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ASSESSMENT OF THE PEAT RESOURCES OF FLORIDA,
WITH A DETAILED SURVEY OF THE NORTHERN EVERGLADES

By
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Larry Q. Hood
R. W. Goode, III
Robert K. Sawyer
Donald F. McNeill

1982

Work Performed Under Contract No. FG18-81FE05114

University of Florida
Tallahassee, Florida

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Center for Environmental and Natural Resources
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STATE OF FLORIDA
Governor's Energy Office
Tallahassee

1982

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ABSTRACT

Presently available data, including previous publications, modern soil surveys, and detailed coring in the Northern Everglades for this project have been used to update peat resources data. Based on the results of this project, it is now estimated that Florida could, if no other constraints existed, produce 606 million tons of moisture-free fuel-grade peat, which would yield approximately 10.0×10^{15} BTU of energy. These estimates are much lower than previously published projections for the state.

The principal effort of this survey was in the largest peat region of the state, the Northern Everglades of Palm Beach and adjacent counties, where more than 800 core holes were drilled. Based on these core holes and several thousand individual analyses of samples, the Northern Everglades is now estimated to contain 181 million tons of moisture-free peat, with a potential yield of 2.98×10^{15} BTU. Again, these values are considerably less than previously published estimates, probably due to bacterial oxidation and other forms of drainage-induced subsidence in the agricultural areas.

The present fuel-peat resources of the Northern Everglades occur in 19 separate deposits. Of these, the deposits in the Port Mayaca, Bryant, Six Mile Bend, and Loxahatchee Quadrangles have the best potential of being harvested for fuel purposes. These lands are privately owned and used for sugar cane and other crops, and their

conversion to peat harvesting seems unlikely; however, that decision is for the individual property owners to make. It seems even less likely that the extensive peat deposits within the Loxahatchee National Wildlife Refuge will be available for fuel use, barring a dire national emergency.

ABBREVIATIONS AND SYMBOLS

ac	acre
BTU	British thermal unit
BTU/lb	BTU energy yield per pound of moisture-free peat
cc	cubic centimeter
DOE	U.S. Department of Energy
ft	foot
g/cc	grams per cubic centimeter
GRI	Gas Research Institute
IFAS	Institute of Food and Agricultural Sciences, University of Florida
LNWR	Loxahatchee National Wildlife Refuge
mm	millimeter
Quad	USGS topographic quadrangle map
quad	1×10^{15} BTU, a unit of energy
SCS	Soil Conservation Service
sq.mi.	square mile
tons/AF	short tons per acre foot
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
UF	University of Florida
UTM	Universal Transverse Mercator system of designating locations; see Appendix 7 for explanation
%	Percent; parts per hundred
>	Greater than
<	Less than

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I. INTRODUCTION

Overview of the DOE Peat Development Program

The Peat Development Program of the U.S. Department of Energy (DOE) was conceived in 1979 as part of the national effort to evaluate the potential of non-petroleum alternate energy sources. In partnership with the Gas Research Institute (GRI), the program was broadly based and incorporated most of the elements necessary to assess the technological viability of peat as a commercial energy source. Four major phases were included in the program:

- 1 - Assessment of the peat resources of the United States.
- 2 - Development of harvesting and dewatering technology.
- 3 - Development of technology for conversion of peat to synthetic natural gas, including pilot plant studies.
- 4 - Consideration of the environmental and socio-economic effects of peat utilization.

Originally, the end-usage was directed toward production of high-BTU gas, but that goal was later generalized to include direct-burning and other energy-related applications.

The Florida Peat Resource Assessment Project was an integral part of the DOE/GRI Peat Development Program. It was funded by the DOE/GRI through a grant to the Florida Governor's Energy Office. That office then subcontracted with the University of Florida's Institute of Food and Agricultural Sciences (IFAS), through its Center for Environmental and Natural Resources, with the actual survey being performed in the Department of Geology. The Department of Soils also cooperated on some phases of the study.

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II. DEFINITIONS, FORMATION, RESOURCE ESTIMATES, AND USES OF FLORIDA PEAT.

Definitions of Peat and Related Terms

Organic soil (Organic sediment) encompasses the terms peat and muck and includes all soils containing in excess of 25 percent organic matter in the dry state. This is the most general term for the organic-rich soils of the Northern Everglades. In this report "organic soil" and "organic sediment" are used interchangeably as synonymous terms.

Muck is an organic soil consisting of 25 to 75 percent organic matter in the dry state.

Peat is an organic soil consisting of greater than 75 percent organic matter in the dry state.

"Moisture-free" peat is peat that has been heated to 110°C for at least 12 hours, as described in Appendix 7. All resource calculations in this report are based on moisture-free peat.

"Air-dried" peat, as the term is used by Davis (1946) and elsewhere, refers to peat that has been dried by exposure to the atmosphere, without artificial heating. The moisture content is unknown and variable, probably near 35 to 50 percent by weight.

Fuel-grade peat follows the definition of peat as described above, with the added condition that the deposit must be at least 4 feet thick, with a surface area not less than 80 contiguous acres per square mile, and yield not less than 8000 BTU per moisture-free pound.

Fiber content as used in this study, refers to a megascopic estimation in the field of the percent fiber included in the organic soil sample. This estimation is necessarily qualitative and is used to

divide peat into "sapric" (0-33 percent fibers), "hemic" (34-67 percent fibers), and "fibric" (68-100 percent fibers) varieties.

Formation of Peat

Peat is a natural deposit of plant remains which has been protected from complete decomposition by submersion in oxygen-depleted waters such as occur in swamps and bogs. In such waters, the dissolved oxygen saturation approaches zero, aerobic bacteria are inhibited, and bacterial oxidation of the plant remains is minimized. Decomposition is further inhibited by the build-up of partial-decay products such as methane, alcohol, hydrogen sulfide, and organic acids (Moore and Bellamy, 1974).

For peat to accumulate into a significant deposit, the rate of addition of new plant debris must exceed its rate of decomposition. In Florida, this condition is most often met in the solution-generated depressions common through much of the peninsula. These depressions are in all stages of filling, some are open lakes, and others form extensive "prairies" and swamps (Fig. 1). In some parts of the world, as the peat forming process becomes highly advanced, drainage is impeded to such an extent that organic materials continue to accumulate above the level of the lands around the bog, a process called paludification (Fig. 2). The resultant accumulation is sometimes termed a "raised-bog."

Presumably, under continued humid conditions, in a few thousand years many Florida lakes would become peat bogs or prairies. In contrast, a change to arid conditions would allow air to enter the soil, and aerobic bacterial would flourish and oxidize the peat. As the peat

Figure 1. Lakefill process of peat formation (after Hammond, 1975, in Severson et al, 1980).

Figure 2. Paludification process of peat formation (after Hammond, 1975, in Severson et al, 1980).

was destroyed, the bedrock depressions would be exposed and once again become potential lakes.

