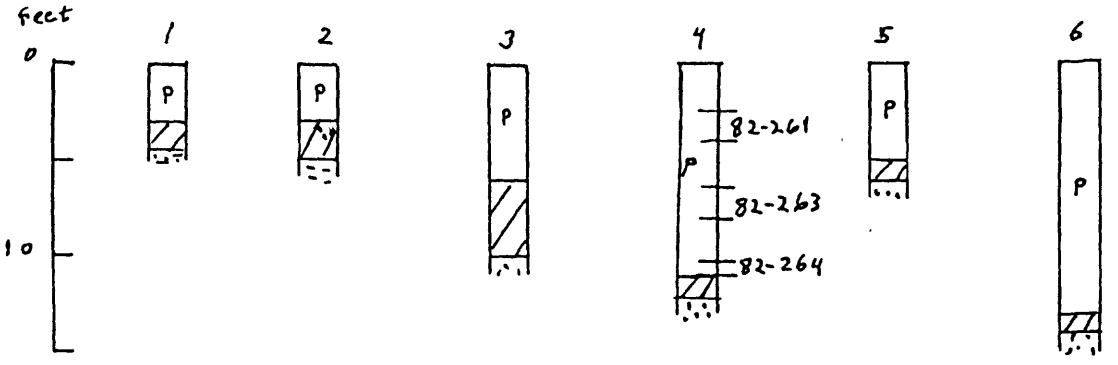


Table 26.--Analyses of samples in cores located in figure 26a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
261	52.97	4.60	0.77	0.15	1.0	93.1	69.4	8,774
263	---	---	---	---	1.5	---	---	---
264	---	---	---	---	5.6	---	---	---
Average commercial quality peat (ash content less than 25%)	52.97	4.60	0.77	0.15	2.7	93.1	69.4	8,774

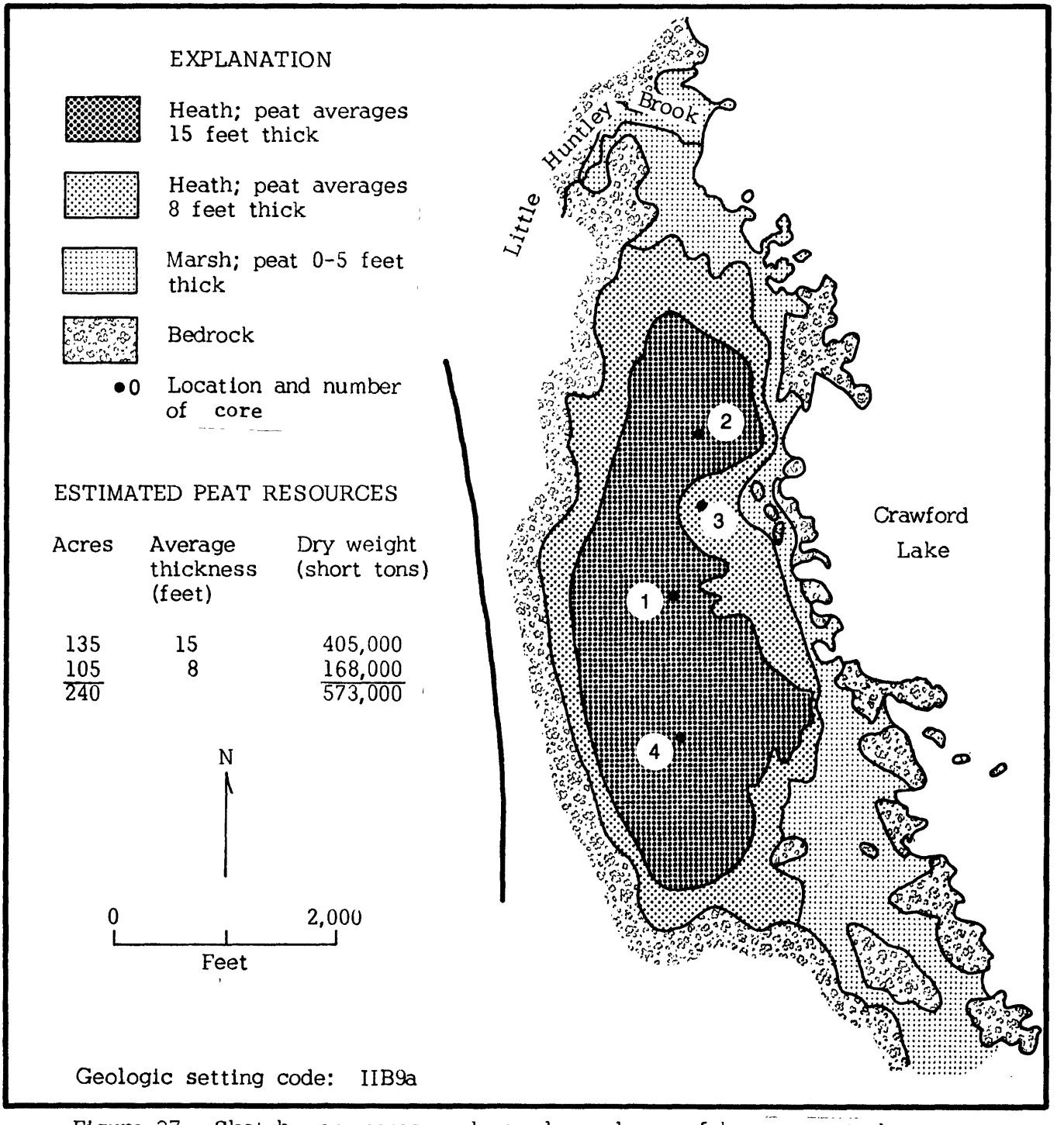


Figure 27. Sketch map, cores, and sample analyses of bog on west shore of Crawford Lake east of Little Huntley Brook, Crawford Twp., Big Lake 15 minute Quadrangle, Washington County, Maine (Number 26 on Index Map).

Figure 27a.— Cores and sample locations.

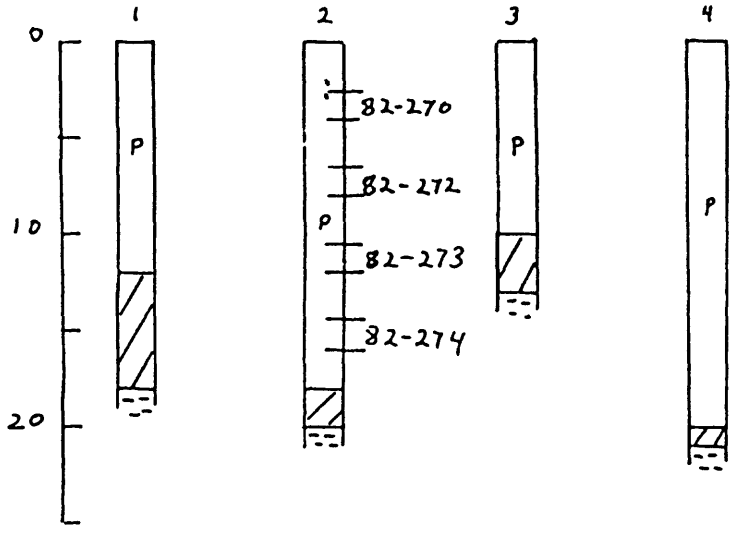


Table 27.--Analyses of samples in cores located in figure 27a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
270	58.43	4.75	0.93	0.13	0.6	89.8	64.8	9,722
272	54.83	4.43	0.58	0.11	0.4	92.8	68.4	8,983
273	---	---	---	---	1.1	---	---	---
274	---	---	---	---	3.4	---	---	---
Average commercial quality peat (ash content less than 25%)	56.63	4.59	7.55	0.12	1.4	91.3	66.6	9,353

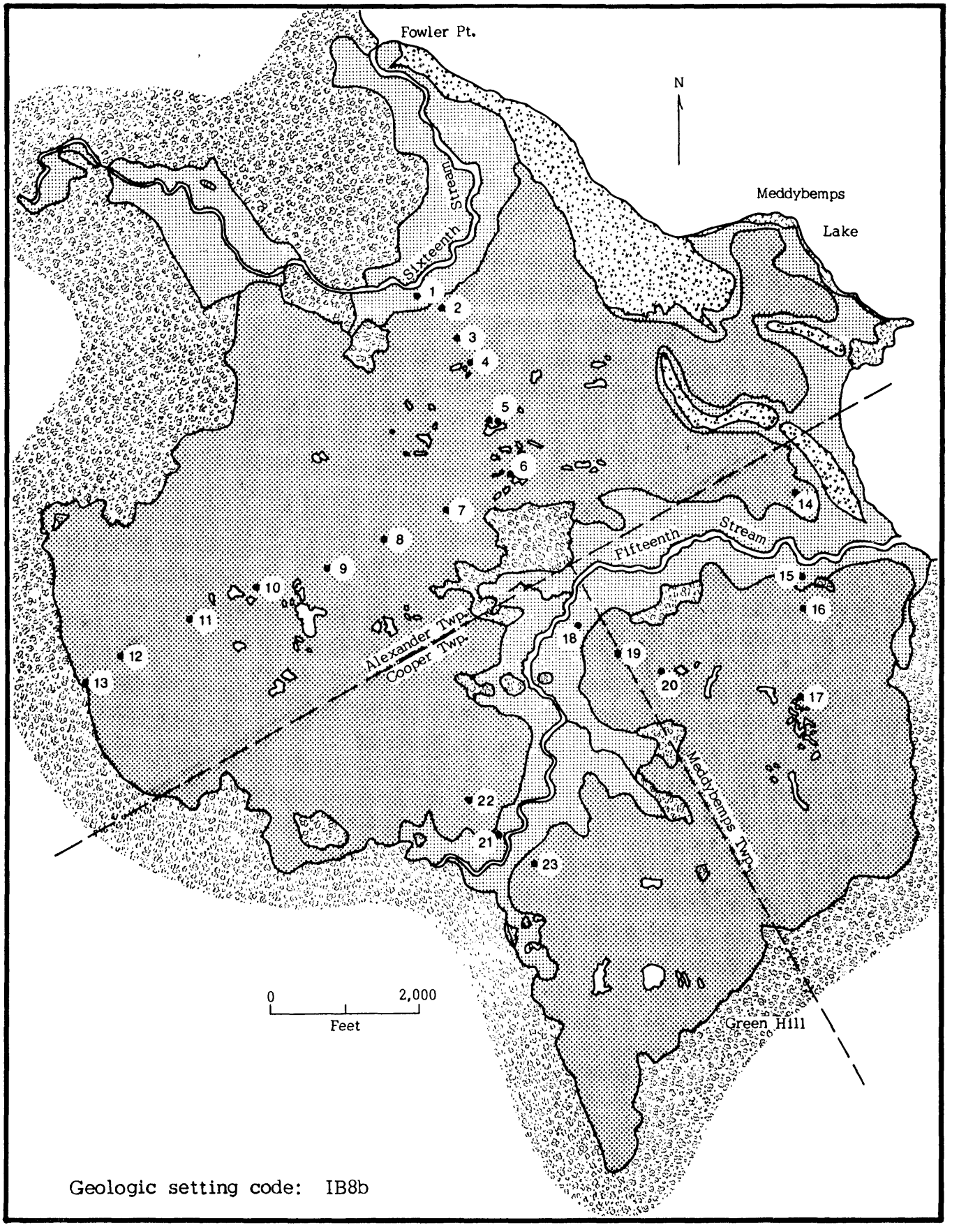
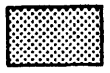
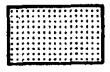


Figure 28. Sketch map, cores, and sample analyses of Meddybemps Heath, Alexander, Cooper, and Meddybemps Twps., Calais 15 minute Quadrangle, Washington County, Maine (Number 27 on Index Map).



EXPLANATION

Open heath; peat averages 16 feet thick



Open heath; peat averages 6 feet thick

Esker

Beach sand

Glacial drift and bedrock

•0 Location and number of core

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
1,690	16	5,408,000
390	6	468,000
2,080		5,876,000

Figure 28. Continued.

Figure 28a.--- Cores and sample locations.

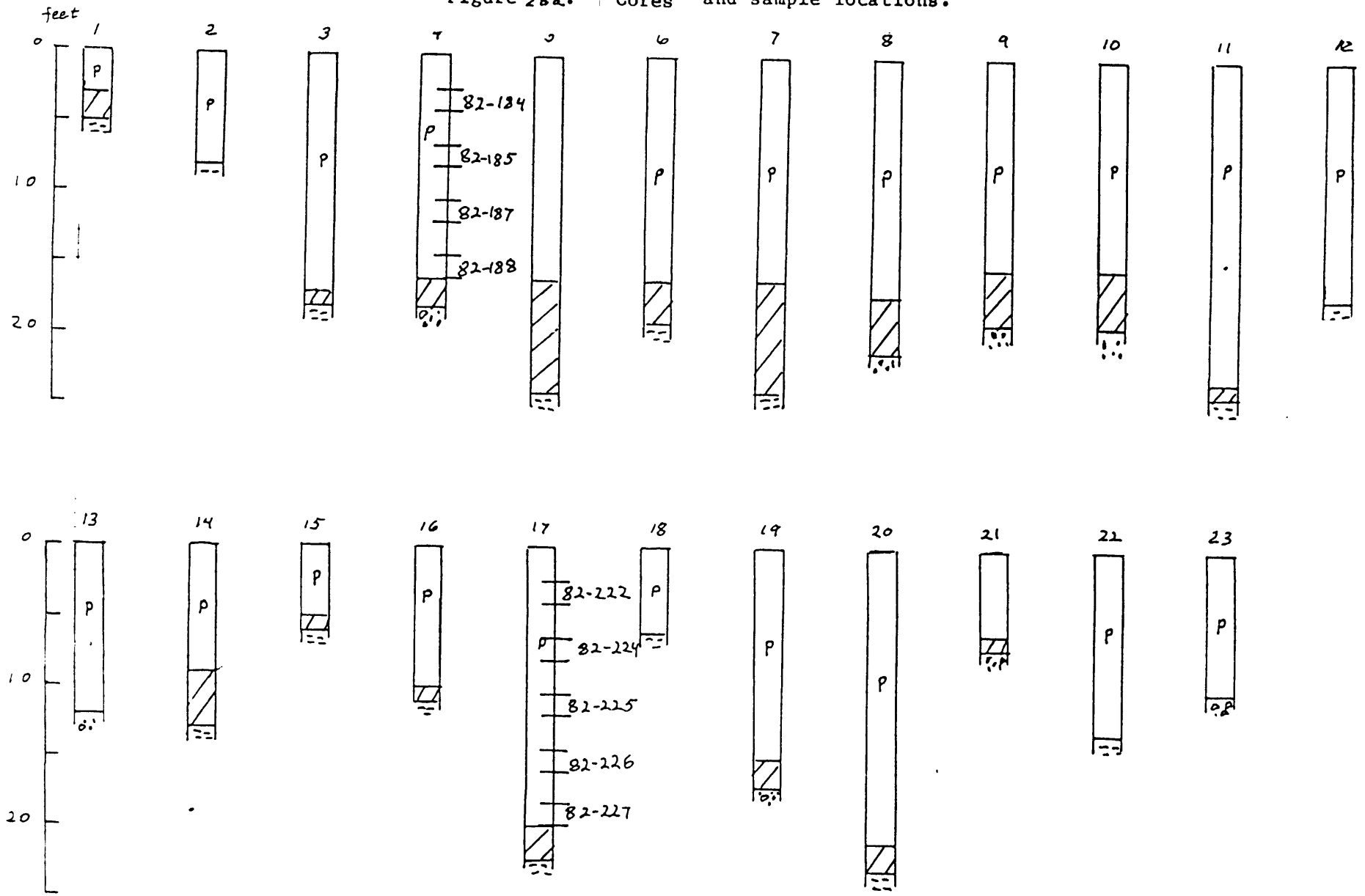


Table 28.--Analyses of samples in cores located in figure 28a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
184	53.36	4.32	1.23	0.25	2.1	90.7	68.3	9,116
185	53.75	4.39	0.58	0.11	0.7	94.5	70.8	9,083
187	57.36	4.91	1.13	0.17	0.9	82.3	67.6	9,771
188	58.10	4.55	0.86	0.16	1.1	82.5	64.8	9,926
222	55.11	4.41	0.78	0.12	0.3	93.6	68.8	9,217
224	---	---	---	---	0.2	---	---	---
225	59.25	4.76	1.31	0.18	0.8	93.4	65.2	9,943
226	---	---	---	---	0.8	---	---	---
227	57.92	4.84	1.47	0.22	1.5	91.6	65.1	10,087
Average commercial quality peat (ash content less than 25%)	56.41	4.60	1.05	0.17	0.9	89.8	67.2	9,592

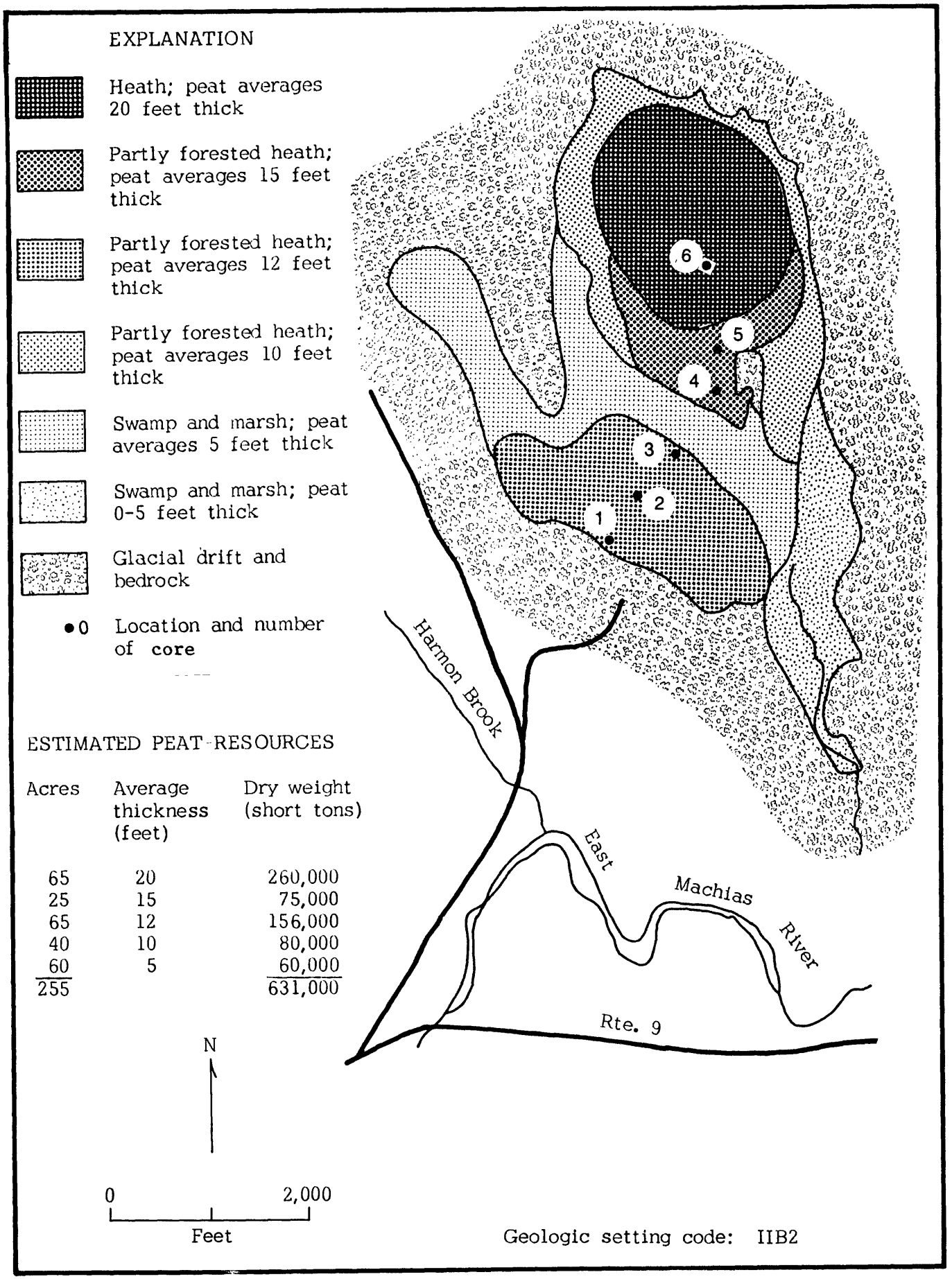


Figure 29. Sketch map, cores, and sample analyses of bogs between Harmon Brook and Seavey Brook, Crawford Twp., Big Lake 15 minute Quadrangle, Washington County, Maine (Number 28 on Index Map).