The Northern Everglades in Palm Beach County is slightly different from most of the Florida deposits in that it is not in a completely enclosed basin with interior drainage. Rather, it is in a shallow, elongate channel in the limestone bedrock ("Loxahatchee Channel," Fig.3), through which fresh water from the Kissimmee River-Lake Okeechobee basin made its way, prior to canal dredging, very slowly to the sea. During its very slow passage through the labyrinthic maze of vegetation in the Everglades, the flow became depleted of oxygen as that element was consumed in the partial decay of plant remains. In general, the deeper sloughs gradually became filled, first with fine organic detritus from the surrounding marshes ("sapropel"), then with remains of aquatic vegetation such as the white water lily ("Loxahatchee Peat"). As the water continued to shallow, the vegetation became transitional between the aquatic and marsh types, forming a transitional sediment ("Transition Peat"), and finally, as the sawgrass marsh encroached over the surface, the most widespread peat type developed ("Everglades Peat"). The result was a peat deposit covering hundreds of square miles, with an irregular base dictated by solution features in the limestone bedrock, and with a nearly flat upper surface.

Artificial drainage by canals, starting in about 1906, has reversed the peat accumulation process in the Northern Everglades by allowing air to enter the peat. The resulting oxidation by bacteria has subsequently allowed the rate of decomposition to exceed the rate of accumulation, and the level of the surface has declined at an average rate exceeding one-inch per year, as will be discussed in a later section of this

Figure 3. Approximate elevation of the rock surface under the organic soils of the Everglades from 1948 Soil Conservation Service map (from Brooks, 1974).

report. By 1981, more than half of the peat reported by Davis in 1946 evidently had been lost from the Northern Everglades deposit, and the loss will probably continue until all of the drained peat has been destroyed.

Peat deposits generally occur where the climate favors a surplus in the water budget, a condition which can occur in either cold or warm climates. However, accumulation of peat is more common in cold climates because the rate of decomposition is slower. For this reason, peat deposits tend to occur in relatively cold moist places, such as Ireland and the Falkland Islands; thus, the Florida Everglades deposit is atypical in its climatic setting. However, in its pre-drainage state, the Everglades met the governing criteria for accumulation: excess rainfall, abundant vegetation, and a shallow basin with very sluggish drainage in which the water became oxygen-depleted so that organic remains could be preserved.

Peat Resources of the World

The following summaries are quoted from the U.S. Department of Energy's Peat Prospectus (Kopstein, 1979) and represented the status of knowledge as of that date.

Foreign Resources As described by Kopstein(1979):

Significant reserve of peat are found in Europe and North America. These two areas of the world account for over 95 percent of the estimated worldwide peat resources. Surveys of peat resources throughout the world have been limited and quite variable. Differences between countries in the methods used for reporting their peat reserves, e.g., the Soviet Union which only reports exploitable reserves and countries which have made gross estimates on the extent of muskegs and

swamps, are a major factor in this variation. European countries that are utilizing peat for agricultural and/or energy purposes have fairly accurate resource estimates. It is estimated that the Soviet Union has approximately 60 percent of the world's exploitable reserves of peat. At the present time, the United States is ranked second in peat reserves. Canadian reserves have not been surveyed. These reserves (excluding arctic and permafrost areas) may be approximately equal to those of the United States.

As shown in Table 1, the northern European nations of Finland, Sweden, Poland, East and West Germany, together with Ireland and Great Britain, have large resources of peat. Approximately one third of the total area of Finland is considered peatland. Sweden's total peatland is estimated at 14.5 percent of that country's total area. Other European countries have as much as 5 percent of their area comprised of peatlands. Much of this land, however, is no longer native and is fragmented with agricultural, forest, and industrial development.

Some countries have large deposits of peat that do not substantially add to the total world reserves. Nonetheless, they are significant to those individual countries and can be considered potentially valuable for energy (for instance, New Zealand has about 400,000 acres of peatlands). South America, Argentina, Uruguay, Brazil, and Paraguay have sizeable reserves. Other large, but unsurveyed, peat deposits are in the tropical areas of Africa, Indonesia, and Malaysia.

Table 1 - World Peat Resources

Country	Acres (Millions)
Soviet Union	228.0
United States*	52.6
Finland	35.6
Canada**	34.0
East & West Germany	13.1
Sweden	12.7
Poland	8.6
Ireland	7.3
Great Britain	5.8
Indonesia	3.3
Norway	2.6
All Others	<u>5.2</u>
TOTAL	408.8

*Estimate includes non-permafrost peatlands of Alaska.

**Estimate does not include Arctic Canada peatlands.

Domestic Resources According to Kopstein(1979):

Peatlands are distributed throughout the United States and are estimated to cover 52.6 million acres of land (Punwani and Rader, 1977). As shown in Table 2 and Figure 4, the United States peat resource is estimated to be 120.3 billion tons if it were dried to 35 percent moisture. (Fuel peat is not differentiated from sphagnum peat in this estimate.) It is assumed that the deposits average seven feet in depth and have a bulk density of 15 pounds per cubic foot (DOE). This may not be a reasonable assumption, i.e., many locations have depths in excess of twenty feet. Using a nominal heating value for peat of 6000 BTU per pound (at 35 percent moisture), the total potential energy available from known resources of peat is 1443 quads (10^{15} BTU). This estimate of the peat reserve is not as precise as other fuel reserve estimates since less than one percent of peatlands have been surveyed in detail and the assumptions concerning depths may not be acceptable. The area of the peat deposits can be mapped fairly accurately. The quality and depth of the deposits must be surveyed through normal mineral resource practices.

The majority of the domestic peat resources is located within three geographical regions--Atlantic Coastal, North Central, and Alaska. There are also substantial deposits of peat in New England, especially in Maine. By far the largest domestic resource of peat, as shown in Table 2, is found within the state of Alaska. Excluding permafrost areas, Alaska has 51 percent of the nation's peat. Peat within the permafrost regions is not included in the peat reserves since there are overwhelming problems associated with its extraction.

Within the contiguous United States, the North Central region--Minnesota, Michigan and Wisconsin--contributes approximately 14.5 million acres of peatlands, which is the majority of peatlands outside Alaska (Minnesota Department of Natural Resources, 1978). Of these, Minnesota has the largest estimated peat reserve (7.2 million acres of peatland with a total of 16.4 billion tons according to the current estimates) (Fox, 1977).

The Atlantic Coastal region extends south from New Jersey to Florida. The large wetlands of Florida, including the Everglades, are estimated to contain the fourth largest reserve of peat in the United States. Similarly, large deposits have been located in isolated coastal areas in Georgia, North Carolina, South Carolina, and Virginia.

Table 2 - United States Peat Resources and Potential Energy Estimated
by Kopstein (1979) Based on Data Available at That Time.

State	Acres (Millions)	Quantity (Billions Tons)	Potential Energy (10^{15} Btu)
Alaska	27.0	61.7	741
Minnesota	7.2	16.5	198
Michigan	4.5	10.3	123
Florida	3.0	6.9	82
Wisconsin	2.8	6.4	77
Louisiana	1.8	4.1	49
North Carolina	1.2	2.7	33
Maine	0.77	1.8	21
New York	0.65	1.5	18
All Others	3.66	8.4	101
TOTAL	52.58	120.3	1443

■ PEATLANDS

Figure 4 - Peatlands of the United States (Kopstein, 1979)

The remaining deposits of peat are scattered throughout the country, with potentially exploitable reserves located in Louisiana, Indiana, Massachusetts, and Hawaii.

As will be mentioned further in the next section of this report, concerned with Florida resources, the quantities of fuel-peat and the energy yield listed for Florida in Table 2 are evidently 8 to 11 times too high. Similar discrepancies have been reported verbally for other states, and the totals listed for the United States evidently will be in need of significant revision when all the surveys are completed.

Florida Resources

The primary purpose of this survey was to estimate the fuel-grade peat resources of Florida. Unfortunately, because a curtailment of Federal funds for fossil-energy research occurred while the project was in process, only the largest deposit, the Northern Everglades, could be surveyed. However, by utilizing a combination of Davis' (1946) publication, soil survey bulletins, and the data from the present survey, the locations of prospective fuel-peat areas were outlined for most of the counties, and tonnages were calculated from the available information.

Figure 5 is an updated map of prospective fuel-peat areas in the State of Florida, and Table 3 lists the resource data for each county. Counties without an updated modern soil survey or other sources of information could not be included, and for most of the counties that are included the data should be treated as order-of-magnitude approximations. Even the data for Palm Beach County and vicinity, although based on over 800 cores, are subject to revision with further work because the sampling density is less than one core per square mile.

Table 3 - Summary of Fuel-Grade Peat Resources in Florida (not including some counties without a recent soil survey or other available information).

County	Area of Fuel-Grade Peat (Acres)	Acre Feet of Fuel- Grade Peat	Million Tons of Moisture Free Peat	Energy Yield ¹⁵ in BTU X 10 ¹⁵	Date of Soil Survey, or Other Reference
Northern Everglades (Palm Beach and parts of Broward and Hendry Co.)	174,856 or	1,044,050 or	181 or	2.98 or	This survey, incl. an estimate for peat in the N. part of the Loxahatchee National Wildlife Refuge.
"	157,723	924,119	163	2.68	This survey, not incl. an estimate for the N. part of the LNWR.
Volusia	91,780	367,120	74	1.2	1980
Dade	81,127	436,072	52	0.9	1958, 1974; and Davis (1946)
Indian River	50,000	225,000	55	0.9	1974; and Davis (1946)
Highlands	35,000	175,000	34	0.6	Davis (1946)
Lake	44,166	276,144	32	0.5	1974; and Davis (1946)
Brevard	37,125	163,885	33	0.5	1974
Leon	31,225	124,900	25	0.4	1979; and Davis (1946)
Osceola	22,049	110,245	22	0.4	1975, 1979; and Davis (1946)

Table 3 Continued.

County	Area of Fuel-Grade Peat (Acres)	Acre Feet of Fuel- Grade Peat	Million Tons of Moisture- Free Peat	Energy Yield ¹⁵ in BTU X 10 ¹⁵	Date of Soil Survey, or Other Reference
Polk	15,000	75,000	15	0.3	Davis (1946)
Sumter	18,470	73,800	15	0.3	1974 and Davis (1946)
Citrus	16,840	67,360	14	0.2	1974
Orange	11,050	53,950	11	0.2	1960, 1973 and Davis (1946)
Santa Rosa	12,067	47,024	9.5	0.2	Davis (1946)
Seminole	7,542	33,756	7	0.1	1966, and Davis (1946)
St. Johns	5,824	23,296	5	0.1	1920
Jackson	4,036	22,037	4	0.1	1979, and Davis (1946)
Hillsborough	4,500	18,000	4	0.1	Davis (1946)
Putnam	4,000	12,878	3	0.1	Davis (1946)
Hernando	3,510	14,040	3	0.1	1977, and Davis (1946)
Okaloosa	2,600	12,816	3	0.1	Davis (1946)
St. Lucie	1,984	8,432	2	0.1	1980

Table 3 Continued.

County	Area of Fuel-Grade Peat (Acres)	Acre Feet of Fuel- Grade Peat	Million Tons of Moisture- Free Peat	Energy Yield ¹⁵ in BTU X 10 ¹⁵	Date of Soil Survey, or Other Reference
Alachua	1,790	7,160	1	< 0.1	1973, and Davis (1946)
Martin	858	4,290	1	< 0.1	1979
Marion	289	1,445	< 1	< 0.1	1979
TOTALS	677,688	3,397,700	606	10.0	Includes estimate of unsampled northern part of Lox. Nat. Wildlife Refuge.
	or	or	or	or	
	660,555	3,277,769	588	9.7	Does not include unsampled northern part of Lox. Nat. Wildlife Refuge.

The methodology for estimating the resources in the Palm Beach County deposits is described in a later section.

In Table 4, this project's estimate of the fuel-grade peat resources in Florida is compared with earlier estimates by Davis (1946) and the Soil Conservation Service Conservation Needs Inventory, as quoted by Kopstein (1979). The 1981 estimate of tonnage and energy yield is less than one-half of Davis' (1946) estimate. This difference is probably due largely to subsidence (including actual loss through bacterial oxidation) in the Everglades Agricultural Area, as discussed elsewhere in this report. There are also differences in the moisture content, types of peat included, and perhaps other factors used for measurement, as indicated in Table 4.

Comparison of the 1981 data with the Soil Conservation Service (SCS) estimate indicates a gross discrepancy, in which the SCS estimate is evidently 11 times the 1981 tonnage found and 8 times the energy yield. Even the acreage reported by the SCS is more than 4 times that which was measured in 1981. The reasons for these large differences could not be determined, because the methods used by the SCS were not published with the data in Kopstein (1979), and the basic SCS publication was not obtainable. Verbal reports from some other states at the April 1982 DOE Peat Contractors Conference indicated that they have encountered similar difficulties in reconciling the SCS estimates with those from the recent DOE-sponsored resource surveys. In any event, it is believed that our 1981 estimate is more actualistic, and that the maximum fuel-peat that could be produced from Florida, in the absence of any constraints, is approximately 606 million tons (moisture-free), which would yield on the order of 10.0×10^{15} BTU.

Table 4 - Comparisons of Estimates of Peat Resources in Florida.

FLORIDA PEAT RESOURCES						
<u>December 1981</u>						
		<u>Area (Ac.)</u>	<u>Acre Ft.</u>	<u>Tons x 10⁶</u>	<u>BTU x 10¹⁵</u>	<u>Remarks</u>
1981	This Survey	677,688*	3,397,700*	606*	10.0*	Fuel-grade peat only.
		660,555**	3,277,769**	588** (moisture-free)	9.7**	Detailed coring in Palm Beach Co., soil surveys elsewhere.
1946	Fla. Geological Survey, Bull. 30 (Davis, 1946)	2,240,000		1,750 (air-dry)	21***	All peats, but "not including areas used agriculture."
1979	Soil Conservation Service (quoted by Kopstein, 1979)	3,000,000		6,900	82	All peats (?). Based on Soil Conservation Service <u>Conservation Needs</u> <u>Inventory</u> .

*Includes estimates of peat in the large unsampled northern half of the Loxahatchee National Wildlife Refuge, for which a sampling permit was denied. These values are considered to be the best estimates of the total resource.