Figure 29a.--Cores and sample locations.

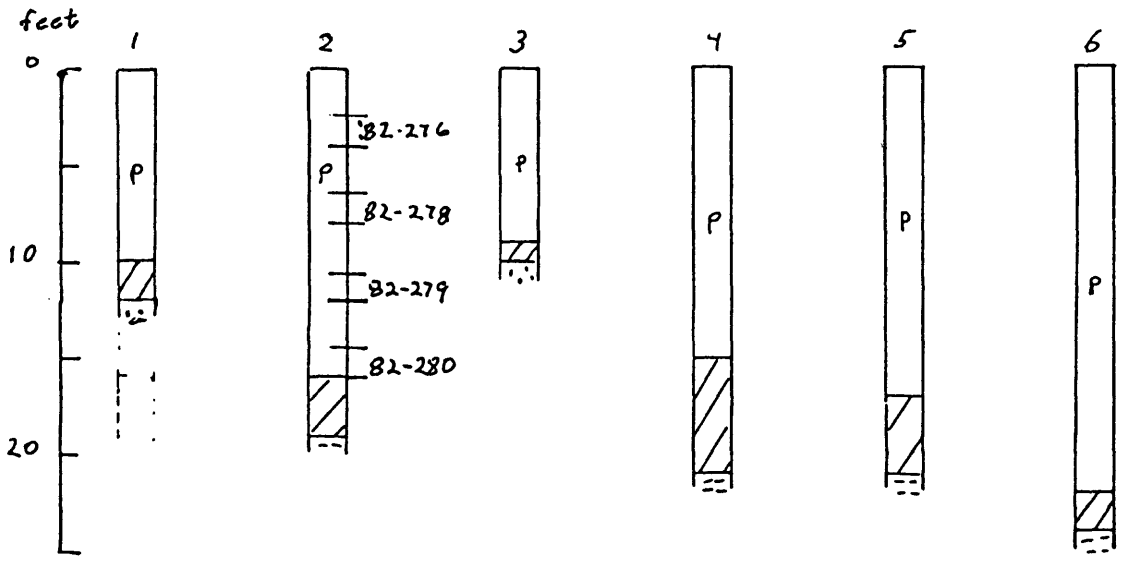


Table 29.--Analyses of samples in cores located in figure 29a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
276	55.91	4.62	0.71	0.12	0.6	91.5	68.0	9,210
278	---	---	---	---	2.1	---	---	---
279	56.66	4.12	1.46	0.22	2.6	91.5	63.6	9,587
280	---	---	---	---	24.6	---	---	---
Average commercial quality peat (ash content less than 25%)	56.29	4.37	1.09	0.17	7.5	91.5	65.8	9,399

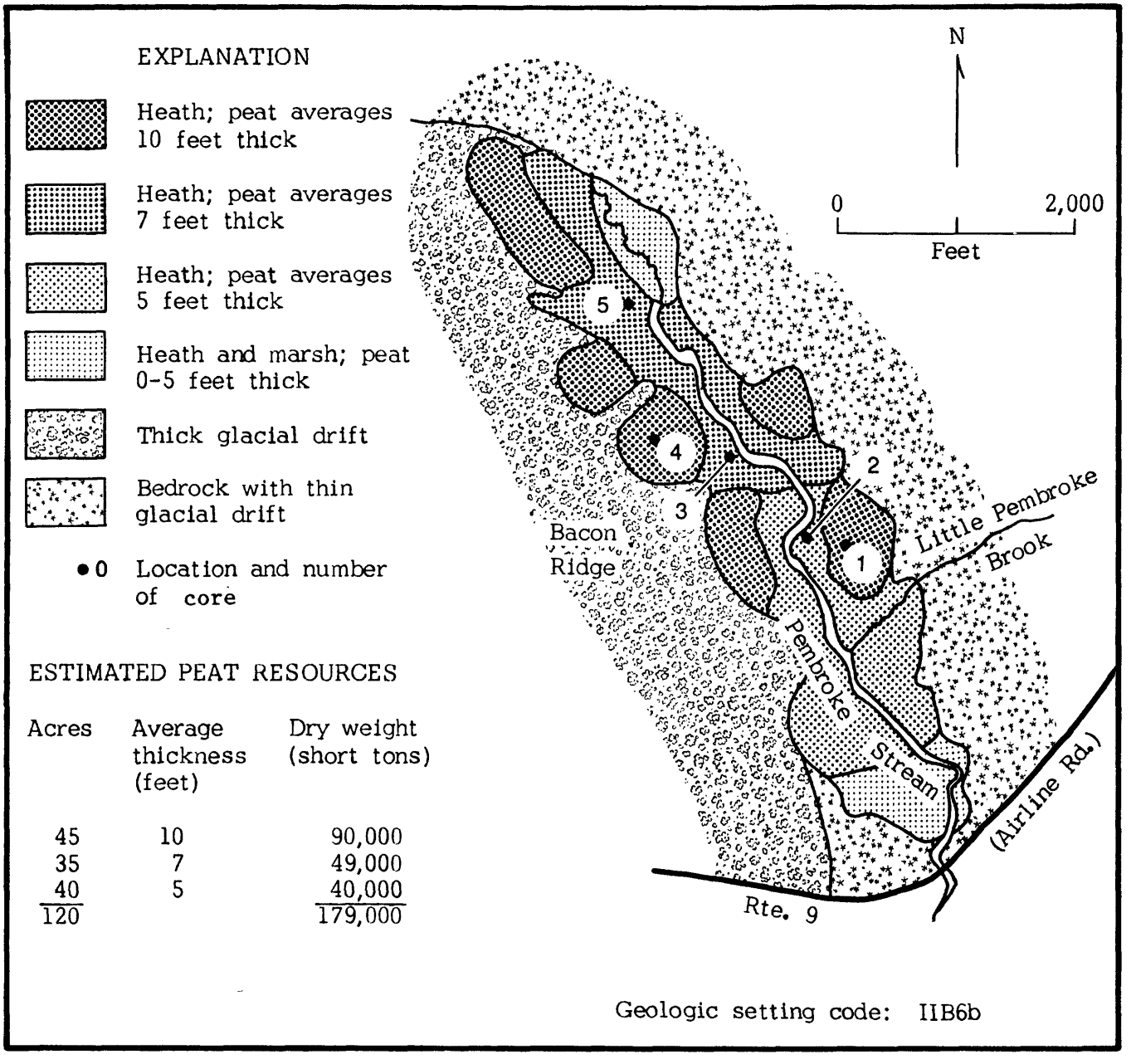


Figure 30. Sketch map, cores, and sample analyses of bog along Pembroke Stream, T31 MC BPP, Tug Mountain 15 minute Quadrangle, Washington County, Maine (Number 29 on Index Map).

Figure 30_a.- Cores and sample locations.

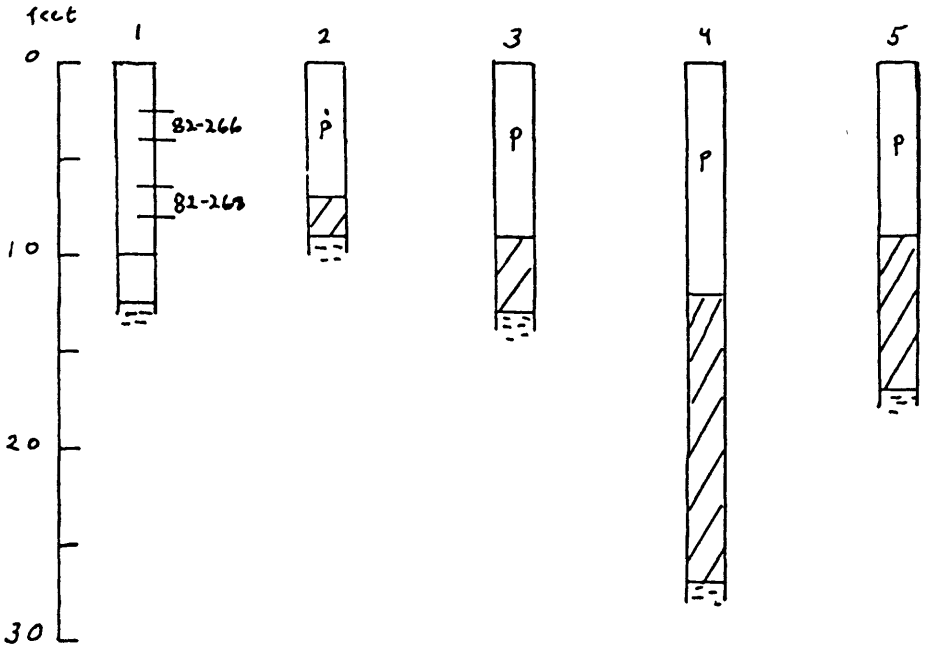


Table 30.--Analyses of samples in cores located in figure 30a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
266	56.54	4.63	0.83	0.13	1.1	91.0	68.5	9,581
268	55.93	4.51	1.39	0.26	4.3	89.4	65.0	9,550
Average commercial quality peat (ash content less than 25%)	56.245	4.57	1.11	0.195	2.7	90.2	66.75	9,566

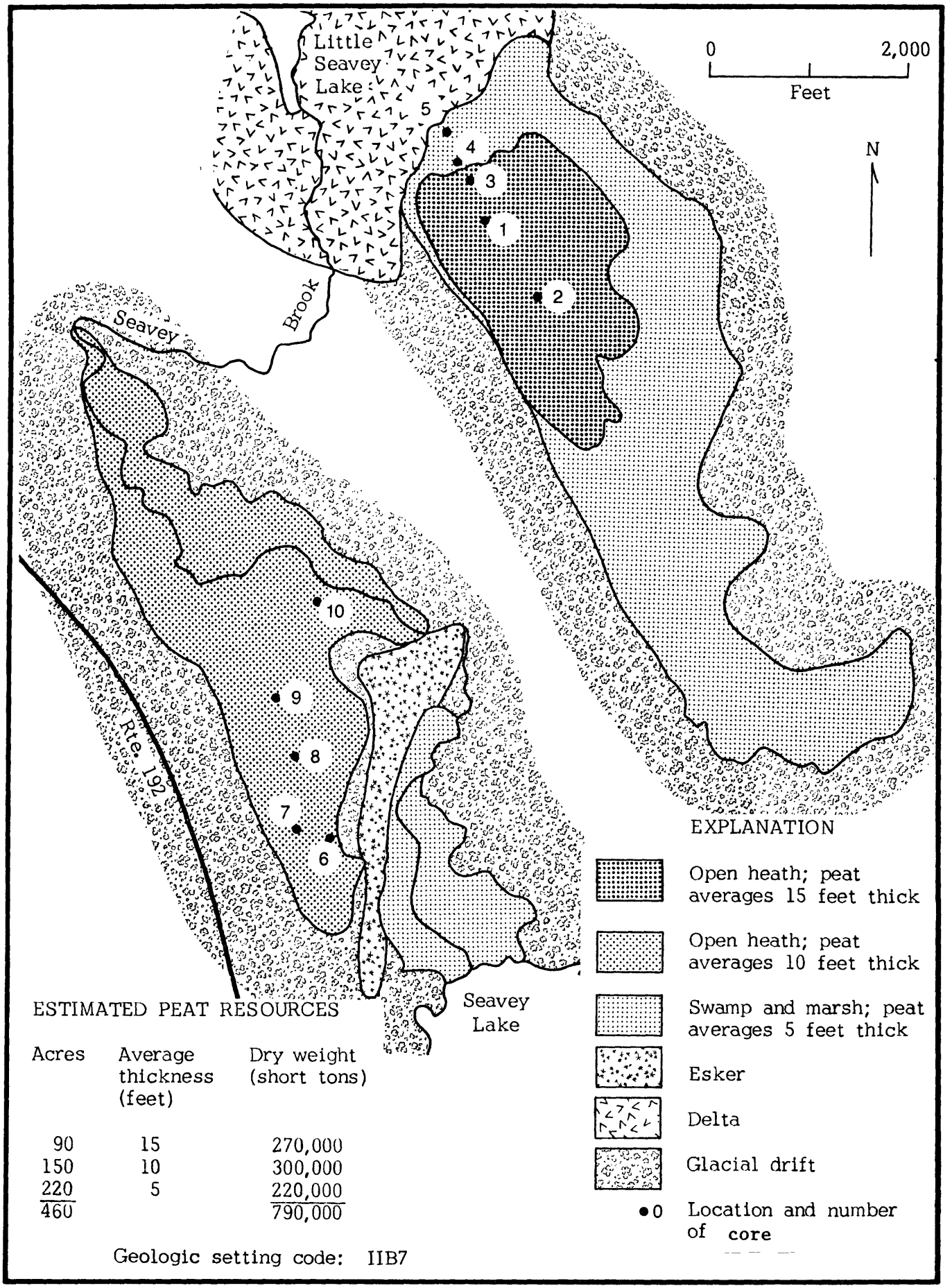


Figure 31. Sketch map, cores, and sample analyses of bogs between Seavey Lake and Little Seavey Lake, Wesley Twp., Wesley 15 minute Quadrangle, Washington County, Maine (Number 30 on Index Map).

Figure 31a.- Cores and sample locations.

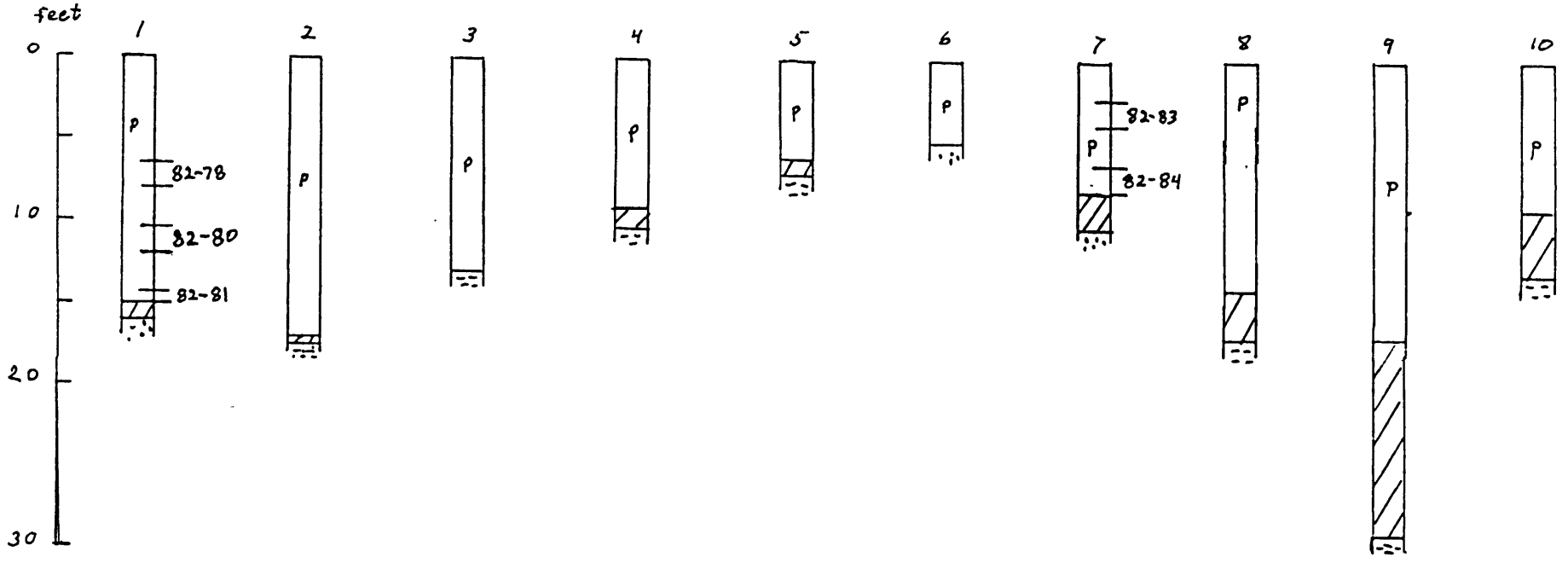
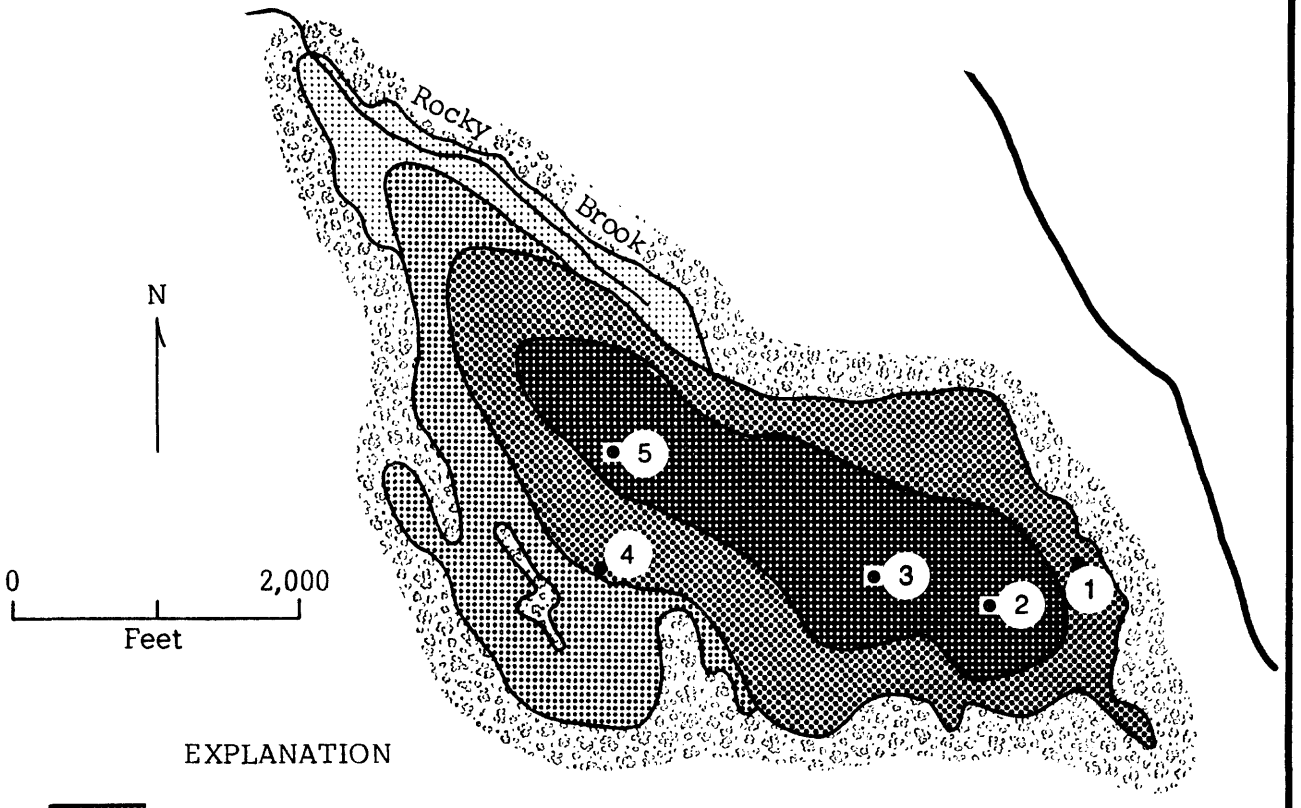


Table 31.--Analyses of samples in cores located in figure 31a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
78	51.28	4.15	0.47	0.12	1.1	92.3	70.6	8,708
80	---	---	---	---	2.1	---	---	---
81	55.03	3.65	1.17	0.76	7.5	84.6	61.9	9,134
83	52.96	4.30	0.62	0.15	0.7	91.9	66.8	8,771
84	---	---	---	---	0.6	---	---	---
Average commercial quality peat (ash content less than 25%)	53.09	4.03	0.75	0.34	2.4	89.6	66.4	8,871



EXPLANATION

- Open heath; peat averages 20 feet thick
- Open heath; peat averages 15 feet thick
- Open heath; peat averages 10 feet thick
- Open heath; peat averages 5 feet thick
- Glacial drift and bedrock
- • 0 Location and number of core

Geologic setting code: IIB2

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
75	20	300,000
90	15	270,000
50	10	100,000
25	5	25,000
240		695,000

Figure 32. Sketch map, cores, and sample analyses of Joe Hanscom Heath, T19 ED BPP, Wesley 15 minute Quadrangle, Washington County, Maine (Number 31 on Index Map).

Figure 32a.-- Cores and sample locations.