**Values do not include the unsampled northern half of the Loxahatchee National Wildlife Refuge.

***Calculated from data in Davis (1946).

Assumptions:

(1) Density of 201.9 tons/AF assumed unless analysis indicated otherwise. In Palm Beach County actual density values were used, as discussed in the text.

(2) Moisture-free peat yields 8227 BTU/lb, based on average values of Northern Everglades peats. Air dry peat yields 6000 BTU/lb.

Production and Use of Florida Peat

Florida peat has been produced commercially for at least 65 years. Davis (1946), quoting the U. S. Bureau of Mines Minerals Yearbook for 1945, stated that Florida ranked "highest" in the U. S. in production for that year. Of the sales reported, 64% was for soil improvement, 24% for use in mixed fertilizers, and 12% for other uses, including fuel (noted by Davis as having been used for fuel for the first time in recent years), litter for barns and poultry yards, and as packing for bulbs, fruits, and fragile articles.

In 1972, the Minerals Yearbook (Stowasser and Oglesby, 1972) reported that the major uses were: 60% for packing flowers, plants, and shrubs; 20% for general soil improvement; and 20% for the culture of earthworms and as an ingredient of potting soils. The same uses still prevail, as indicated in the 1977, 1978, and 1979 Minerals Yearbook (Boyle and Henry, 1981), except that its use in earthworm culture was not mentioned. It is interesting that peat was listed in the Minerals Yearbook as a "mineral fuel" until 1977, since then it has been listed with the "nonfuel mineral commodities."

Commercial production of peat in Florida has been persistent, if not extensive. Table 5 summarizes production data for the recent past. It is apparent that both the tonnage and dollar value of peat have increased in almost every year, and that Florida is among the top producers in the country, with 153,000 tons worth \$2,190,000 produced in the latest reporting year. The composition of the commercial peat in the only recent year for which it was mentioned was 34% moss, 14% reed-sedge, and 52% humus peat (Sweeney and Hendry, 1979).

Of course, the agriculture industry is by far the largest user of peat, as peat and muck are the predominant soil types in the enormous Everglades Agricultural Area near Lake Okeechobee, as well as the large farming areas near lakes Istokpoga and Apopka. Although agricultural usage of the soil is not usually thought of as consumptive, the drainage-induced oxidation of the peaty soils used for sugar cane production is evidently consuming peat at a high rate. For example, during the 35 years between the 1946 estimates of Davis and those of the present 1981 survey, the tonnage of peat in the Palm Beach-Hendry County area has been reduced on the order of 741 million tons; that figure amounts to peat consumption on the order of magnitude of 21 million tons per year from those two counties. That rate is 137 times the total 1979 production in Florida for all other use (Table 5).

Table 5 - Summary of Data Related to the Production of Peat in Florida.

Year	No. of Productive Counties	No. of Commercial Producers	Tons Produced	Total Value of Production	Value Per Ton	Ranking of Fla. in U.S. Production	Remarks
1917-1924			20,571*	\$ 250,820*	\$12.19		Davis (1946)
1925-1929			20,073*	185,757*	9.25		"
1930-1940			32,171*	287,528*	8.94		"
1941			13,450				"
1945			29,800			1st.	"
1968	7	11	41,213	277,000	6.72		Sweeney and Maxwell (1969)
1969	7	11	55,165	359,000	6.49		"
1971	6	8	57,000	412,000	7.23	3rd.	Stowasser and Oglesby (1974)
1972	6	8	45,000	362,000	8.04	3rd.	"
1973	5	9	43,800	384,000	8.77		Stowasser and Hendry (1976)
1974	5	9	67,000	616,000	9.15	4th.	Sweeney and Hendry (1977)
1975	6		100,895	1,037,000	10.28	4th.	Sweeney and Hendry (1979)
1977	6	9	125,000	1,396,000	11.16	2nd.	Boyle and Hendry (1981)
1978	6	9	158,000	2,246,000	14.22	2nd.	"
1979	6	9	153,000	2,190,000	14.31	2nd.	"

Notes: * = totals for entire period. Blanks indicate that no data were reported.

III. THE NORTHERN EVERGLADES: GENERAL DESCRIPTION, SUBSIDENCE, PLANT COMMUNITIES, AND TYPES OF ORGANIC SEDIMENTS.

Past and Present Conditions in the Northern Everglades

Pre-Drainage Conditions

Early accounts of the Everglades as it existed prior to drainage usually included phrases similar to Buckingham Smith's 1847 notes. He wrote:

...imagine a vast lake of fresh water, extending in every direction, from shore to shore, beyond the reach of human vision; ordinarily unruffled by a ripple on its surface; studded with thousands of islands, of various sizes . . . lilies and other aquatic flowers, of every variety and hue, are to be seen on every side, in pleasant contrast with the pale green of the sawgrass . . . the profound and wild solitude of the place; the silence that pervades it, unless broken by the splashing of a paddle of the canoe or light batteau . . . except for the occasional sight of an eagle or a bittern, startled by the strange invaders of their privacy, or a view of the fishes in the shallow water, gliding swift from your boat, as it goes near them, your eye would not rest on a living thing.

In this vast marshland, plant remains accumulated in large quantity, protected from decay by the anerobic nature of the enclosing water. Organic deposits became widespread, covering the limestone bedrock with as much as 11 feet of peat (Davis, 1946).

Present Conditions

With the exception of the water conservation areas (including the Loxahatchee National Wildlife Refuge), the present Northern Everglades region is vastly different from Smith's 1847 observations. Electric power lines are nearly always in sight, and crop dusters are more common than eagles. In an effort to control flooding in South Florida and to

claim the Everglades for agricultural purposes, major arterial canals were constructed in the 1900's to drain and divert water from Lake Okeechobee and the Everglades. At present, canals, ditches, dams, and pumping stations completely control water flow. Most of the acreage is now planted in sugar cane or vegetable crops, the cultivation of which has significantly reduced the amount of peaty soils. This reduction is primarily related to the general subsidence which has affected the area for the past seventy years, as explained below.

Subsidence and its Effect on Peat Resources

According to Stephens (1974):

...about 1906, canals dug from Lake Okeechobee to the sea upset the anaerobic conditions and disturbed the water balance so that aerobic conditions prevailed. Thus, peat accumulation was reversed and subsidence began. When drainage was intensified, the original hydrology was greatly altered. Presently, an area of arable organic soils is drained for agricultural use, whereas the remainder is used for water conservation. Subsidence is continuing in the agricultural area, but has been ameliorated or halted in the conservation area.

While subsidence is not the primary concern of this survey, it has affected the peat resources so greatly that the process and its consequences must be considered. As the term is used in the Northern Everglades, "subsidence" includes the related processes of dessication, consolidation by loss of the buoyant force of groundwater, compaction by tillage, wind erosion, burning, and biochemical oxidation (Stephens and Johnson, 1951). In evaluating the relative importance of these processes, Stephens (1974) concluded that (emphasis added):

...initial subsidence is due to compaction and settlement, and fire causes sporadic losses in wildlands. In the warm subtropics of Florida, however, the greatest long-term losses are caused by biochemical oxidation. A continuous study of subsidence profile lines shows that Everglades organic soils

have subsided at rates ranging from 0.5 to 3 inches per year. Both subsidence-line and area-wide surveys show that subsidence rates have not declined for three decades. Controlled water-table plots and laboratory studies demonstrate that warm temperatures, low water tables, high pH, and high organic content accelerate biochemical oxidation, which has been responsible for approximately 55 to 75 percent of the total soil loss in the upper Everglades agricultural area.

It should be noted, therefore, that subsidence has resulted in a net destruction of peat, not just in its conversion to a more compact form.

Collectively, subsidence processes have resulted in lowering the elevation of the soil surface by large amounts. For example, the famous concrete monument at the University of Florida's Belle Glade Agricultural Research and Education Center was set into bedrock in 1924, with the top of the post flush with the ground surface (Figure 6). Subsidence of 4.5 feet had occurred by 1974.

The most active loss of peat occurred shortly after initial gravity drainage began in the early 1900's (Figure 7). However, the loss continued to occur with biological oxidation being the chief cause. By 1973, surface elevations throughout the area had declined on the order of 6 to 8.5 feet (Figure 8).¹

Evidently, subsidence has resulted in the loss of more than half the peat resources of the Palm Beach and Hendry counties area. This is suggested by comparing the resource tonnages and acreages reported in 1946 by Davis with those of the present survey, as discussed in the section on Florida's peat resources.

¹More detailed accounts of the subsidence problem can be found in Dachnowski, 1924; Stephens and Johnson, 1951; Stephens, 1956, 1974; Volk, 1972; and Shih et al., 1978, 1979.

Figure 6. The concrete monument at the Belle Glade Agricultural Research and Education Center, showing subsidence losses between 1924 and 1974 (from Stephens, 1974). In 1924, the ground surface was at the top of the center post.

Figure 7. Sequence of observed subsidence of organic soils in the Florida Everglades after initial drainage, circa 1912 (from Stephens, 1974).

Figure 8. Cross-sectional view through the northern Everglades showing original surface elevation and the elevation in 1940 as indicated by topographic surveys. Estimated ground elevations for the year 1970 and 2000 are also shown (from Stephens and Johnson, 1951).

Peat-Forming Plant Communities of the Northern Everglades

Prior to drainage, four major peat-forming plant communities occurred within the Northern Everglades. These were the tree island, sawgrass marsh, wet prairie, and aquatic slough communities. Differences in water depth or elevation of less than a foot can determine the composition of the plant community, and subcommunities often form transition zones from one community to the next (Loveless, 1959; Goodrick, 1974).

Tree islands occupy the highest ground and undergo only occasional inundation. Dominant vegetation ranges from shrubs, such as wax myrtle and dahoon holly, to trees, such as redbay and willow (Loveless, 1959). Tree islands originated as a result of large buoyant masses of peat breaking loose from beneath sloughs, and floating with the current until they became anchored to nearby higher grounds (Loveless, 1959; Gleason et al., 1974).

Sawgrass marshes are wetter than tree islands. They may experience seasonal droughts, but are covered by at least a few inches of standing water during the wet season. The dominant plant is sawgrass (Cladium jamaicensis), a sedge. This plant typically composes 65 to 70% of the community (Loveless, 1959). Accessory plants include flag, maidencane, pickerel weed, and cattails. Sawgrass marsh forms the most extensive plant community in the Northern Everglades.

Wet prairies are even wetter than sawgrass marshes, and water depths may reach two feet. Important plants include beak rushes, spike rushes, water panicum, and certain water lilies. The wet prairies often form a transition zone between sawgrass marshes and aquatic

sloughs and may have once been quite extensive in the Northern Everglades (Loveless, 1959; Goodrick, 1974).

The aquatic slough community occupies the topographically lowest sites and is wet throughout the year. Water depths exceeding 2.5 feet are not uncommon (Goodrick, 1974). Principal plants include the white water lily (Nymphaea odorata), floating heart, spatterdock, and bladderworts.

Types of Peat and Related Organic Soils in the Northern Everglades

Types of Peat

Typically the four major plant communities described above each produce a different type of peat. Locally-significant names have been applied to each type, as listed below in order of increasing water depth:

<u>Plant Community</u>	<u>Peat Type</u>
Tree island	Gandy Peat
Sawgrass marsh	Everglades Peat
Wet prairies	Transition Peat
Aquatic slough	Loxahatchee Peat

The areal distribution of the major peat types (except for Transition Peat) is shown in Figure 9, and their subsurface distribution is delineated in the cross-sections of Appendix 8 (from Wieland, 1981, with modifications). The various peat types are described below:

Gandy Peat is a highly variable woody material occurring under some tree islands. Gandy Peat is very fibrous, containing over 50% fibers intermixed with woody fragments (Davis, 1946). Color is usually medium to reddish brown. Gandy Peat occurs on, and in lenses within,

Figure 9. Map of surface sediments covering South Florida (adapted from soil map of Everglades Drainage District, USDA, Soil Conservation Service, 1944, in Gleason et al., 1974).

Loxahatchee and Everglades Peat; it is more commonly associated with Loxahatchee Peat. Although Gandy Peat is generally of high quality, it is limited in areal extent and does not form a significant part of the peat resources of the Northern Everglades.

Everglades Peat is derived mainly from sawgrass, and microscopic examination shows numerous roots and rootlets from that plant (Cohen and Spackman, 1974). Megascopically and typically, it consists of vertically oriented coarse fibers (1 to 3 mm in diameter) in a matrix of randomly oriented fine to colloidal organic debris (Davis, 1946). Visible fibers make up 10 to 50% of this peat. Matrix material consists mainly of unattached cells, plant fragments, or ash and charcoal (Cohen and Spackman, 1974). According to Gleason, et al. (1974):

...the term Everglades Peat is a genetic term and refers to sediments formed primarily from degraded sawgrass though other plant parts may also be present. They are brown to black in color, finely fibrous to granular, and low in ash. These sediments are the most abundant of organic sediments in the Everglades marsh. The black color of these peats has been attributed to an abundance of fusinite or charcoaled material developed from fires which swept through the Everglades in the geologic past.

Everglades Peat is the most widespread type on the surface of the Northern Everglades (Figure 9), and in the subsurface it is the major type except in the Loxahatchee National Wildlife Refuge (Figure 8-2 to 8-6 of Appendix 8). It contributes significantly to the peat resources.

Transition Peat is a new type, not reported prior to this survey. It is believed to correspond to the wet prairie plant community.

Weiland (1981) described it as follows:

...in some areas of the Northern Everglades a medium to dark brown spongy, hemic peat was found. This peat contains coarse fibers similar to those found in Everglades Peat in a matrix of fine fibers characteristic of Loxahatchee Peat. This peat is often found as a layer separating Loxahatchee and Everglades Peats. A large area of this peat has been found in

western Palm Beach County in the Lake Harbor and Lake Harbor S.E. topographic quadrangles. This type of peat has been termed Transition Peat.

The distribution of Transition Peat is not shown in Figure 9. However, as is indicated on Figures 8-3 to 8-6, it is common in the subsurface. Therefore, Transition Peat contributes significantly to the peat resources of the area.