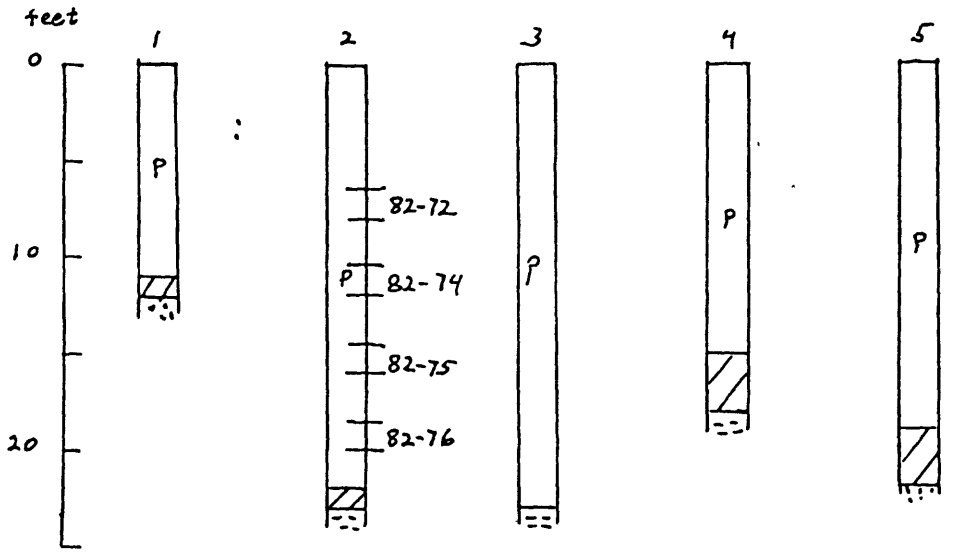


Table 32.--Analyses of samples in cores located in figure 32a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
72	53.95	4.08	0.55	0.16	0.7	92.4	67.7	9,092
74	---	---	---	---	0.2	---	---	---
75	55.31	4.36	0.69	0.12	1.5	92.6	67.4	9,229
76	56.94	4.55	1.78	0.45	2.5	91.6	66.2	9,744
Average commercial quality peat (ash content less than 25%)	55.4	4.3	1.0	0.24	1.2	92.2	67.1	9,355

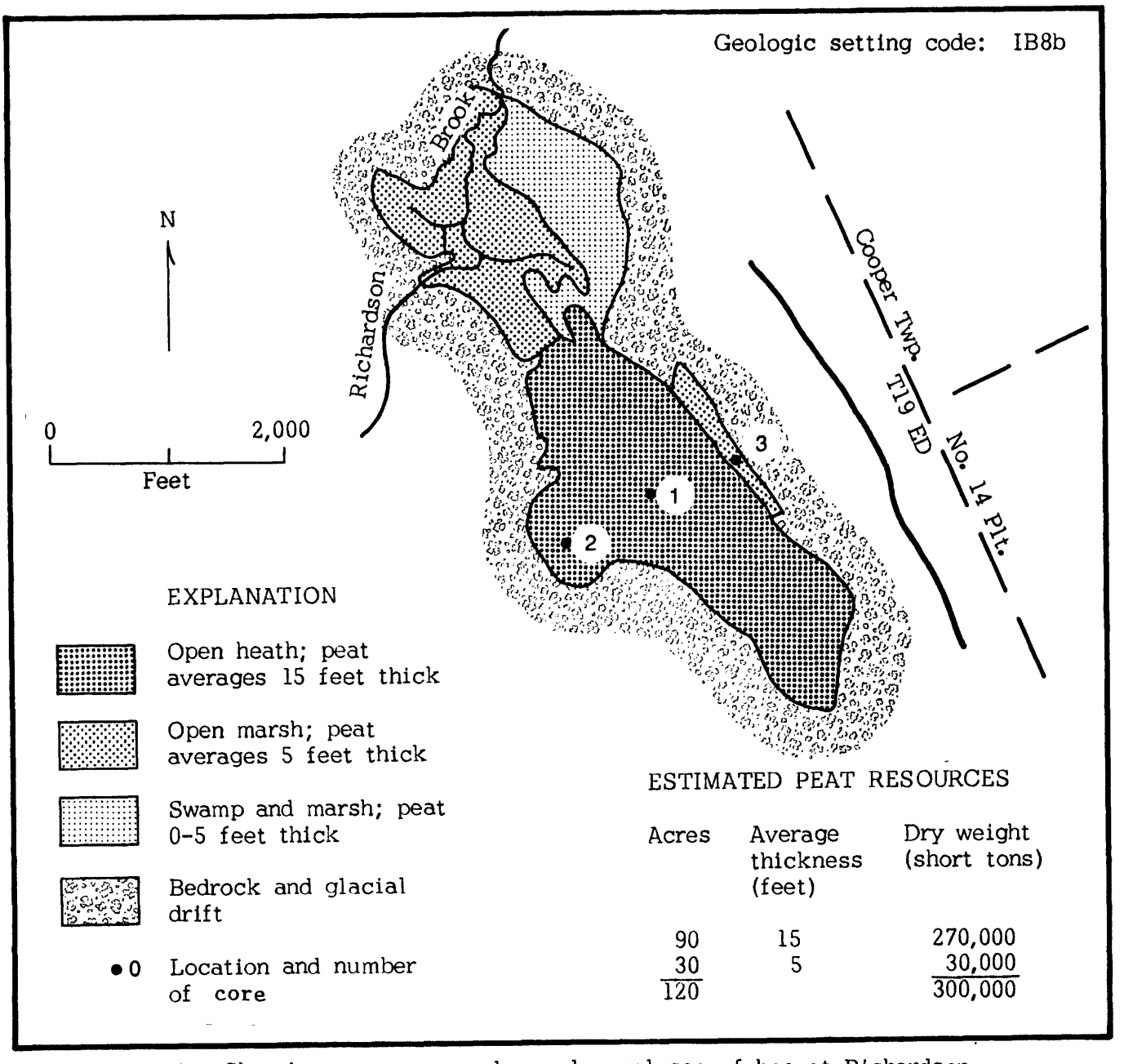


Figure 33. Sketch map, cores, and sample analyses of bog at Richardson Brook, T19 ED BPP, Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 32 on Index Map).

Figure 33a.-- Cores and sample locations.

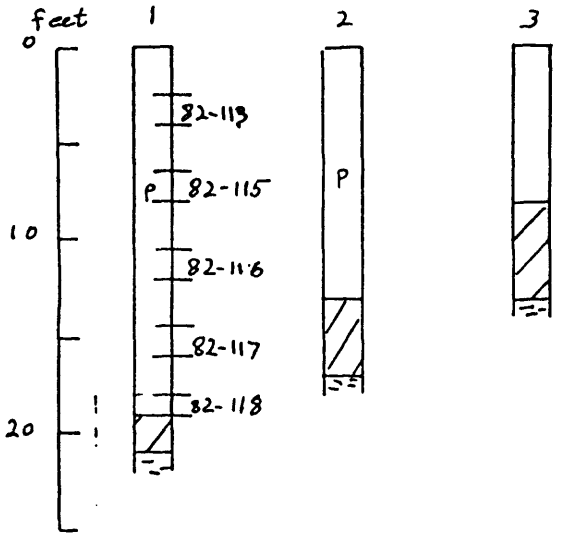


Table 33.--Analyses of samples in cores located in figure 33a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
113	53.64	4.31	0.67	0.13	0.7	90.8	73.0	8,744
115	---	---	---	---	0.3	---	---	---
116	54.06	4.61	0.75	0.16	1.0	93.5	67.6	8,848
117	56.20	4.31	2.02	1.10	7.9	91.3	58.6	9,545
118	---	---	---	---	11.2	---	---	---
Average commercial quality peat (ash content less than 25%)	54.63	4.07	1.14	0.46	4.2	91.8	64.4	9,046

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
55	10	110,000

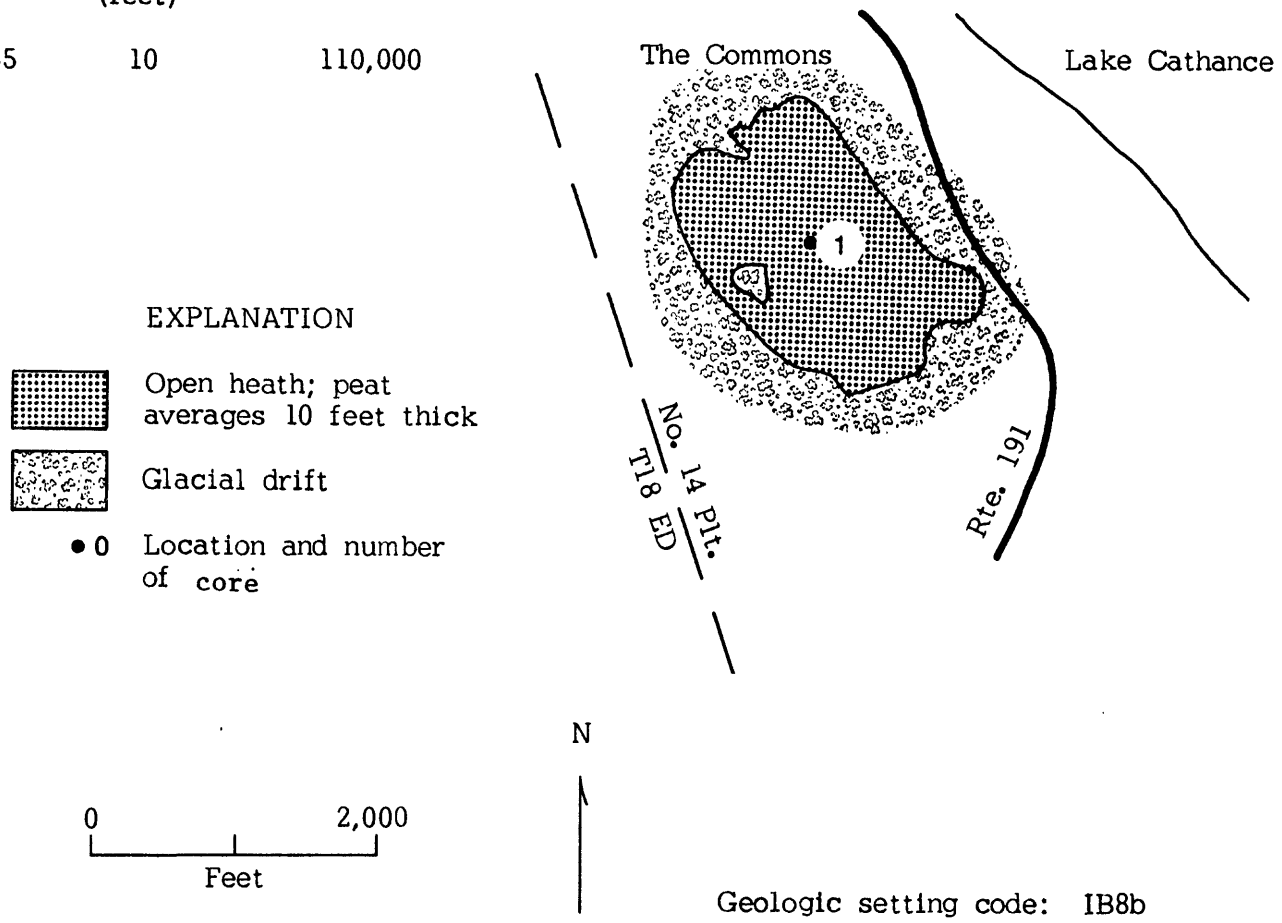


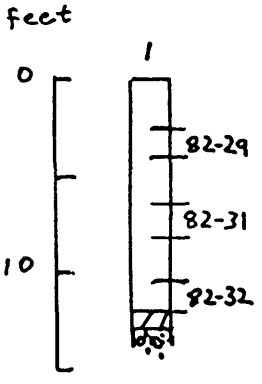
Figure 34. Sketch map, cores, and sample analyses of open heath at The Commons, No. 14 Plantation, Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 33 on Index Map).

Table 34.--Analyses of samples in cores located in figure 34a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
29	57.02	4.38	0.85	0.17	1.1	90.8	67.5	9,578
31	---	---	---	---	1.1	---	---	---
32	55.57	4.78	2.59	0.65	5.8	91.7	65.2	9,721
Average commercial quality peat (ash content less than 25%)	56.30	4.58	1.72	0.41	2.6	91.3	66.4	9,650

Figure 34a.-- Cores and sample locations.



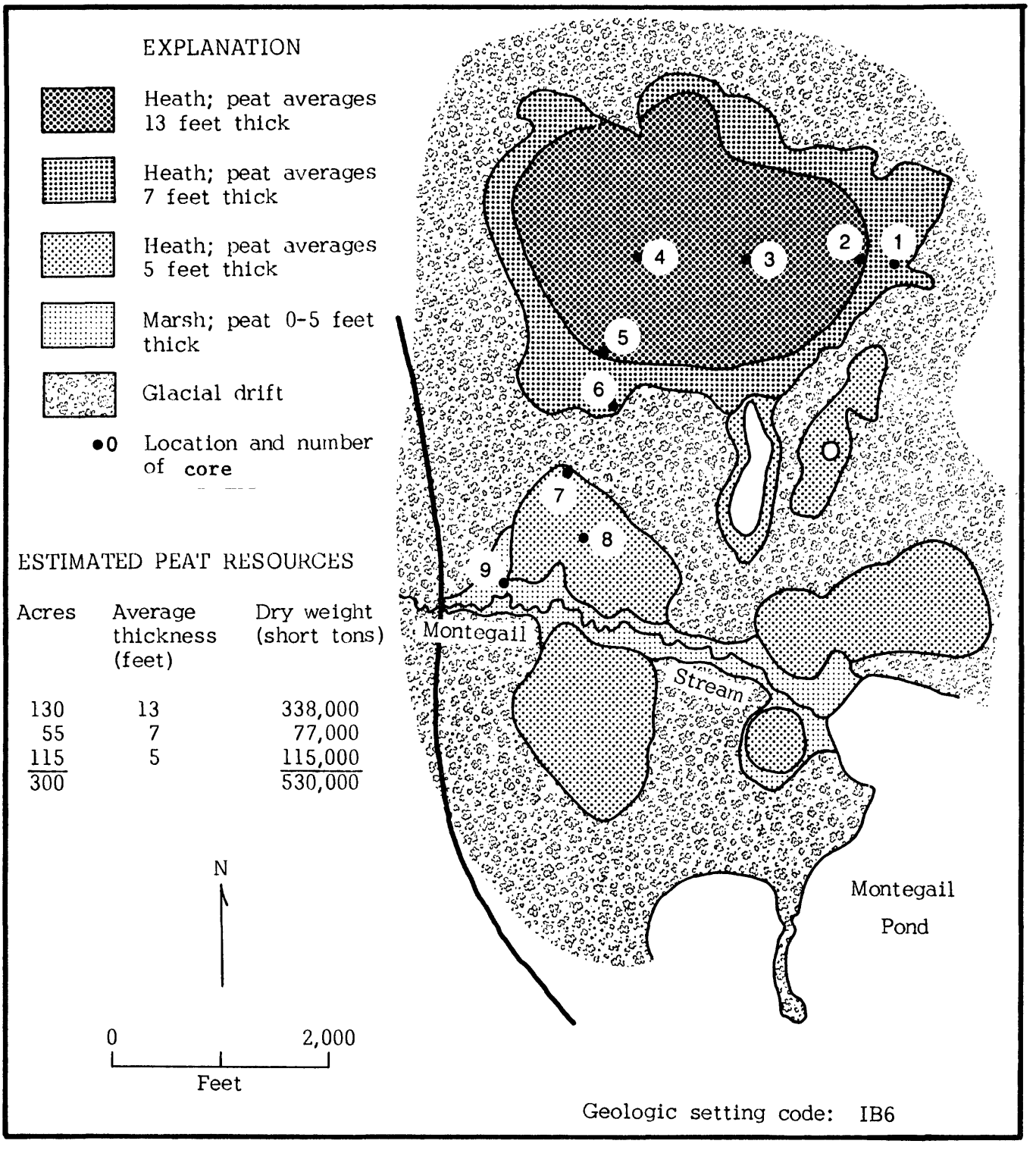


Figure 35. Sketch map, cores, and sample analyses of bogs north of Montegail Pond, T19 MD BPP, Tug Mountain 15 minute Quadrangle, Washington County, Maine (Number 34 on Index Map).

Figure 35a.-- Cores and sample locations.

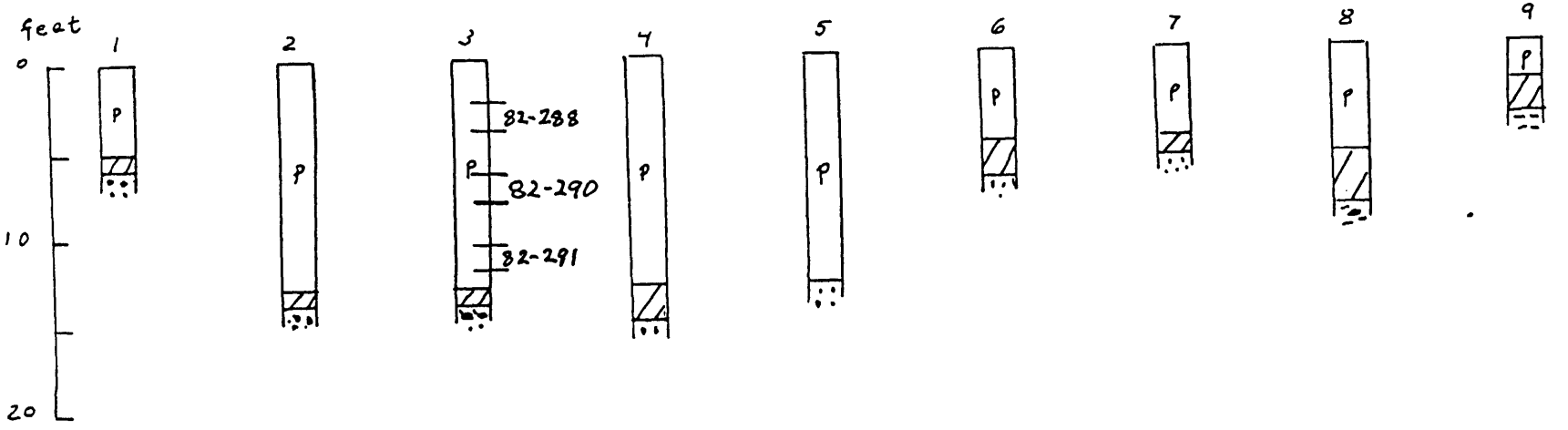


Table 35.--Analyses of samples in 9 cores located in figure 35a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
288	52.05	4.26	0.60	0.13	0.6	93.5	70.9	8,623
290	---	---	---	---	1.1	---	---	---
291	54.93	4.28	0.68	0.13	0.9	93.0	68.2	9,179
Average commercial quality peat (ash content less than 25%)	53.49	4.27	0.14	0.13	0.9	93.25	69.55	8,901

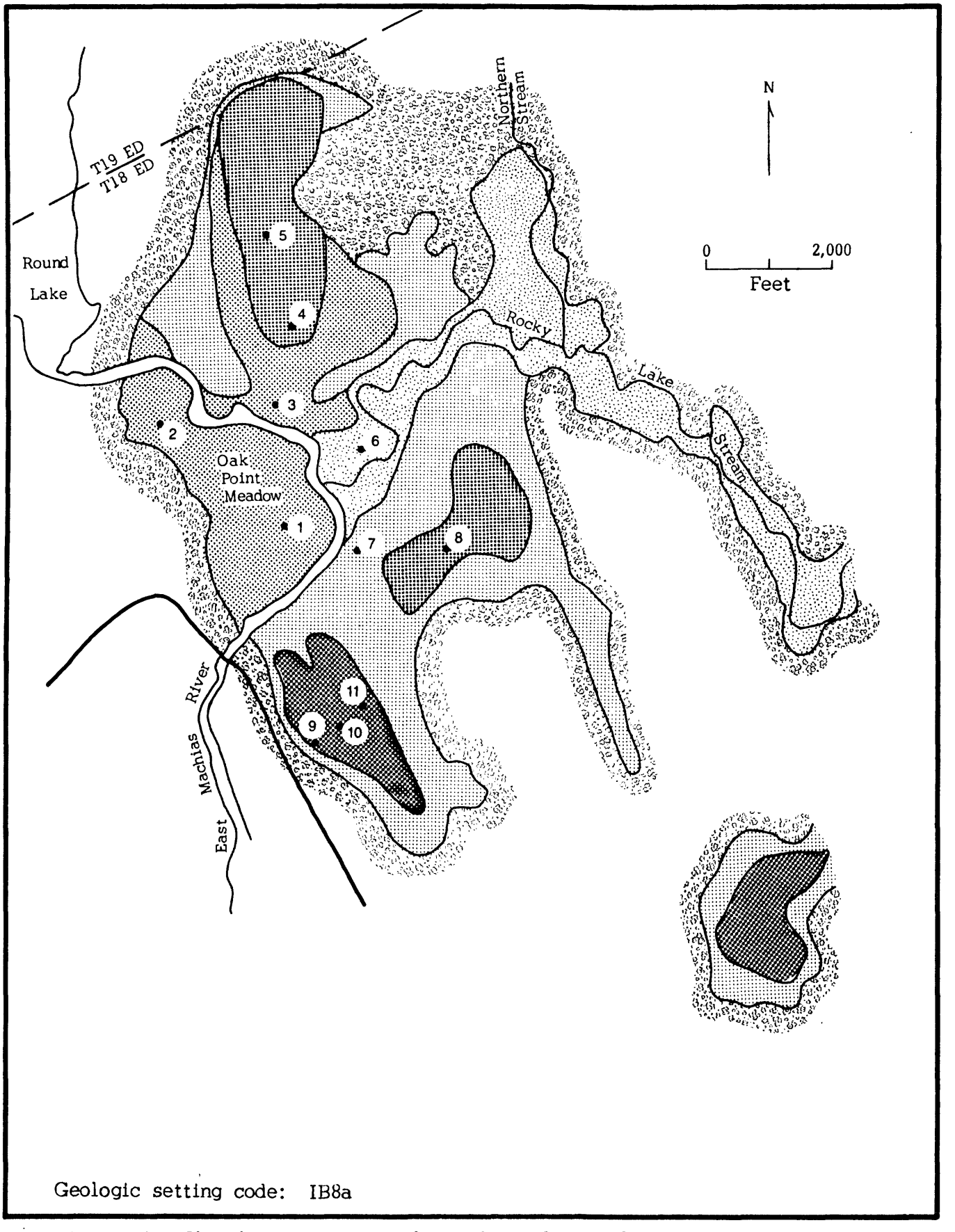
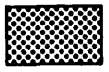
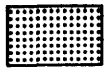


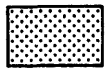
Figure 36. Sketch map, cores, and sample analyses of bogs southeast of Round Lake, T18 ED BPP, Wesley and Gardner Lake 15 minute Quadrangles, Washington County, Maine (Number 35 on Index Map).