Loxahatchee Peat forms in aquatic slough environments. The most common plant species noted in microscopic examination is white water lily (Nymphaea odorata) (Cohen and Spackman, 1974). This type of peat is light brown to reddish brown, finely fibrous, spongy to slightly plastic, and may contain an abundance of water lily seeds (Davis, 1946; Gleason et al., 1974). Fiber contents range from 30 to nearly 100%. Matrix material tends to consist of plant cells and fragments (Cohen and Spackman, 1974), although algae may also be present (Gleason et al., 1974). Charcoal is often found in lenses and streaks 1 to 5 mm thick.

Although not as extensive at the surface as Everglades Peat, Loxahatchee Peat forms persistent layers of great extent in the subsurface (Figure 8-2 to 8-6). It is especially abundant in the Loxahatchee National Wildlife Refuge, where the thickest peat occurs.

Types of Related Organic Soils

Related organic soils occur extensively in the Northern Everglades. Although these types contain much inorganic matter, they also contain some interlaminated peat. Surface distribution of the major types is shown on Figure 9, and the subsurface distribution in Figures 8-2 to 8-6 of Appendix 8. Typical relations to various plant communities and geologic factors are described below:

<u>Plant Community</u>	<u>Related Organic Sediment</u>
Custard Apple Swamp	Okeechobee Muck
Elderberry-Willow Swamp	Okeelanta Peaty-Muck
Allochthonous detritus	Sapropel

Okeechobee Muck was described by Allison and Dachnowski-Stokes (1930) as follows:

This series of profiles includes two-layered muck soils that appear in the position of a natural levee along the south and east shores of Lake Okeechobee. It consists in the main of granular muck at the surface to varying depths that have been derived from a native formation of dense black to grayish black, finely divided, to colloidal sedimentary (allochthonous) peat varying in thickness from 6 to 60 inches where the surface material has the greatest depth. This surface layer contains about midway, one or more narrow layers of yellowish-brown laminated, fibrous peat derived from fleshy rootstocks of semi-aquatic vegetation and grades into a lower layer of brown, fibrous, matted, poorly decomposed sawgrass peat ranging in thickness from 6 to 60 or 72 inches.

Wieland (1981) examined Okeechobee Muck at a number of locations near the south shore of Lake Okeechobee and consistently found at least two reddish-brown finely fibrous hemic peat layers. He attributed these layers to two periods of high lake levels in the recent past.

The lack of woody fragments in the muck led Dachnowski-Stokes (1930) to doubt that the custard-apple forest south of Lake Okeechobee was genetically linked to this type of peat, even though the Okeechobee Muck and the custard-apple forest occupied similar areas around the southern shore of the lake.

Okeelanta Peaty-Muck is a dark brown or gray-brown to black, sapric to hemic, massive material. It contains relatively little clay (as compared to other mucks) and large amounts of fine plant detritus (Davis, 1946; Gleason et al., 1974). It is dense and plastic. No woody fragments have been found, although its distribution corresponded with

the elderberry-willow forest south of Lake Okeechobee (Davis, 1946).

Allison and Dachnowski-Stokes (1930) described this organic sediment as follows:

Typically, the Okeelanta series is a three-layered peat profile and is probably the most extensive single group of peat soils to be found in the Upper Everglades. This series borders the Okeechobee Muck to the south and east and represents that area or zone where the plastic layer of brown, fibrous peat derived, for the most part, from the roots and rhizomes of sawgrass. This surface material is porous, loose, light in weight, and varies in depth from 12 to 35 inches, where a layer of dense, blackish, plastic material of sedimentary origin, 4 to 18 inches is encountered. . . .

Muck soils (including both the Okeechobee and Okeelanta) are at present only dominant at the surface along the south and east shores of Lake Okeechobee (Figure 9). However, the cross-sections indicate a different distribution in the past. During the early stages of organic sediment accumulation in the Northern Everglades, sandy muck was common along the eastern edge of the deposit (Figure 8-2 to 8-5) as well as in more limited and scattered places (e.g., core 3 on Figure 8-4). It was later covered by peat, and, in the most recent times, muck began to accumulate near Lake Okeechobee due to wash-over of fine grained clastics from the lake. Sawyer (1982) has examined the inorganic fraction of these peats and mucks near the lake and has shown that the clay mineral suite (palygorskite-sepiolite-chlorite-kaolinite) was derived from erosion of Miocene outcrops along the Lake Wales Ridge and was transported by way of the Kissimmee River-Lake Okeechobee drainage basin, finally to reside in the muck sediments along the rim of the lake.

Sapropel was described by Gleason et al. (1974) as:

...a fine-textured nonfibrous, plastic organic sediment. It varies from yellow to dark brown in color, and, frequently, though not always, contains a relatively high percentage of

ash. Sapropels, which are also called sedimentary peats when the ash content is not predominant, are believed to have an allochthonous origin because they are found in lacustrine situations and contain much resistant detritus (Forsaith, 1917). Sponge spicules, diatoms, sand grains, clay, water lily idioblasts, cutinized epidermis, and pollen are some of the constituents of Sapropel which are usually embedded in a gelatinous or homogeneous matrix.

Sedimentary Sapropel is present in Lake Okeechobee, sediments bordering the south end of the lake, the interior Everglades marsh, and tidal plain. Soupy sapropelic sediment covers portions of the floor of Lake Okeechobee. This particular Sapropel contains significant amounts of sand and sponge spicules.

The Okeechobee Muck and Okeelanta Peaty-Muck contain horizons of Sapropel within their profiles. In these sediments, the Sapropel is high in ash, varying from 20 to 60 percent (Evans and Allison, 1942).

Sapropel's distribution is more limited than the other types, and is not shown on Figure 9 as a dominant surface sediment anywhere in the area. However, in the subsurface it was encountered in the deeper part of the filling of the old Loxahatchee Trough, beneath some of the thickest peat in the Loxahatchee National Wildlife Refuge (Figure 8-6, core 8). It was also encountered in the basal parts of several other cores (Figure 8-4 to 8-7). Evidently it accumulated as part of the initial filling of the bedrock depressions, when they were acting as lakes.

Relations Between Local Names and the DOE Peat Classification

A very general correlation exists between the locally-used soils names, and the DOE classification of the contained peat:

Everglades Peat	- hemic to high sapric
Loxahatchee Peat	- fibric
Okeechobee Muck	- sapric
Okeelanta Peaty-Muck	- sapric
Sapropel	- sapric

IV. DISTRIBUTION, THICKNESS, PHYSICAL, AND CHEMICAL PROPERTIES OF ORGANIC SEDIMENTS OF THE NORTHERN EVERGLADES

Short Description of Field, Laboratory, and Computer Methods

During the six month period from July to December 1981, approximately 800 cores were taken with a MacCauley sampler in the Northern Everglades. The cores were located mostly in Palm Beach County, but adjacent parts of Broward, Hendry, and Martin counties were also sampled (Figure 10); in addition, a few cores were taken in Dade County as listed in Appendices 1 and 2. In general, samples were collected at one-foot vertical intervals to the base of the organic sediment layer, and into the upper part of the inorganic substrate wherever that was possible. Each sample was described briefly in the field and later analyzed in the Sedimentology Laboratory of the University of Florida (UF) for ash, moisture, and bulk density; 75 of the samples were also sent to the DOE Grand Forks Energy Technology Center for proximate, ultimate, and fuel value analyses. Details of the field and laboratory methods used at UF are given in Appendix 7.

All of the thickness, chemical, and physical data generated at UF were stored in computer files at the Northeast Regional Data Center. These files, in conjunction with the Surface II software system (Samson, 1975), were used to generate most of the maps included in this report.

In the sections below, the distributions and characteristics of the organic soils and peats will be described in detail. The most general category, organic soil, will be described first, followed by peat. These terms have been defined above in the INTRODUCTION. Names of various USGS topographic quadrangle sheets will be used to describe some locations; these quad names are shown in Figure 10. Average data

for each core are compiled in Appendix 1, and data for each sample are listed in Appendix 2. All $\pm$ values quoted refer to the 1 standard deviation ranges. The inorganic components within the peat, which constitutes the ash, and the character of the mineral substrate were studied intensively by Sawyer (1982), and his report should be consulted for details. Also, Goode (1982) determined the vertical distribution and geochemical cycle of sulfide in these peats, for which his report should be read.

Distribution of Organic Soils (Organic Sediments)

The gross thickness of organic sediments of all types ranged from zero to 12.0 feet, with a mean of 4.47 (± 2.01) feet. The modal class was 4 feet (Figure 11). Thickest accumulations occur in two areas (Figure 12): (1) along the eastern shore of Lake Okeechobee in the Pahokee and Bryant quads, and (2) in the Loxahatchee National Wildlife Refuge (principally in the Ft. Lauderdale 2NE and 2NW Quads, and the Loxahatchee SE Quad). In both of the above areas there are small patches with more than 10 feet of organic-rich sediments. Between the two thickest areas, and also extending around the south shore of Lake Okeechobee, is an arcuate band exceeding 4 feet. However, most of the remaining agricultural area has less than 4 feet of organic sediments. To the east, the organic area pinches out abruptly against the sand of the Atlantic Coastal Ridge.

Comparison of Figure 12 with Davis' (1946) map (his Fig. 13) indicates that the areas of thick organic soils were more extensive in 1946, and that the farming area contained several feet more of peaty

Figure 11 THICKNESS OF ORGANIC SOILS IN THE NORTHERN EVERGLADES - DECEMBER 1981
Percentage in each class is indicated above the bars.

soil than now exists. This decrease has been caused by the drainage-induced subsidence of the area, as previously discussed.

Distribution of Fuel-Grade Peat

To distinguish the specific areas of fuel-grade peat from within the general area of organic sediments, each of the cores was sampled at one-foot vertical intervals and analyzed for moisture, ash, and bulk density. From the ash values, the approximate BTU/lb energy yield was calculated from Equation (1), which is a standard linear regression equation. This empirical relationship was developed by plotting the ash percentages versus the BTU/lb values for 43 Northern Everglades peat samples, based on analyses by the DOE Grand Forks Energy Technology Center. In the equation, -119.95 is the slope of the regression line, and 10,187 is the intercept with the Y axis, indicating that a peat with no ash would yield 10,187 BTU/lb. The correlation coefficient for the relationship, -0.93, indicates a very high degree of inverse correlation between ash and energy yield.

Eq. (1)

$$\text{BTU/lb} = (-119.95)(\% \text{ ash}) + 10,187 \text{ BTU}$$

In the discussions that follow, the term "peat" is applied only to organic sediments that have less than 25% ash and a potential energy yield of more than 8000 BTU/lb. Provided that these peats are at least 4 feet thick and cover at least 80 contiguous acres per square mile, they may qualify as fuel-grade.

The maximum peat thickness found in the survey was 10.0 feet, and the mean was 2.8 (± 2.1) feet. The modal class was in the 2 foot range, and only 28% of the cores contained 4 feet or more of peat (Figure 13).

Peat accumulations were thickest in the Loxahatchee National Wildlife Refuge, where four cores had 8 to 10 feet, and much of the area contained 6 to 8 feet of peat (Figure 14). The newly drained agricultural area in the Loxahatchee NW Quad, immediately northwest of the Wildlife Refuge, also contained cores with 6 to 8 feet of peat. And the Port Mayaca Quad on the eastern shore of Lake Okeechobee contained a large area with 6 to 8 feet of peat.

Accumulations of 4 to 6 feet of peat were more widespread, occurring in parts of 18 quadrangles. Although they are relatively thin, some of these 4 to 6 foot accumulations are relatively dense and may contain enough tonnages of peat to be significant.

Thus, the Northern Everglades is no longer one large peat bog. Rather, it is composed of a number of relatively thick areas separated by peat that is probably too thin to have commercial value. More detailed maps of each of the quadrangles that contain prospective deposits are included in a later section, along with descriptions of the largest deposits.

In order to evaluate the potential of the various Northern Everglades deposits, thickness is only one of several important interrelated physical parameters to consider; other are: (1) % ash, (2) BTU yield per pound, (3) bulk density, (4) thickness of overburden and (5) areal extent. These parameters will be considered on a general scale for the area before describing the individual deposits.

THICKNESS OF PEAT (FT.)

Figure 13 THICKNESS OF PEAT IN THE NORTHERN EVERGLADES - DECEMBER 1981
Percentage in each class is indicated above the bars.

Percent ash and BTU/lb

These parameters are inversely related and will be considered together. Only those materials meeting the fuel-grade criteria of $< 25\%$ ash and > 8000 BTU/lb will be considered. Within these bounds, based on several thousand samples from 595 cores, the lowest ash recorded was 3.5%; the mean ash value was 16.3% ($\pm 4.2\%$), and the modal class was 19% (Figure 15). The maximum energy yield was 9763 BTU/lb, with a mean of 8227 (± 1506) BTU; 8200 BTU was the modal class (Figure 16).

The most prospective trend from an ash and BTU/lb standpoint (Figures 17 and 18) begins in the southeastern part of the area, and extends northward through the Loxahatchee National Wildlife Refuge (LNWR) into the new agricultural area in the Loxahatchee NW and SW quads. In that trend, ash values are generally less than 15% and, in parts, less than 10%. Consequently, the energy yields generally exceed 8500 BTU/lb. Both the lowest ash (3.5%) and the highest energy value (9763 BTU/lb) occur in a core within this trend (Core 29.2752/05.6620).

Further northwestward, in the Port Mayaca Quad along the shore of Lake Okeechobee, are two smaller areas with relatively low ash and high BTU/lb values. These areas are actually along a continuation of the arcuate prospective trend that was mentioned above.

Bulk density

This is a very important parameter in computing peat tonnages and delineating prospective peat areas, as has been emphasized by Ingram (1981, 1982). Hood (1982) found that in the Northern Everglades bulk density varies as a function of the thickness of the deposit, the type of land use, the moisture content, and the length of time since a given site was drained. Ingram (1981, 1982) had previously reported similar

ASH CONTENT OF PEAT (%)

Figure 15 ASH CONTENT OF PEAT IN THE NORTHERN EVERGLADES - DECEMBER 1981
Percentage in each class is indicated above the bars.