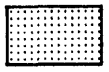
Open heath; peat averages 10 feet thick



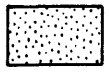
Open heath; peat averages 8 feet thick



Marsh; peat averages 5 feet thick



Swamp; peat 0-5 feet thick



Alluvial silt

Glacial drift and bedrock

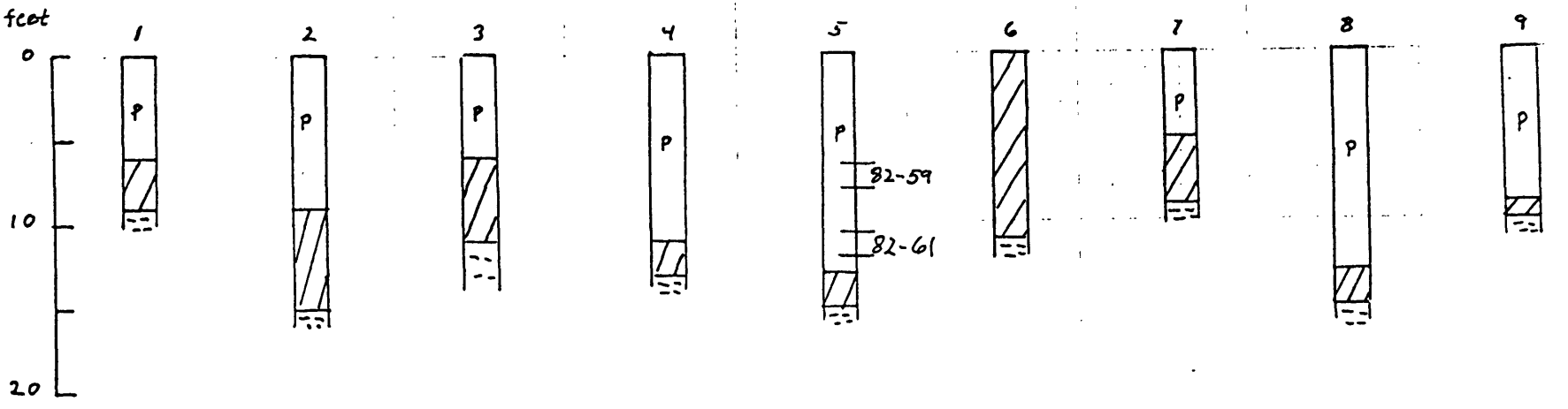
•0 Location and number of core

ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
120	10	240,000
65	8	104,000
135	5	135,000
320		479,000

Figure 36. Continued.

Figure 36a.— Cores and sample locations.



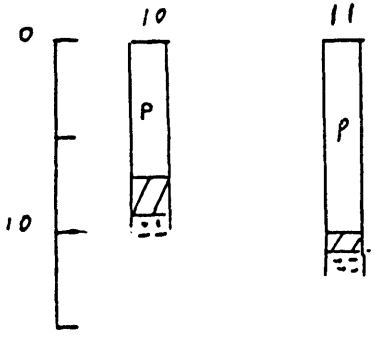


Table 36.--Analyses of samples in cores located in figure 36a.

CC82	Sample Analyses: Percent dry weight C	H	N	S	Ash	Percent H_2O as Received	Dry weight: Percent Volatile Matter	BTU
59	56.89	4.64	0.94	0.17	1.3	90.8	66.3	9,517
61	---	---	---	---	3.8	---	---	---
Average commercial quality peat (ash content less than 25%)	56.89	4.64	0.94	0.17	2.6	90.8	66.3	9,517

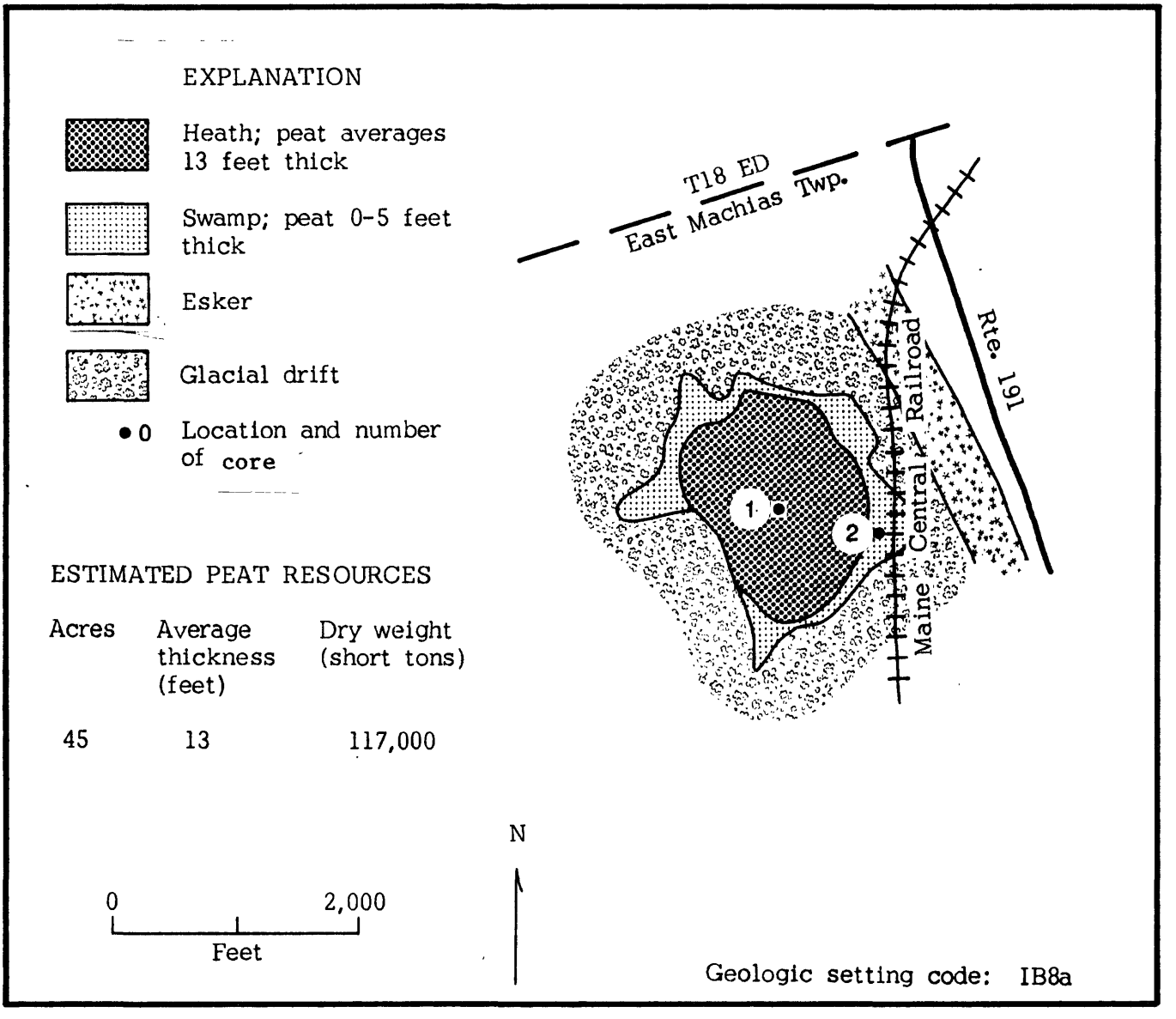


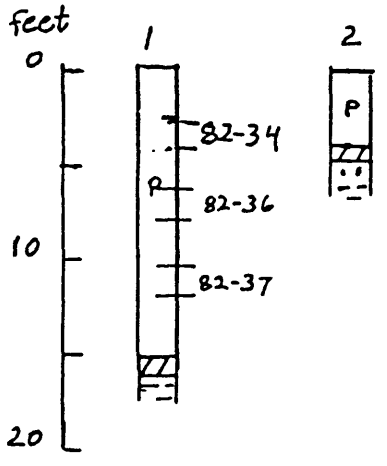
Figure 37. Sketch map, cores, and sample analyses of bog along Maine Central Railroad, East Machias Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 36 on Index Map).

Table 37.--Analyses of samples in s cores located in figure 37a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
34	55.03	4.14	0.68	0.17	0.9	91.5	70.0	9,157
36	---	---	---	---	0.6	---	---	---
37	---	---	---	---	2.9	---	---	---
Average commercial quality peat (ash content less than 25%)	56.89	4.64	0.94	0.17	1.5	90.8	66.3	9,517

Figure 37a.— Cores and sample locations.



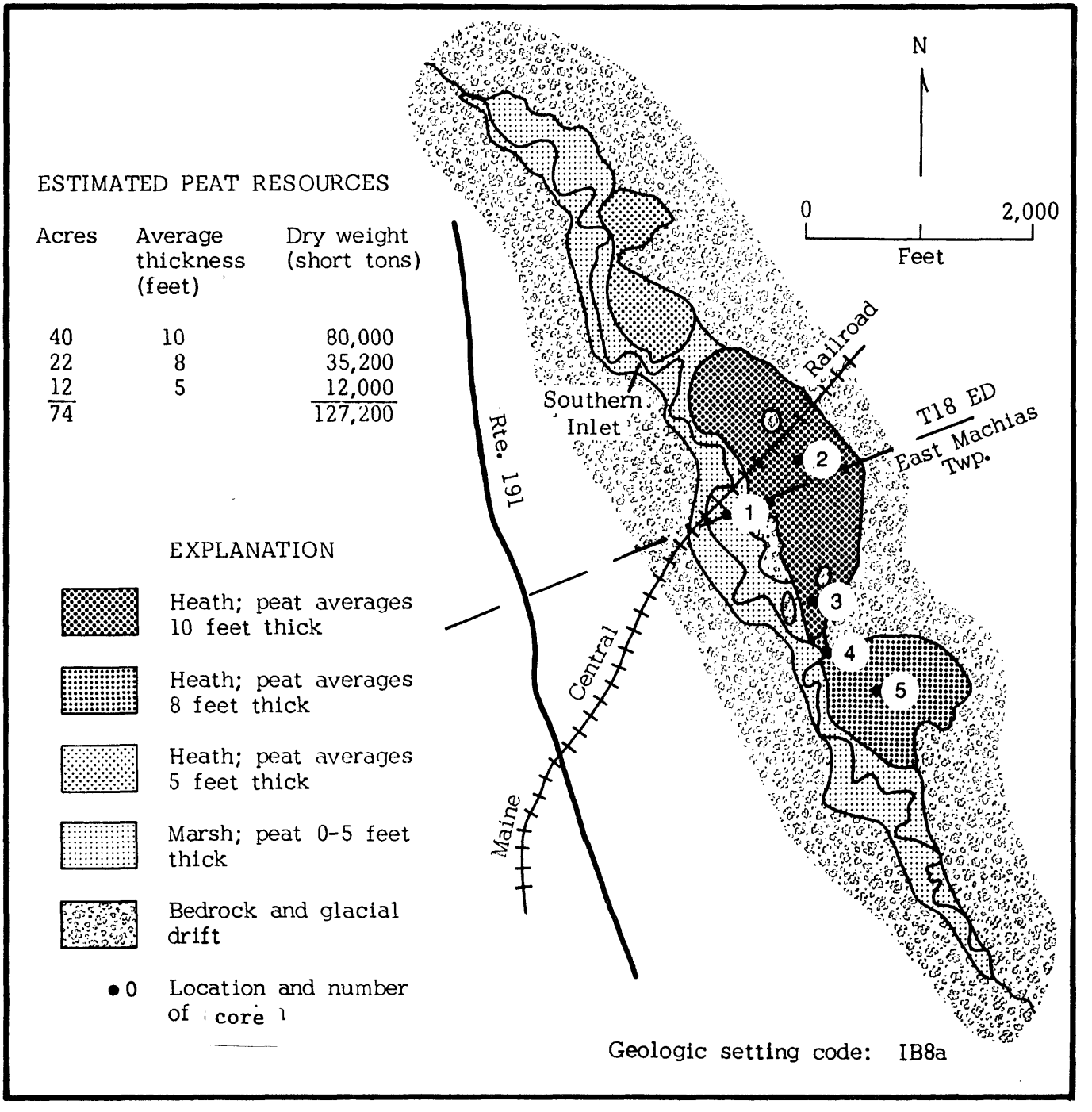


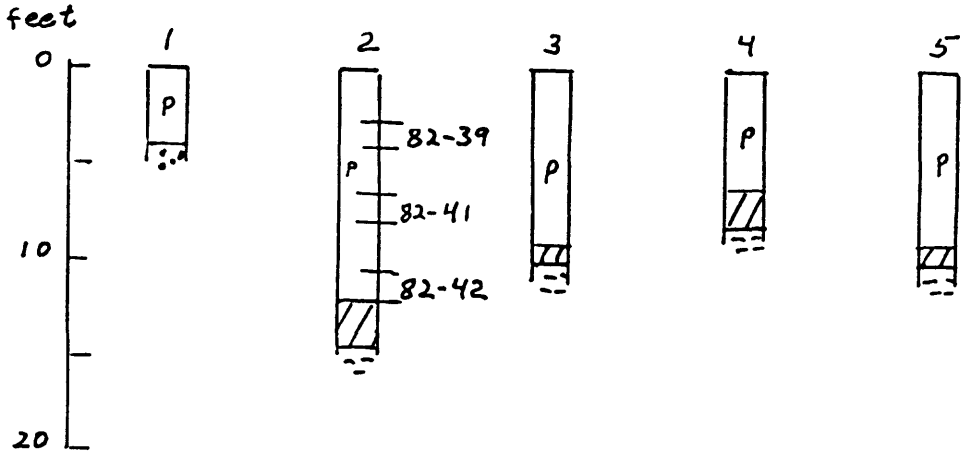
Figure 38. Sketch map, cores, and sample analyses of open heath along Southern Inlet, T18 ED BPP and East Machias Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 37 on Index Map).

Table 38.--Analyses of samples in cores located in figure 38a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
39	57.42	4.60	0.81	0.17	1.2	89.5	68.0	9,655
41	---	---	---	---	1.1	---	---	---
42	56.98	4.44	2.00	0.42	3.4	91.3	65.7	9,991
Average commercial quality peat (ash content less than 25%)	57.2	4.52	1.41	0.30	1.9	90.4	66.9	9,823

Figure 38a.-- Cores and sample locations.



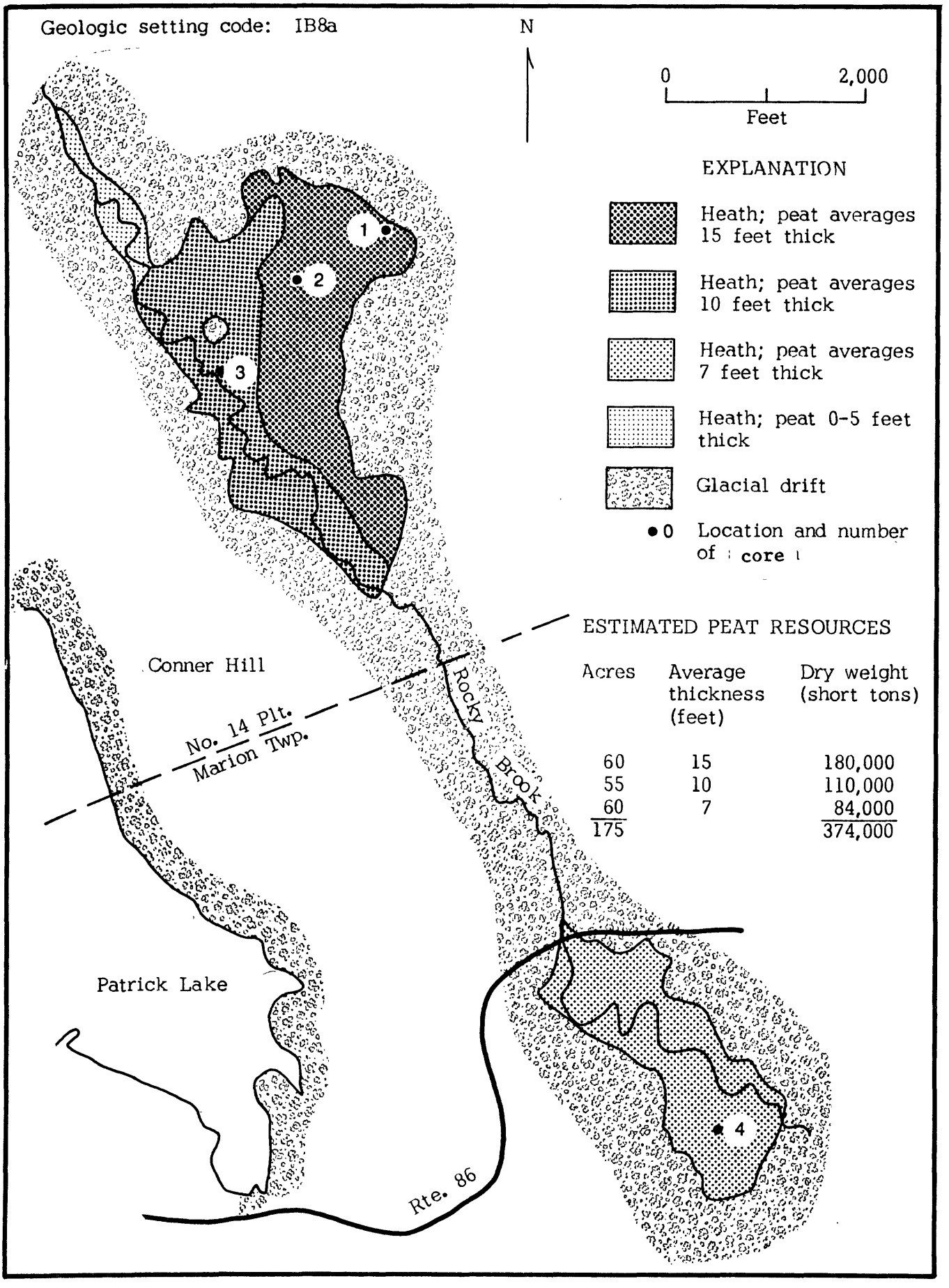


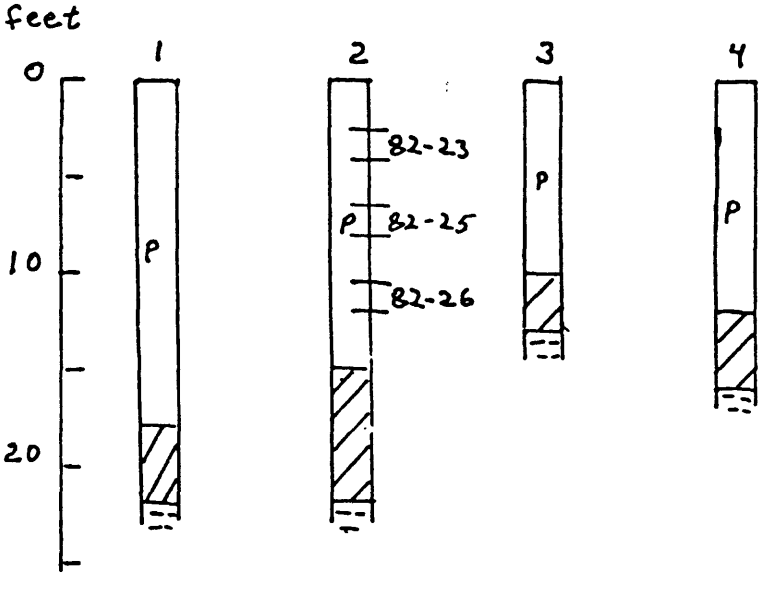
Figure 39. Sketch map, cores, and sample analyses of bogs along Rocky Brook east of Patrick Lake, No. 14 Plantation and Marion Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 38 on Index Map).

Table 39.--Analyses of samples in cores located in figure 39a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
23	57.04	4.52	0.69	0.15	1.0	89.8	67.4	9,523
25	---	---	---	---	0.1	---	---	---
26	54.87	4.39	0.70	0.19	1.4	92.1	69.4	9,236
27	---	---	---	---	5.3	---	---	---
Average commercial quality peat (ash content less than 25%)	55.96	4.46	0.695	0.17	2.0	90.95	68.4	9,374

Figure 39a.-- Cores and sample locations.



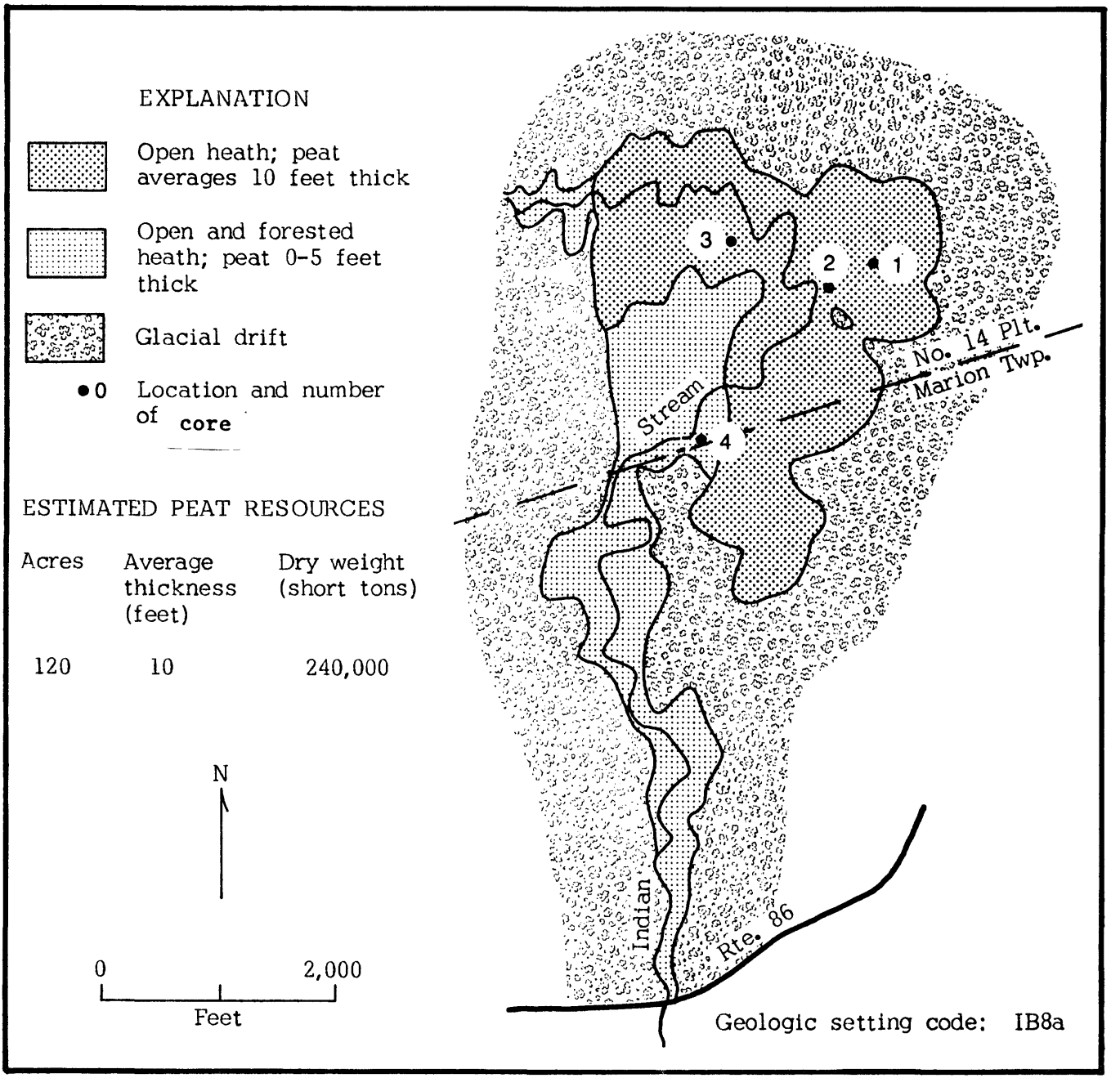


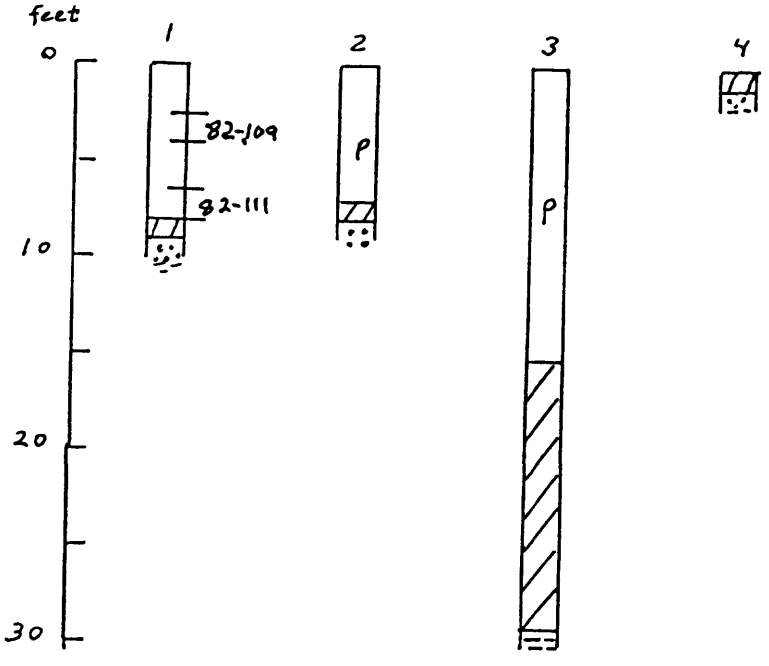
Figure 40. Sketch map, cores, and sample analyses of bog along Indian Stream, No. 14 Plantation and Marion Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 39 on Index Map).

Table 40.--Analyses of samples in cores located in figure 40a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
109	58.54	5.00	0.86	0.19	1.4	89.2	63.0	9,774
111	50.88	4.27	2.51	0.62	13.3	90.7	62.7	8,705
Average commercial quality peat (ash content less than 25%)	54.71	4.64	1.69	0.41	7.4	89.95	62.9	9,239.5

Figure 40a.-- Cores and sample locations.



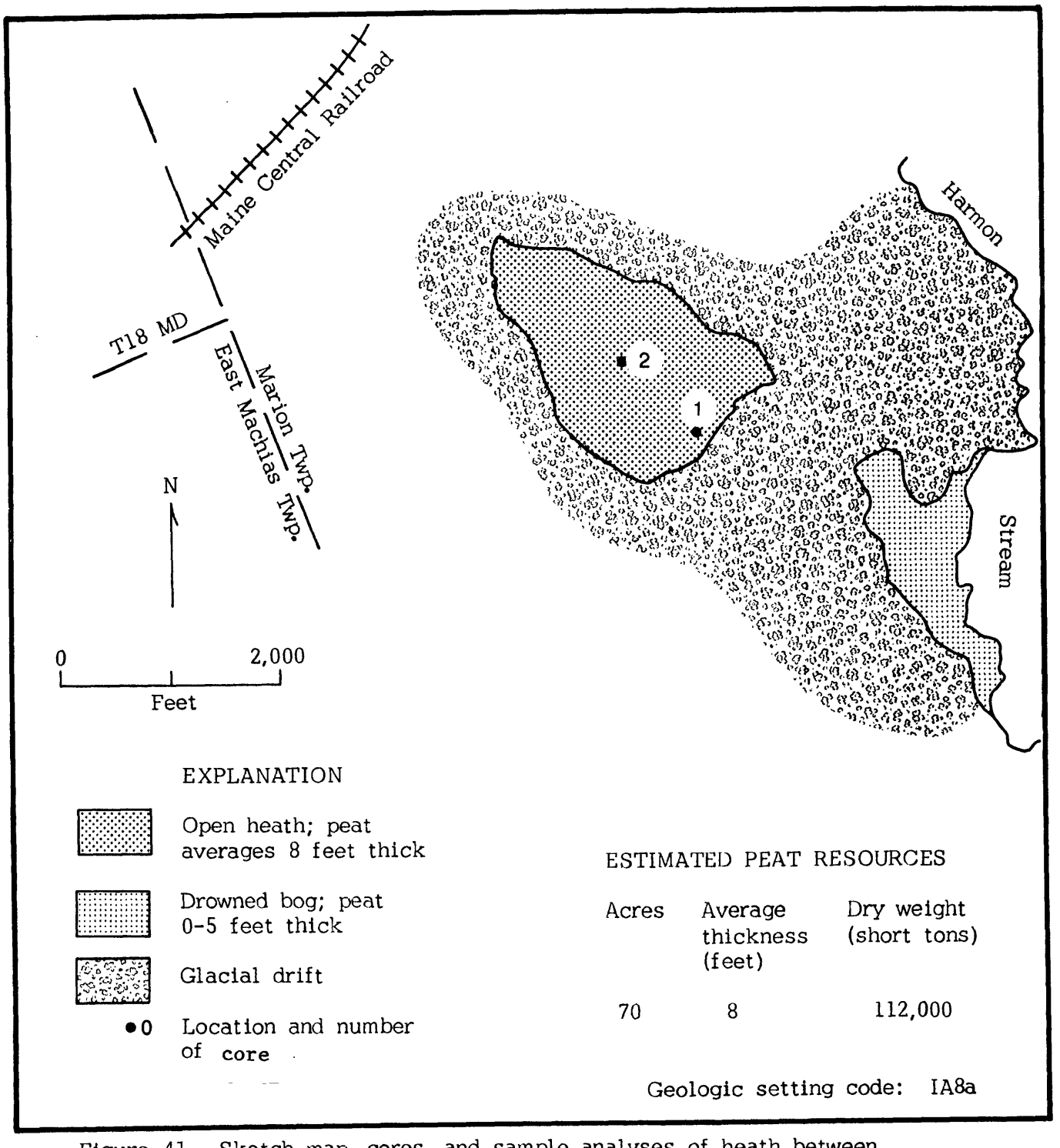


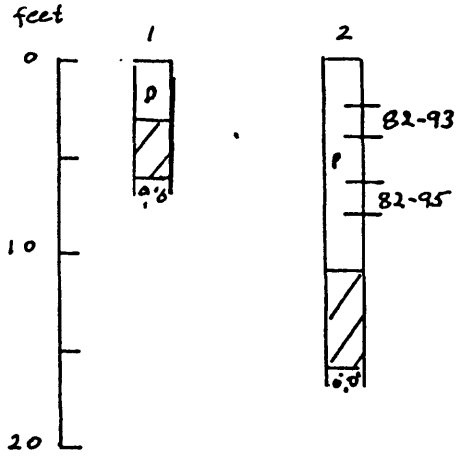
Figure 41. Sketch map, cores, and sample analyses of heath between Harmon Stream and Maine Central Railroad, Marion Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 40 on Index Map).

Table 41.--Analyses of samples in cores located in figure 41a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
93	51.42	4.48	0.75	0.17	0.8	93.8	77.9	8,468
95	52.49	4.51	0.63	0.13	0.8	94.2	75.7	8,629
Average commercial quality peat (ash content less than 25%)	51.96	4.50	0.69	0.15	0.8	94.0	76.8	8,548.5

Figure 41a.--S Cores and sample locations.



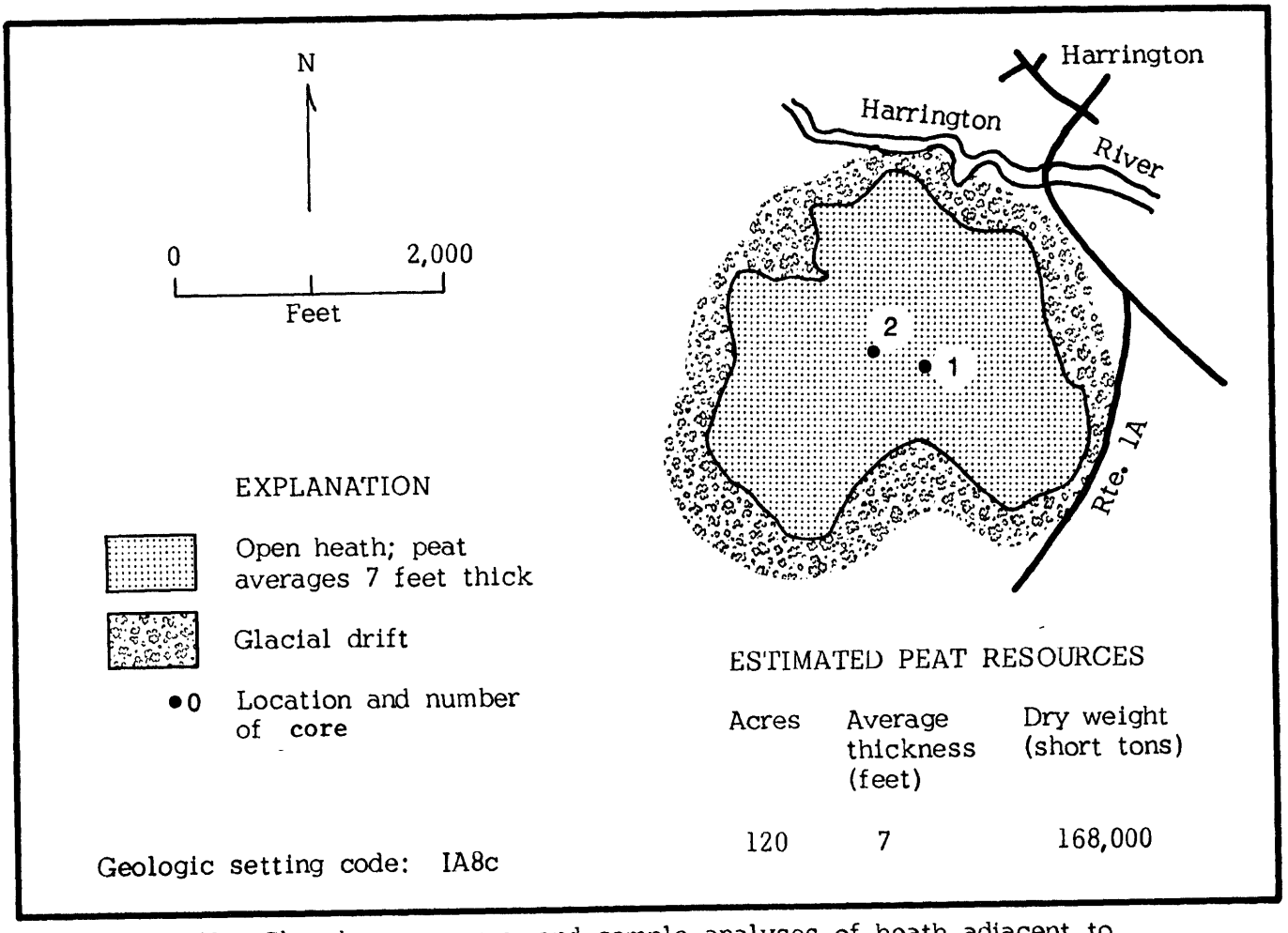


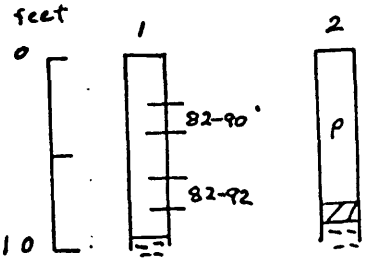
Figure 42. Sketch map, cores, and sample analyses of heath adjacent to Route 1A, Harrington Twp., Harrington 7.5 minute Quadrangle, Washington County, Maine (Number 41 on Index Map).

Table 42.--Analyses of samples in cores located in figure 42a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
90	50.82	4.01	0.55	0.20	1.0	93.4	71.6	8,707
92	54.36	4.99	0.82	0.17	1.6	92.5	72.0	9,249
Average commercial quality peat (ash content less than 25%)	52.59	4.50	0.69	0.18	1.3	92.95	71.8	8,978

Figure 42a.-- Cores and sample locations.



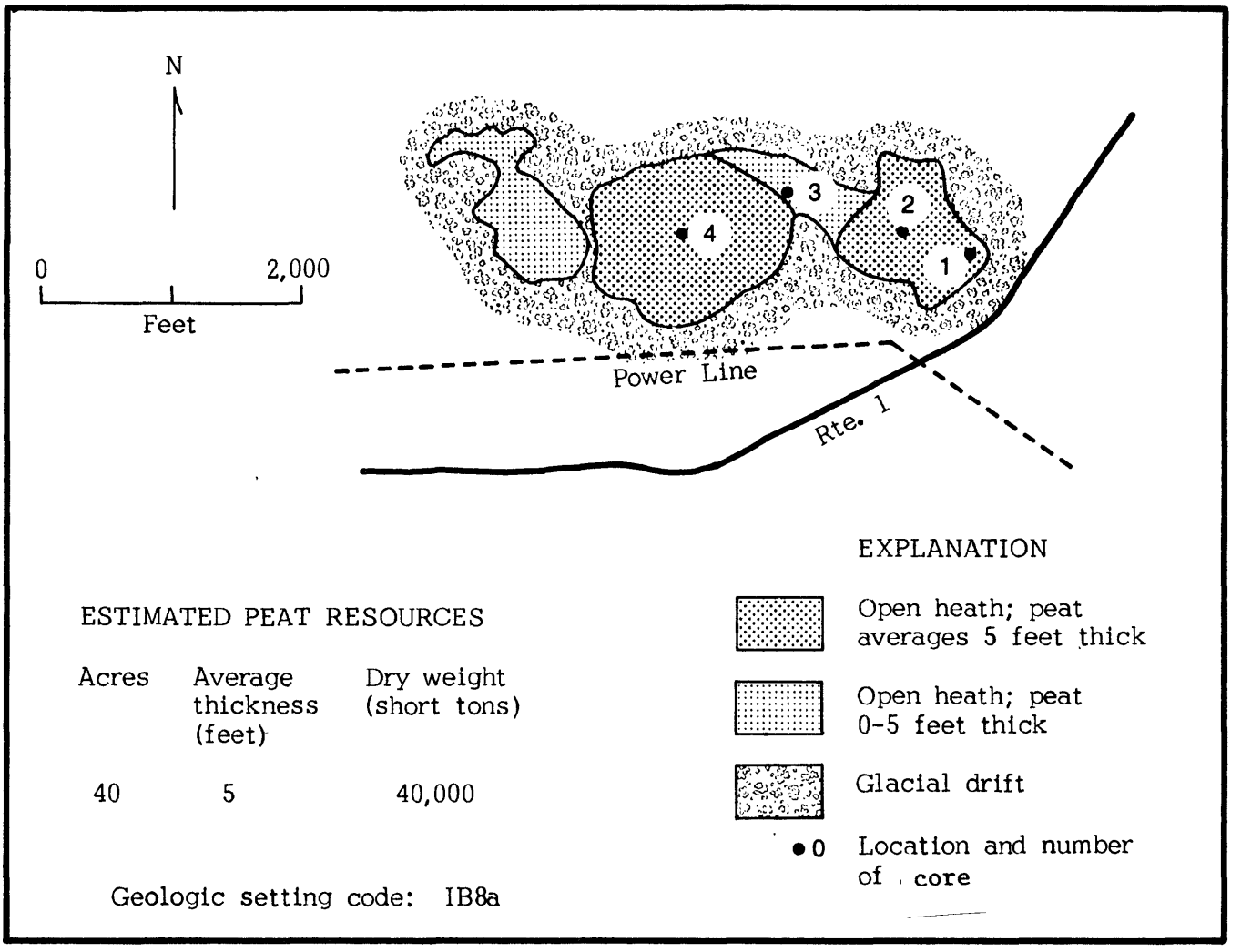


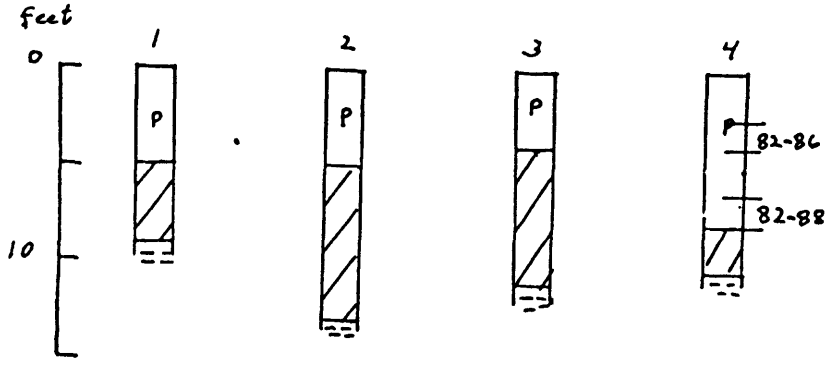
Figure 43. Sketch map, cores, and sample analyses of bogs north of Route 1, Whitneyville Twp., Machias and Whitneyville 7.5 minute Quadrangles, Washington County, Maine (Number 42 on Index Map).

Table 43.--Analyses of samples in cores located in figure 43a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
86	52.16	4.32	0.70	0.20	0.9	92.1	71.6	8,897
88	---	---	---	---	3.2	---	---	---
Average commercial quality peat (ash content less than 25%)	52.16	4.32	0.70	0.20	2.1	92.1	71.6	8,897

Figure 43a.--Cores and sample locations.



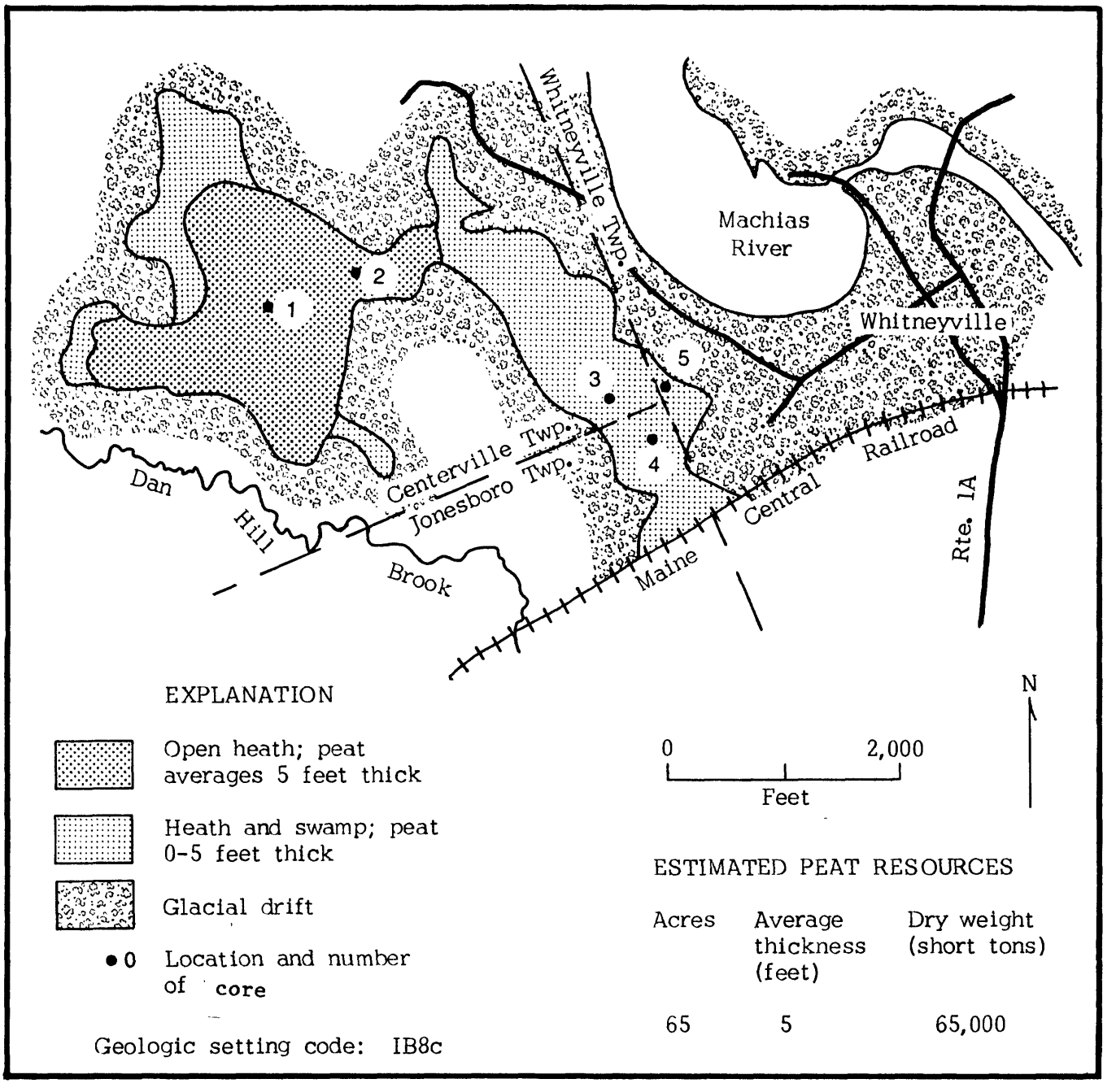


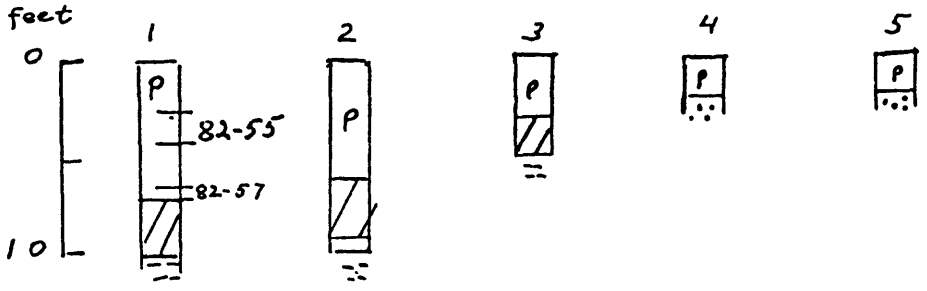
Figure 44. Sketch map, cores, and sample analyses of bogs and heaths west of Whitneyville, Centerville, and Jonesboro Twps., Whitneyville 7.5 minute Quadrangle, Washington County, Maine(Number 43 on Index Map).

Table 44.--Analyses of samples in cores located in figure 44a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
55	51.99	4.28	0.76	0.23	0.8	92.9	70.8	8,876
57	---	---	---	---	1.4	---	---	---
Average commercial quality peat (ash content less than 25%)	51.99	4.28	0.76	0.23	1.1	92.9	70.8	8,876

Figure 44a.--Cores and sample locations.



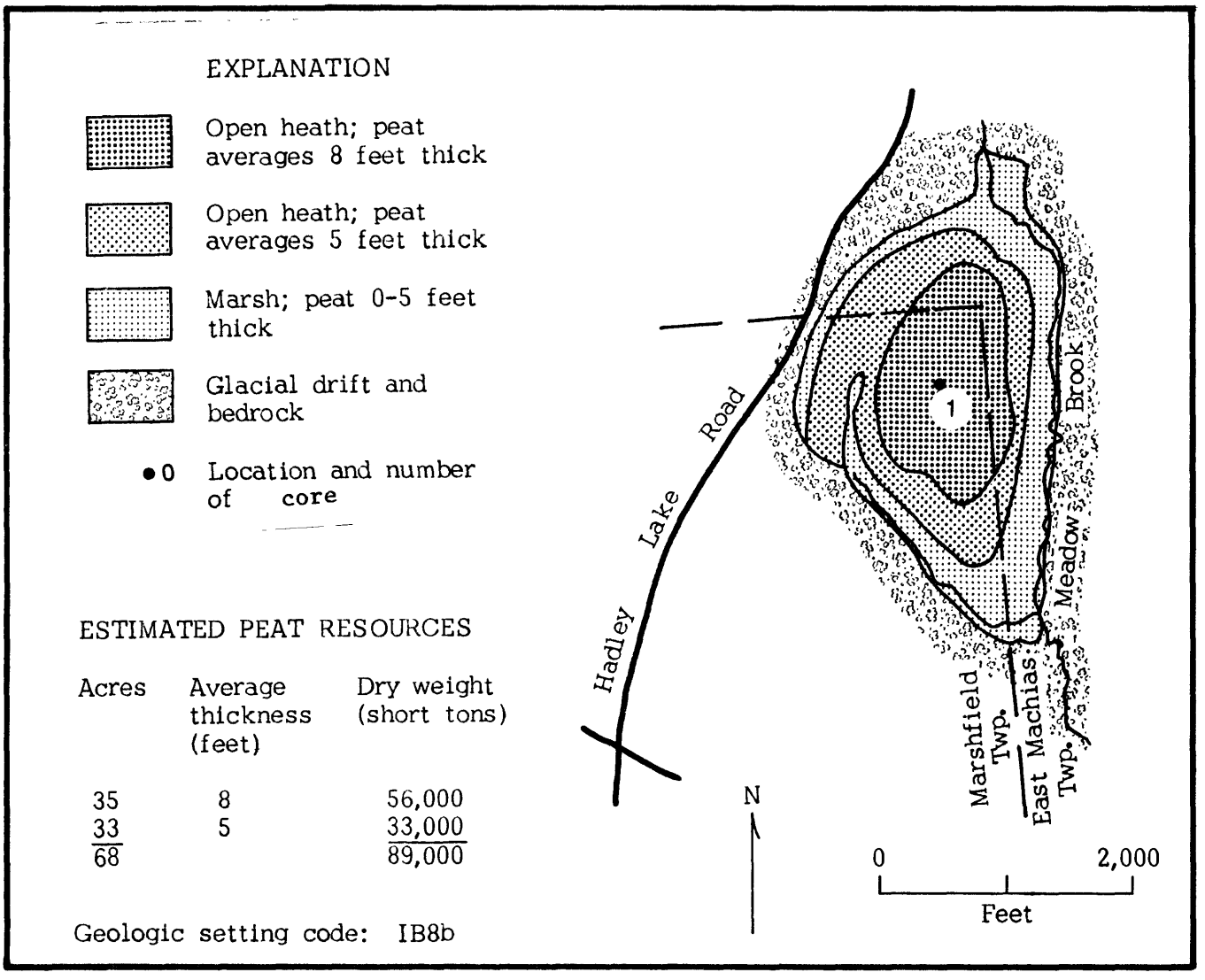


Figure 45. Sketch map, cores, and sample analyses of Runaway Pond Heath, Marshfield and East Machias Twps., Machias 7.5 minute Quadrangle, Washington County, Maine (Number 44 on Index Map).

Figure 45a.-- Core and sample locations.

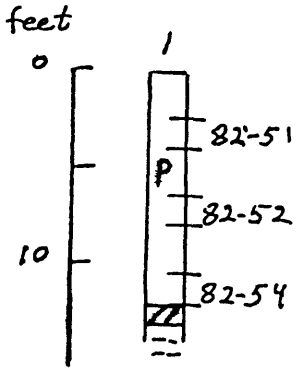


Table 45.--Analyses of samples in core located in figure 45a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
51	53.59	4.27	0.65	0.26	1.3	92.6	69.8	9,173
52	55.36	4.16	0.66	0.23	1.5	86.4	67.2	9,235
54	56.60	4.44	1.88	0.62	8.0	88.7	61.2	9,786
Average commercial quality peat (ash content less than 25%)	55.83	4.29	1.06	0.37	3.6	89.2	66.1	9,398

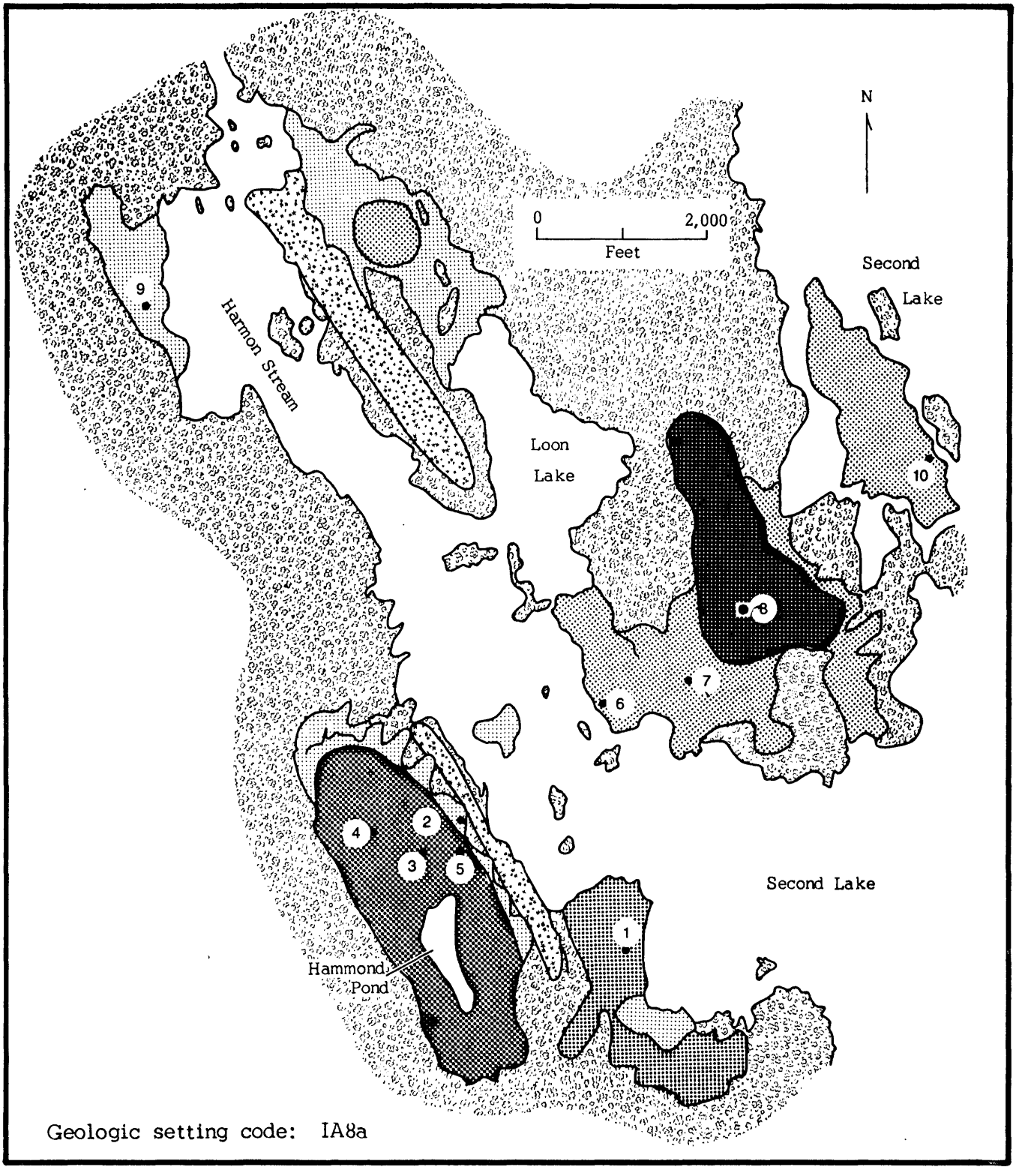


Figure 46. Sketch map, cores, and sample analyses of bogs adjacent to Hammond Pond, Second Lake, and Harmon Stream, Marion Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 45 on Index Map).

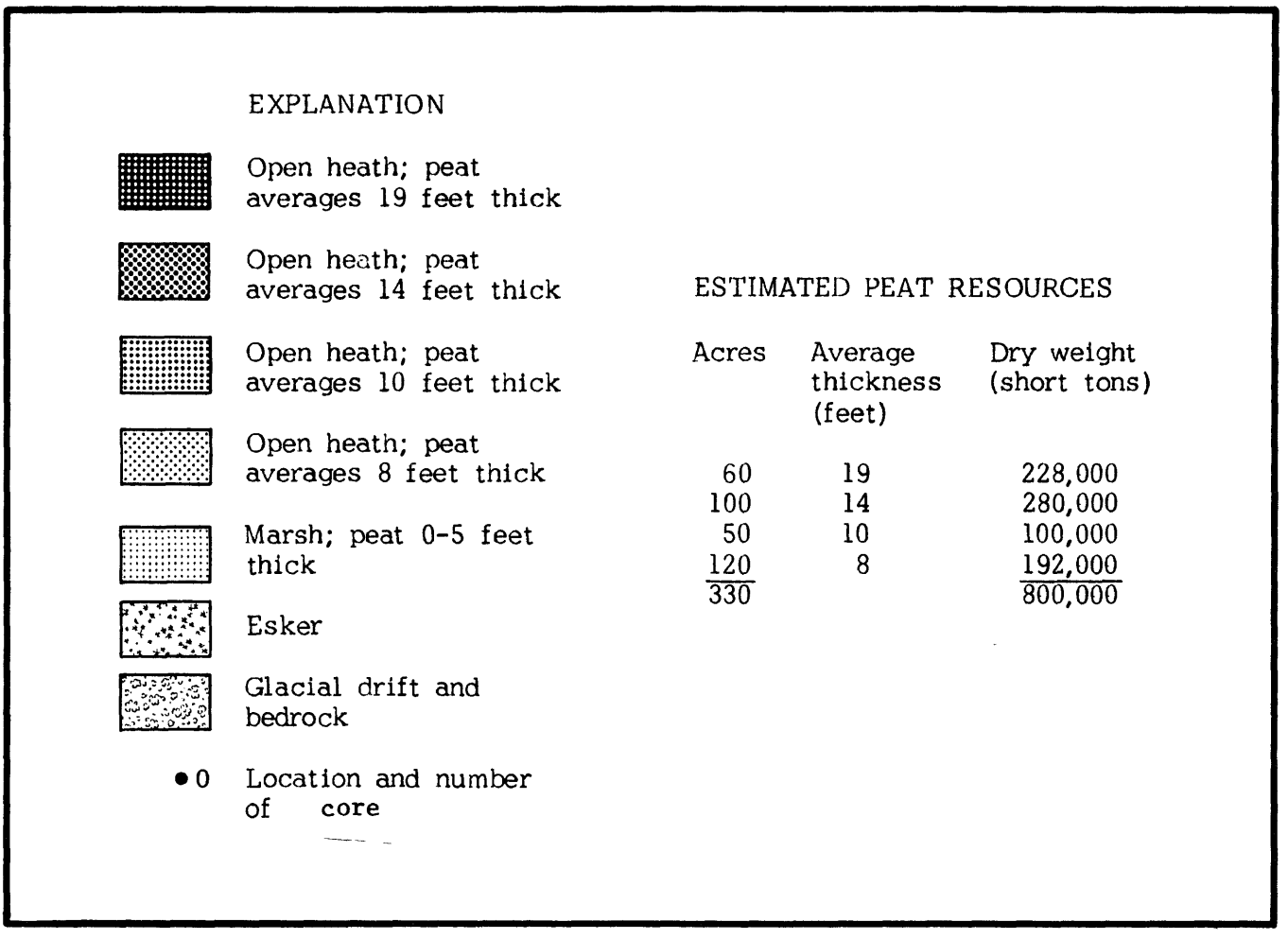


Figure 46. Continued.

Figure 46a.--- Cores and sample locations.

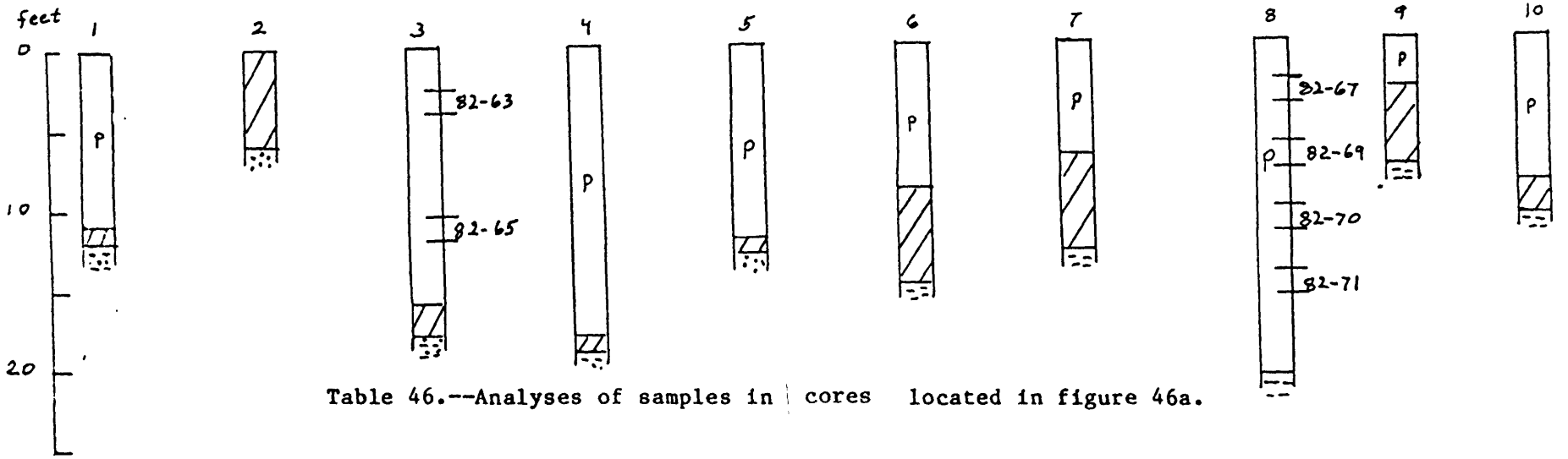
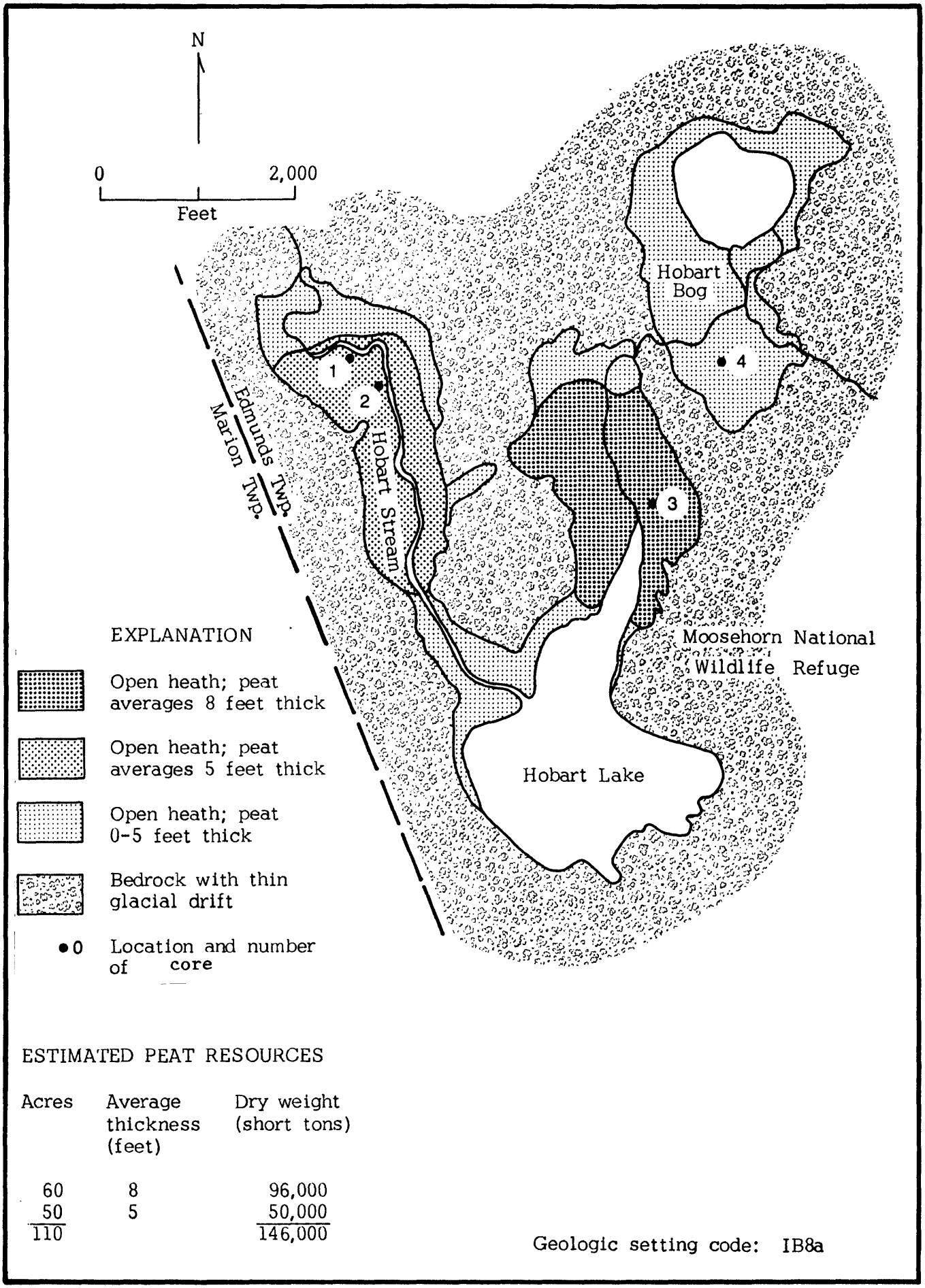


Table 46.--Analyses of samples in cores located in figure 46a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
63	53.80	4.28	0.81	0.20	1.0	94.4	68.6	9,125
65	56.35	4.48	0.78	0.18	2.0	92.6	66.7	9,543
67	52.82	4.28	0.67	0.18	1.1	93.0	70.1	8,874
69	---	---	---	---	0.2	---	---	---
70	54.81	4.06	0.72	0.17	1.2	92.5	66.8	9,200
71	52.96	4.89	0.84	0.18	10.6	89.8	59.9	8,950
Average commercial quality peat (ash content less than 25%)	54.15	4.40	0.76	0.18	2.7	92.5	66.4	9,058



ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
60	8	96,000
50	5	50,000
110		146,000

Geologic setting code: IB8a

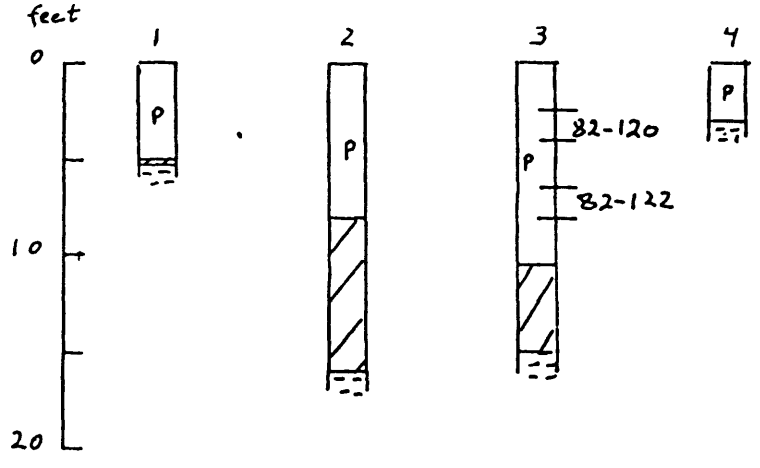
Figure 47. Sketch map, cores, and sample analyses of bogs at Hobart Lake, Edmunds Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 46 on Index Map).

Table 47.--Analyses of samples in cores located in figure 47a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
120	58.84	5.07	1.28	0.20	1.2	90.6	63.0	9,969
122	58.34	4.52	1.85	0.34	2.4	90.6	61.8	9,839
Average commercial quality peat (ash content less than 25%)	58.59	4.79	1.56	0.27	1.8	90.6	62.4	9,904

Figure 47a .-- Cores and sample locations.



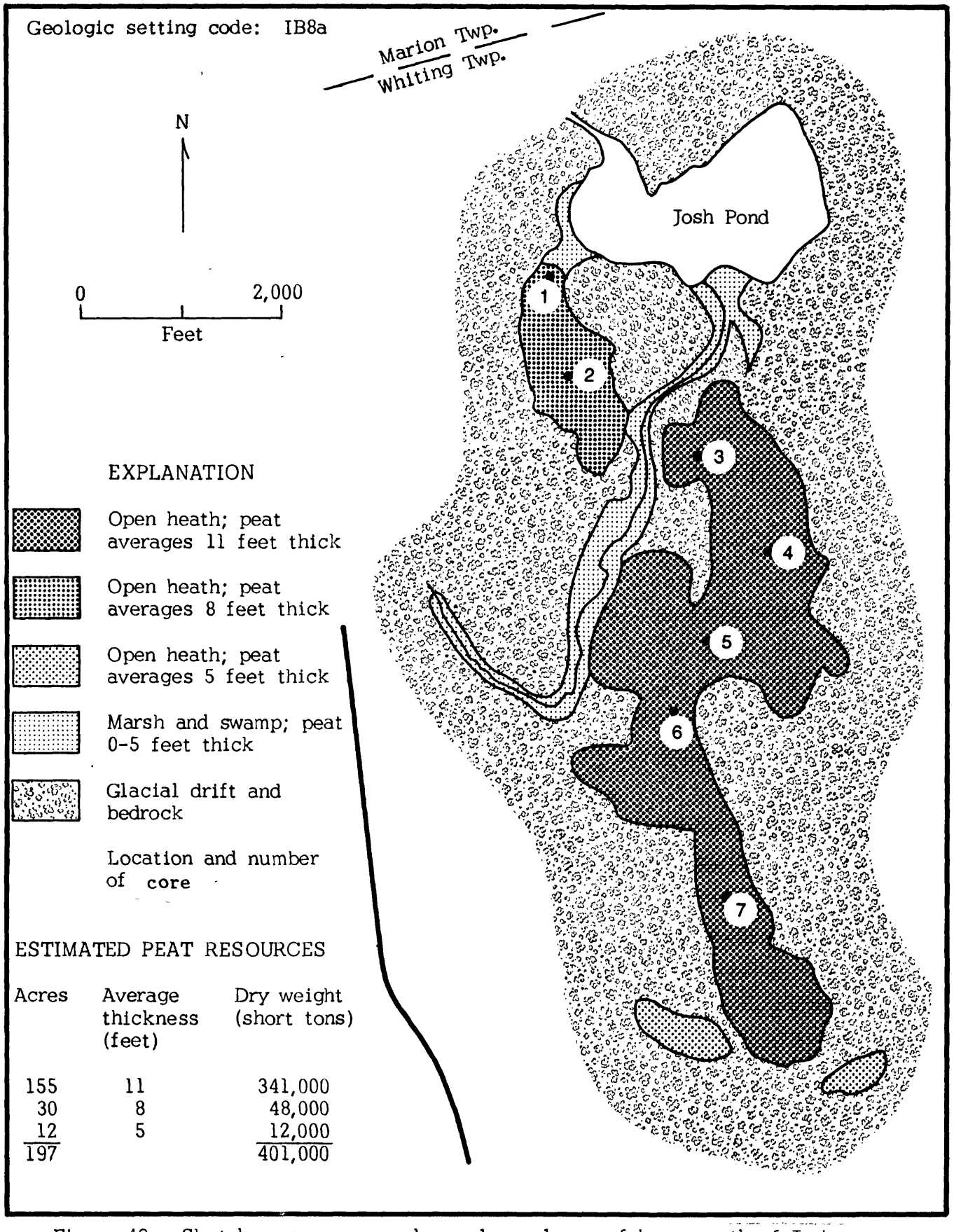


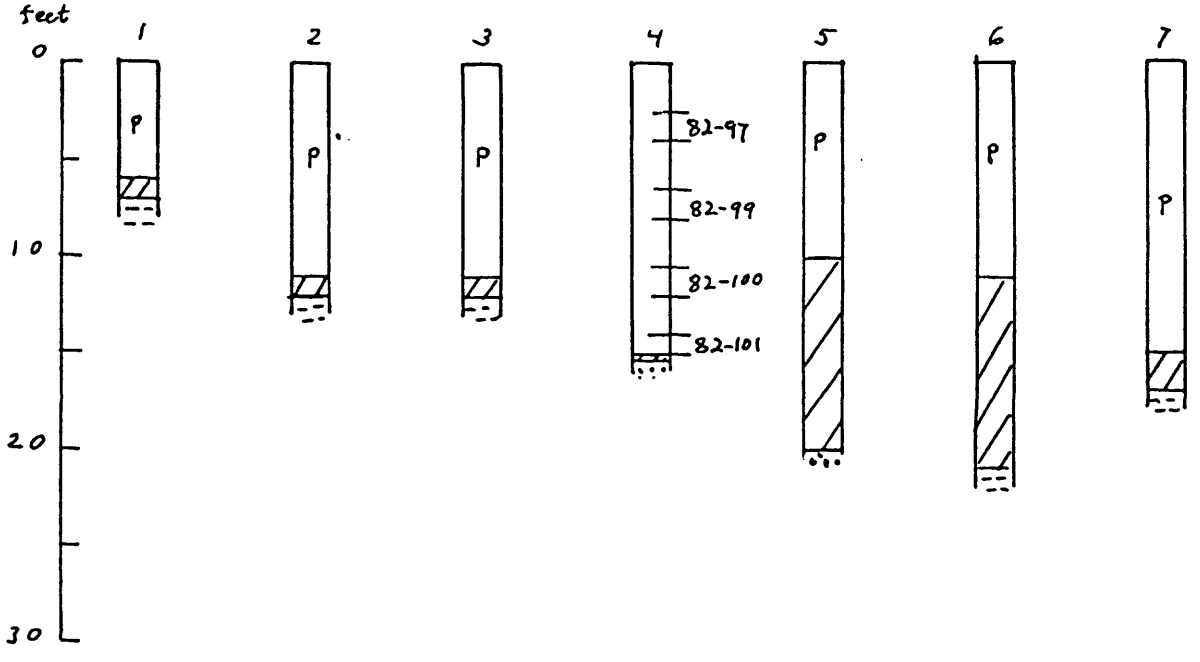
Figure 48. Sketch map, cores, and sample analyses of bogs south of Josh Pond, Whiting Twp., Gardner Lake 15 minute Quadrangle, Washington County, Maine (Number 47 on Index Map).

Table 48.--Analyses of samples in cores located in figure 48a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
97	52.87	4.58	0.56	0.19	0.8	92.8	73.8	8,630
99	---	---	---	---	1.2	---	---	---
100	---	---	---	---	4.1	---	---	---
101	55.25	4.20	0.87	0.21	3.5	89.3	63.8	9,326
Average commercial quality peat (ash content less than 25%)	54.06	4.39	0.72	0.20	2.4	91.1	68.8	8,978

Figure 48a.— Cores and sample locations.



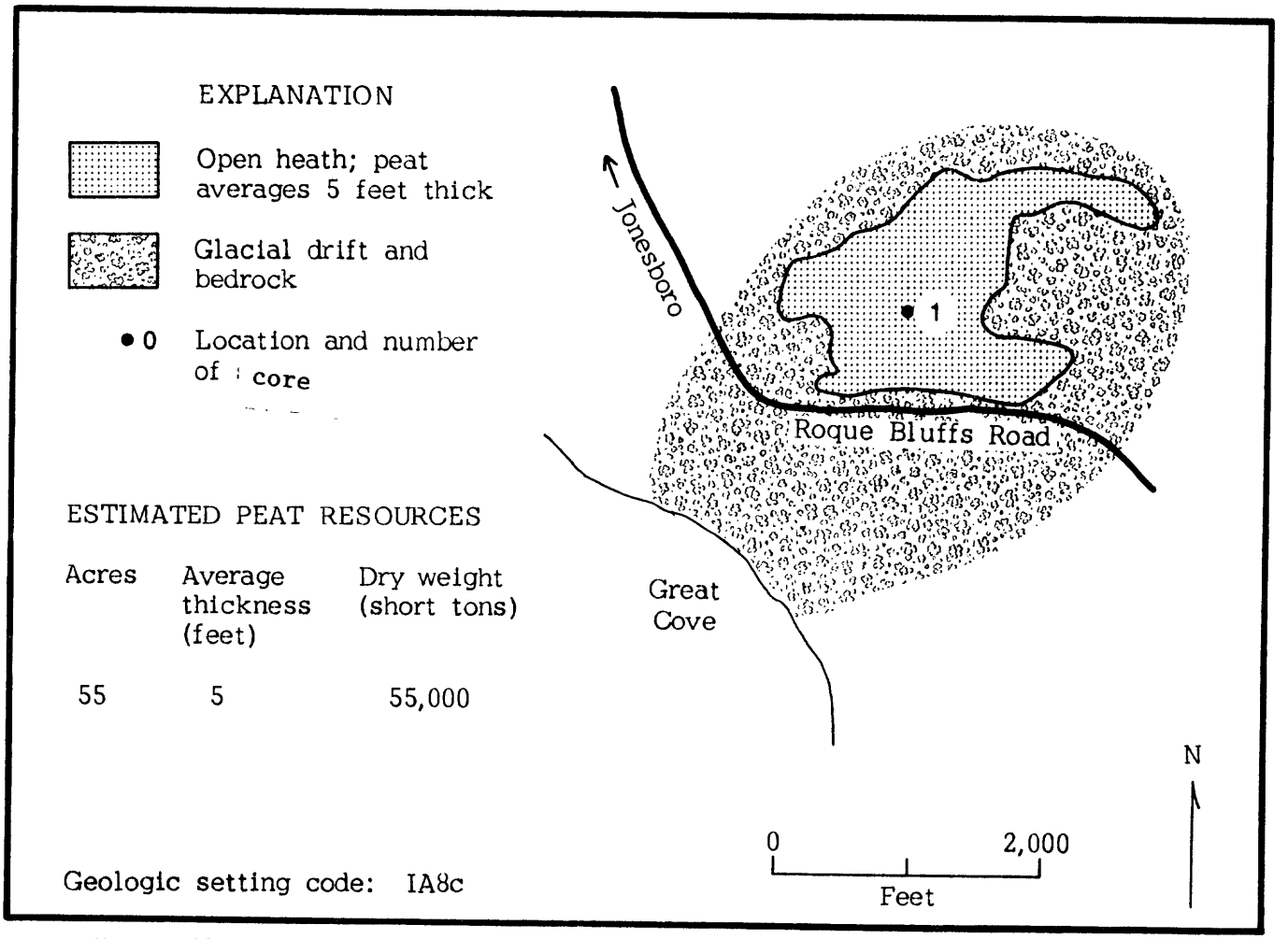


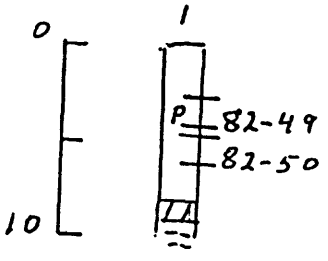
Figure 49. Sketch map, cores, and sample analyses of heath 0.3 miles north of Great Cove, Roque Bluffs Twp., Machias 7.5 minute Quadrangle, Washington County, Maine (Number 48 on Index Map).

Table 49.--Analyses of samples in core located in figure 49a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
49	48.37	5.01	0.80	0.22	1.3	92.0	72.0	8,224
50	57.07	3.93	1.78	0.44	4.0	89.3	58.8	9,273
Average commercial quality peat (ash content less than 25%)	52.72	4.47	1.29	0.33	2.7	90.7	65.4	8,749

Figure 49a.-- Core and sample locations.



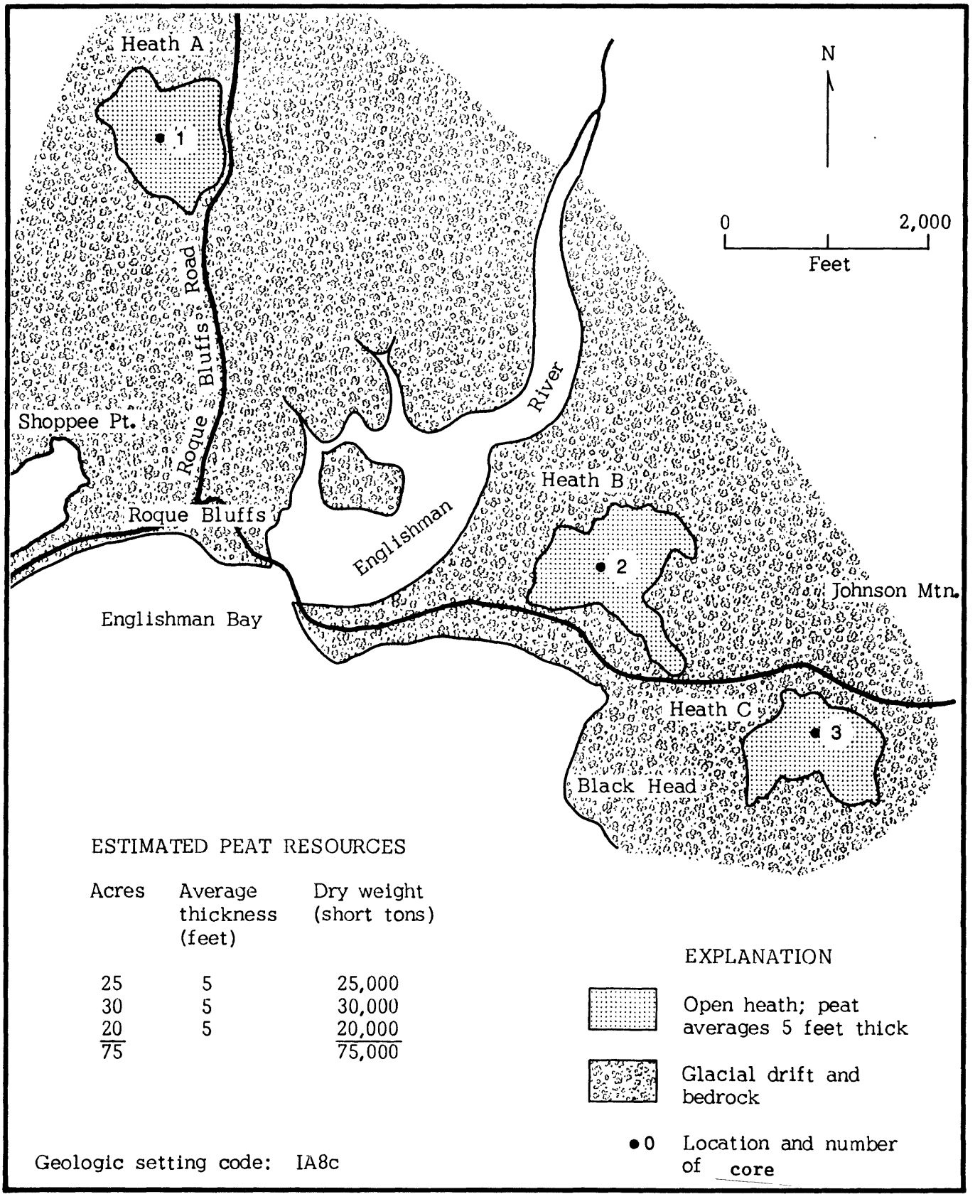


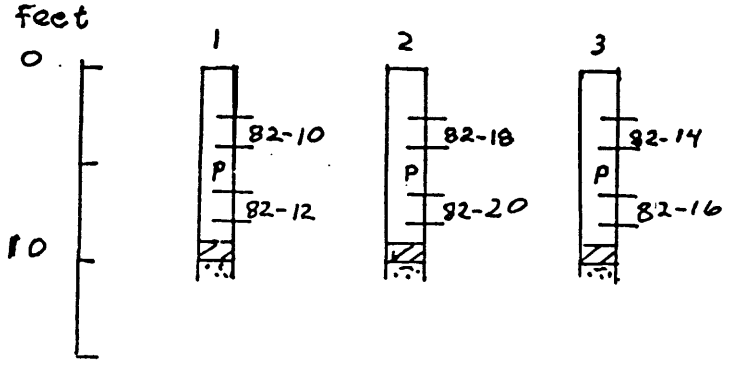
Figure 50. Sketch map, cores, and sample analyses of three heaths, Roque Bluffs Twp., Roque Bluffs 7.5 minute Quadrangle, Washington County, Maine (Number 49 on Index Map).

Table 50.--Analyses of samples in cores located in figure 50a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
10	51.92	4.12	0.51	0.27	0.9	91.4	71.5	8,646
12	---	---	---	---	0.9	---	---	---
14	54.69	4.29	0.79	0.32	1.5	90.8	69.4	9,082
16	---	---	---	---	2.2	---	---	---
18	55.15	4.27	0.69	0.30	1.3	92.3	69.1	9,088
20	---	---	---	---	1.3	---	---	---
Average commercial quality peat (ash content less than 25%)	53.92	4.23	0.66	0.30	1.4	91.5	70.0	8,939

Figure 50a.-- Cores and sample locations.



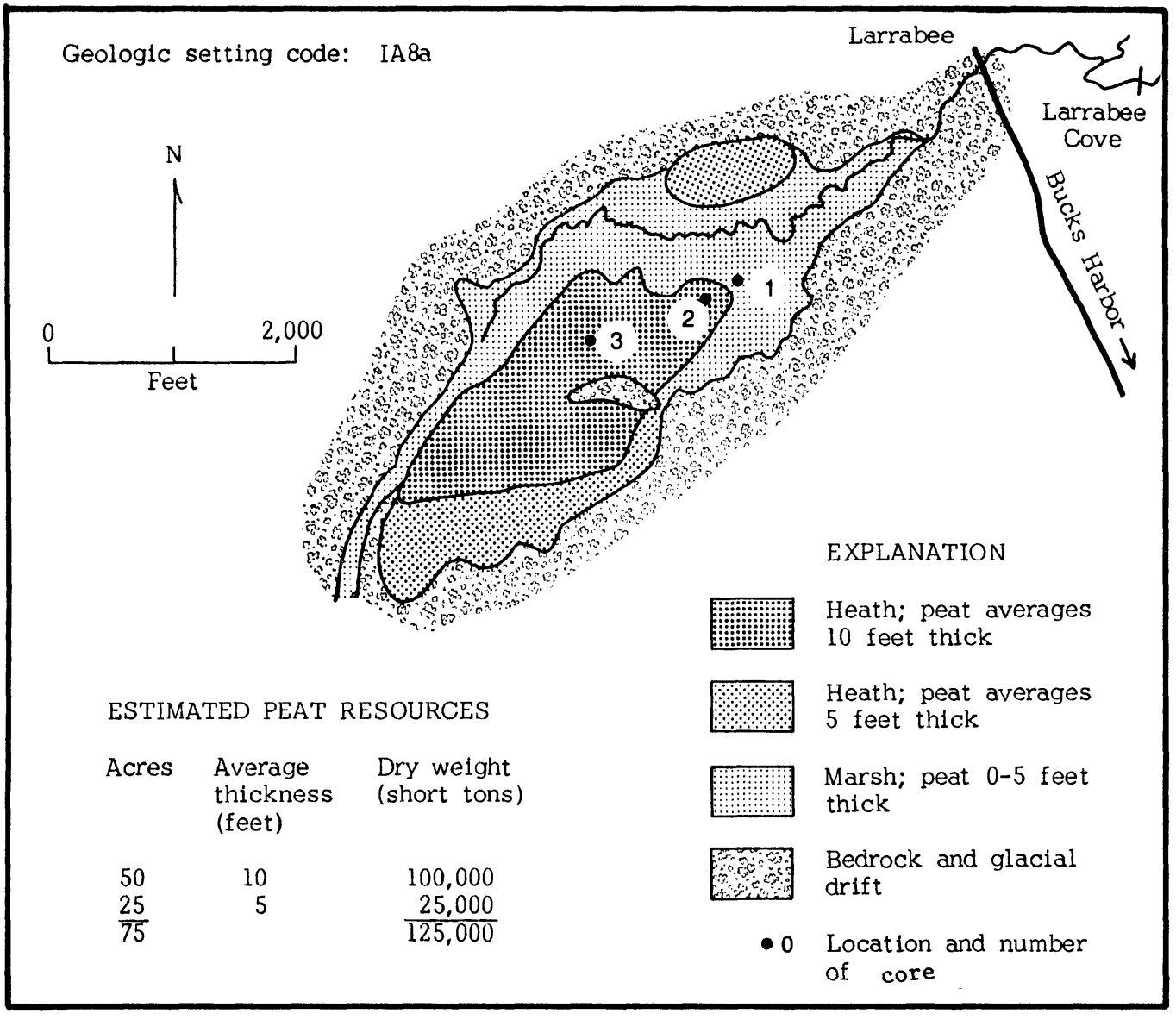


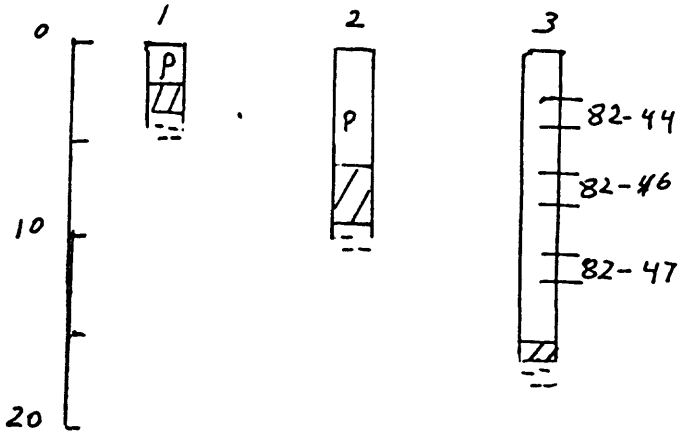
Figure 51. Sketch map, cores, and sample analyses of heaths and marsh southwest of Larrabee, Machiasport Twp., Machias 7.5 minute Quadrangle, Washington County, Maine (Number 50 on Index Map).

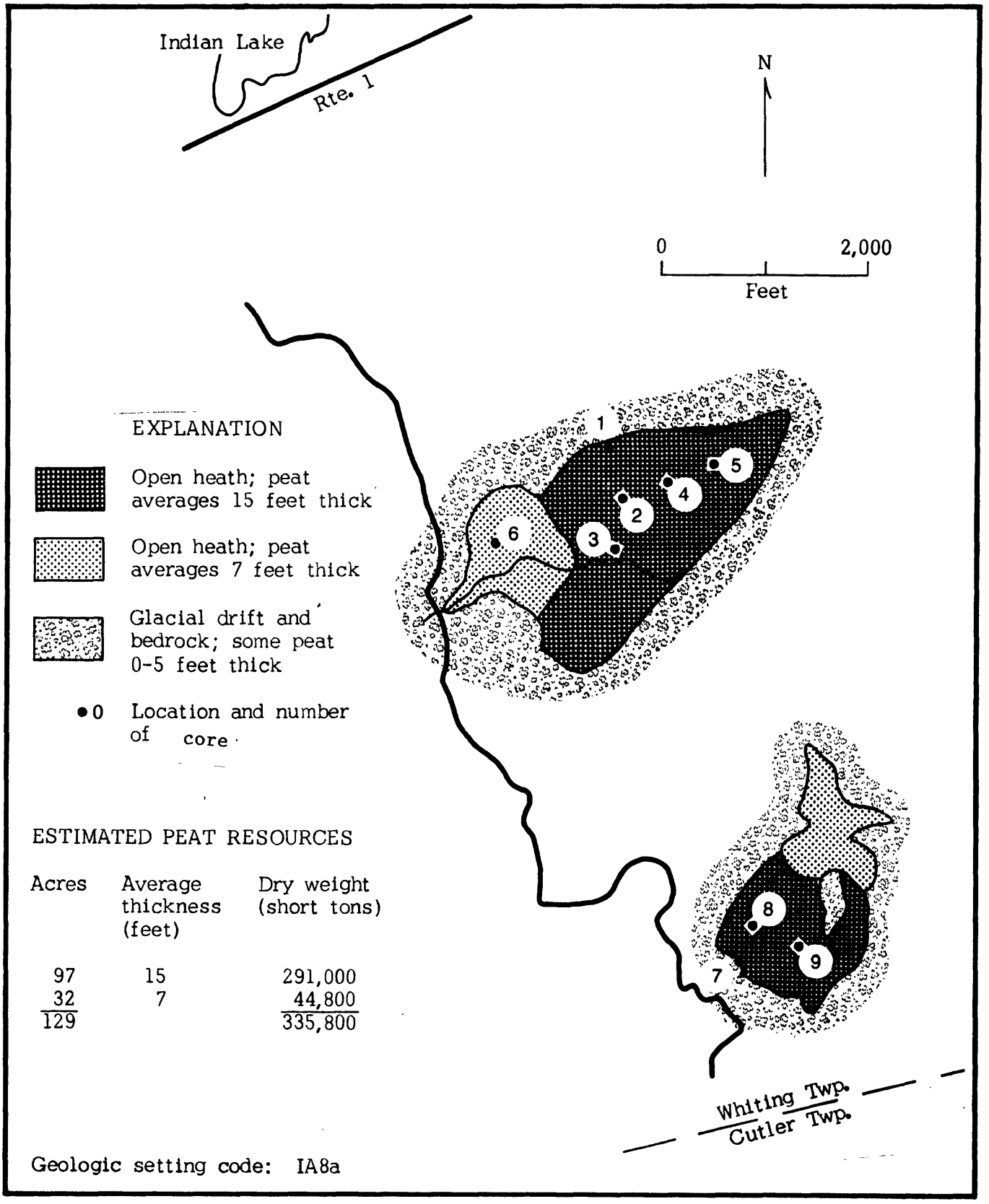
Table 51.--Analyses of samples in cores located in figure 51a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
44	50.10	4.54	0.77	0.28	1.2	90.0	70.4	8,283
46	---	---	---	---	0.3	---	---	---
47	50.19	4.89	0.82	0.23	2.7	90.4	69.4	8,306
Average commercial quality peat (ash content less than 25%)	50.15	4.72	0.795	0.25	1.4	90.2	69.9	8,295

Figure 51a.--Cores and sample locations.





ESTIMATED PEAT RESOURCES

Acres	Average thickness (feet)	Dry weight (short tons)
97	15	291,000
32	7	44,800
129		335,800

Geologic setting code: IA8a

Figure 52. Sketch map, cores, and sample analyses of heaths southeast of Indian Lake, Whiting Twp., Machias Bay and Cutler 7.5 minute Quadrangles, Washington County, Maine (Number 51 on Index Map).

Table 52.--Analyses of samples in cores located in figure 52a.

Sample Analyses

CC82	Percent dry weight					Percent H_2O as Received	Dry weight	
	C	H	N	S	Ash		Percent Volatile Matter	BTU
102	53.21	4.39	0.81	0.25	1.2	92.7	66.9	8,795
104	54.39	4.67	0.99	0.18	0.9	93.5	66.7	8,916
105	---	---	---	---	0.9	---	---	---
106	57.78	4.80	0.98	0.23	1.7	86.8	62.7	9,688
107	---	---	---	---	2.5	---	---	---
Average commercial quality peat (ash content less than 25%)	55.13	4.62	0.93	0.22	1.4	91.0	65.4	9,133

Figure 52a.--Cores and sample locations.

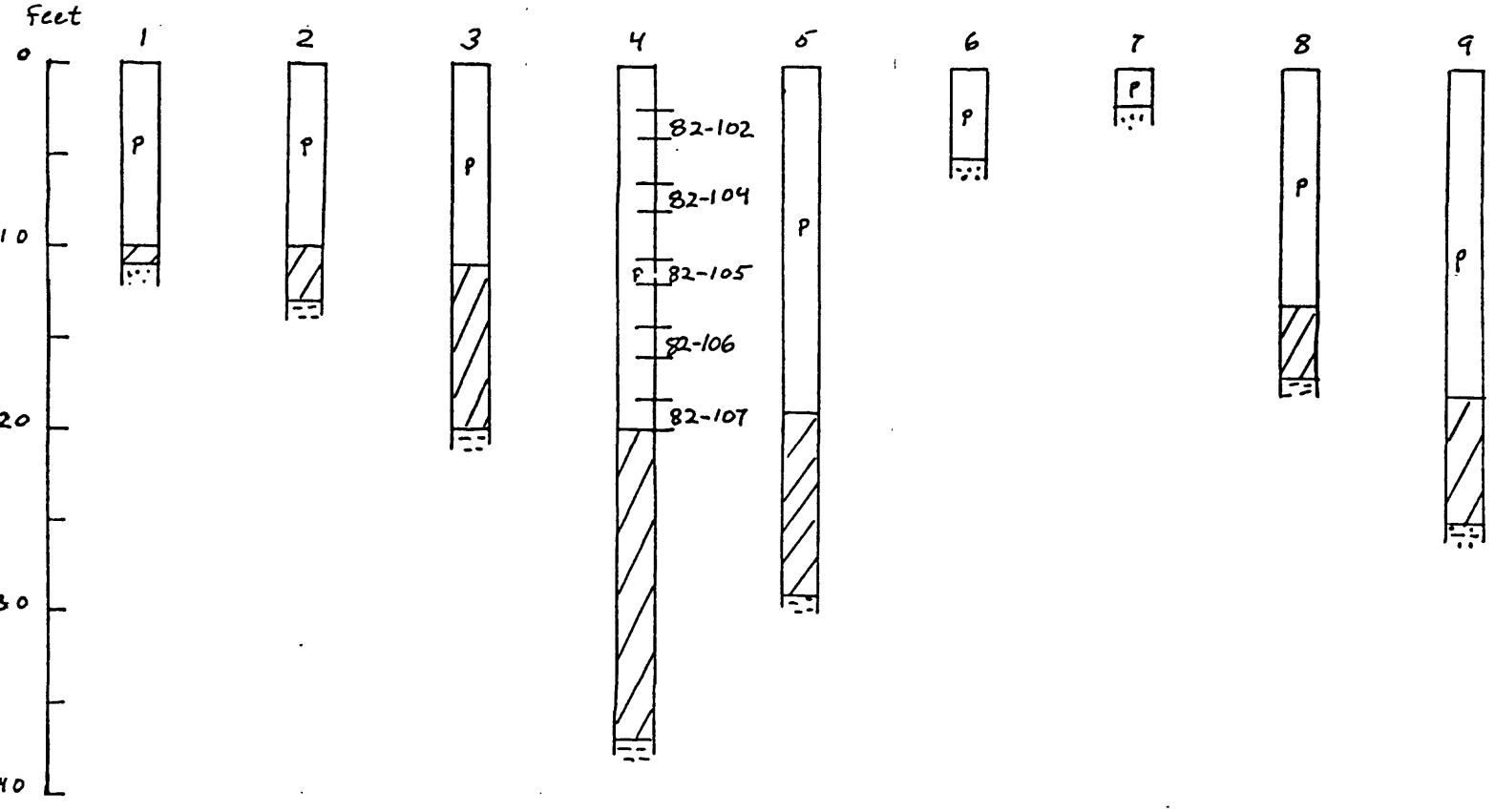


Table 53. Results of the Maine Peat Resource Evaluation Program

FIELD SEASON	NUMBER OF DEPOSITS SURVEYED	RANGE IN SIZE (ACRES)	RANGE IN RESOURCES (SHORT TONS DRY WEIGHT)	TOTAL ACREAGE	TOTAL RESOURCES
1979	57	30 - 2,645	30,000 - 6,953,000	18,268	32,113,000
1980	50	40 - 1,344	50,000 - 3,204,800	14,262	23,908,000
1981	56	27 - 751	37,800 - 2,010,800	13,810	27,736,400
1982	51	40 - 2,080	40,000 - 5,876,000	12,341	23,104,600
1983	21	80 - 3,301	*174,000 - 6,994,000	14,212	*29,205,000
TOTAL	235			72,887	*137,508,400

*Preliminary estimate

Table 54. Results of peat resource surveys conducted in Maine.

COUNTY	NUMBER OF DEPOSITS SURVEYED	ACREAGE	ESTIMATED RESOURCES (SHORT TONS DRY WEIGHT)
Androscoggin	11	1,723*	3,791,000*
Aroostook	59	12,426*	19,299,400*
Cumberland	9	1,152*	926,500*
Franklin	3	1,185	2,414,000
Hancock	15	2,563*	5,374,400*
Kennebec	19	2,470*	5,074,000*
Knox	3	227*	447,000*
Lincoln	4	402	776,200
Oxford	10	1,466*	1,096,800*
Penobscot	57	23,696*	44,419,000*
Piscataquis	32	6,876*	10,194,200*
Sagadahoc	0	---	----
Somerset	23	9,456*	14,851,800*
Waldo	8	2,893	3,835,800
Washington	75	13,409*	26,677,800*
York	11	1,945*	2,923,080*
TOTAL	339	81,889*	142,100,980*

*Data not available for all deposits surveyed

Sources: Bastin and Davis, 1909; Soper and Osborn, 1922; Trefethen and Bradford, 1944; Cameron, 1975; Davis and Anderson, 1980; Cameron and others, 1982; Cameron and Mullen, 1983; Cameron, in preparation.