BTU PER POUND OF PEAT (x 100)

Figure 16 BTU PER POUND OF PEAT IN THE NORTHERN EVERGLADES - DECEMBER 1981
Percentage in each class is indicated above the bars.

relationships for North Carolina peats. Although the general relationships are similar for North Carolina and Florida peats, and the densities are of similar magnitude, the values differ enough to cause discrepancies in resource calculations. Thus, bulk densities must be determined for each area of interest and used for resource calculations in that area.

Table 6 indicates the bulk density relationships for the Northern Everglades as a function of land use, thickness of the deposit, and depth within the deposit. For example, in the old agricultural area in an organic soil with a thickness of 6 feet, a sample from the 3-4 foot depth would have a bulk density of approximately 286 tons/acre foot. However, in a water conservation area, in an organic soil with a thickness of 6 feet, a sample from the 3-4 foot depth would have a bulk density of only 117 tons per acre foot. For this reason, 4 feet of peat in the old agricultural area would yield more tons of dry peat than 8 feet in the conservation area.

Therefore, the most accurate assessment of resources requires that a bulk density value be applied to each core sample that reflects the type of land use, soil thickness, and depth within the soil, as was done by Hood (1982) in his preliminary estimates using 68 cores. However, in order to simplify the mapping process and, in particular, to allow the use of all 595 cores, with more than 2000 samples on which densities had been measured, averages based on Hood (1982) were used. These averages, listed in Table 7, were applied to the acre-foot values according to the land use category and the thickness of the organic soil at each core site. Based on approximately 2000 analyses from 595 cores, the statistical data indicate a mean density of $217(\pm 68)$ tons per acre foot,

Old Agricultural Areas

Depth (ft)	Total peat thickness (ft)							$\bar{x}_{dl}$	$\Delta \pm$
	2	3	4	5	6	7			
0-1	489	547	623	694	646	533	589	78	
1-2	307	296	375	353	263	256	308	48	
2-3		253	272	347	322	223	285	50	
3-4			325	302	286	226	285	42	
4-5				280	251	226	252	27	
5-6					230	228	229	1	
6-7						484	484	--	
$\bar{x}_{tg}$	398	367	399	395	313	311	(357)		
$\Delta \pm$	129	157	155	170	157	136			

New Agricultural Areas

Depth (ft)	Total peat thickness (ft)						$\bar{x}_{dl}$	$\Delta \pm$
	3	4	5	6	7			
0-1	530	444	373	361	363	414	73	
1-2	294	255	218	203	261	246	36	
2-3	261	205	204	162	229	212	36	
3-4		213	197	198	239	212	20	
4-5			202	215	247	221	23	
5-6				343	253	298	64	
6-7					278	278	--	
$\bar{x}_{tg}$	362	279	239	247	267	(273)		
$\Delta \pm$	147	112	75	83	45			

Muck Areas

Depth (ft)	Total peat thickness (ft)									$\bar{x}_{dl}$	$\Delta \pm$
	4	5	6	7	8	9	10	11			
0-1	637	709	670	656	688	740	846	775	715	69	
1-2	332	439	347	528	306	354	746	664	465	166	
2-3	268	357	322	452	266	312	653	827	432	204	
3-4	278	316	315	340	213	282	349	342	304	45	
4-5		353	294	290	191	269	324	262	283	51	
5-6			269	224	160	238	295	257	241	47	
6-7				261	163	187	245	271	226	48	
7-8					163	217	225	183	197	29	
8-9						221	197	167	195	27	
9-10							237	173	205	45	
10-11								238	238	--	
$\bar{x}_{tg}$	379	435	369	393	269	313	412	378	(343)		
$\Delta \pm$	174	160	150	158	177	168	241	250			

Water Conservation Areas (Including Loxahatchee NWR)

Depth (ft)	Total peat thickness (ft)									$\bar{x}_{dl}$	$\Delta \pm$
	3	4	5	6	7	8	9				
0-1	109	119	156	155	182	193	226	163	41		
1-2	179	128	131	162	144	160	162	152	19		
2-3	446*	112	127	135	184	155	141	143	25		
3-4		122	204	117	143	142	122	142	32		
4-5			405*	113	116	118	122	117	4		
5-6				161	128	124	138	138	17		
6-7					220*	149	139	144	7		
7-8						179	144	161	25		
8-9							146	146	--		
$\bar{x}_{tg}$	144	120	155	141	150	153	149	(143)			
$\Delta \pm$	49	7	35	22	28	25	30				

* Values not used in mean calculation due to basal sand contamination.

Table 6. Bulk density (Tons/Acre Foot) of Organic Soils in the Northern Everglades as a Function of Land Use, Total Organic Soil Thickness, and Depth within the Deposit (A composite of Tables 1 to 4 in Hood, 1982).

Table 7 - Average Bulk Densities of Northern Everglades Peats as a Function of Land Use and Organic Soil Thickness (based on data in Hood, 1982).

<u>Land Use</u>	<u>Avg. Thick. of Org. Soil (ft.)</u>	<u>Avg. Density (tons/AF)</u>
Water Conservation Areas	5	155
	7	150
	9	149
New Agricultural Areas	5	239
	7	267
Old Agricultural Areas	5	395
	7	311
Muck Areas	5	435
	7	393
	9	313
	11	378

with a minimum of 59 and maximum of 502 for the Northern Everglades peats; these values do not include muck or other organic soil types.

Unfortunately from a resources standpoint, thickest peats tend to coincide with areas of lowest density. Figure 19 shows that high density peats (> 300 tons/acre foot) are scattered throughout the agricultural area, with the largest accumulations in the Six Mile Bend, Belle Glade, Loxahatchee SW, and Lake Harbor SE Quads, all of which are farmed intensively for sugar cane. Lowest densities (100 to 200 tons/acre foot) coincide with the trend of thickest peat, from the Loxahatchee National Wildlife Refuge northwestward to the Port Mayaca Quad.

Energy yield per square mile.

From the above discussion, it is evident that delineation of prospective areas requires more than peat thickness maps and is actually a complex function of thickness, energy yield per pound, and density. To simplify this assessment, a new parameter was developed. It was calculated for each core using Equation (2).

Eq. (2)

$$\text{BTU/sq mi} = \left[\begin{array}{c} \text{peat thick.} \\ \text{in ft} \end{array} \right] \left[\begin{array}{c} \text{avg. density} \\ \text{of peat in} \\ \text{core in} \\ \text{tons/AF} \end{array} \right] \left[\begin{array}{c} \text{avg. energy} \\ \text{yield of peat} \\ \text{in core in} \\ \text{BTU/lb} \end{array} \right] [2000 \text{ lb}] [640 \text{ ac}]$$

For mapping purposes, it is convenient to use 10^{11} BTU as a unit. Thus, the term plotted on the maps is BTU $\times 10^{11}$ per square mile.

Based on several thousand samples of peat from 595 cores, the minimum energy yield was 3.0, the maximum was 209.0, and the mean was

67.6 (± 36.8). The modal class was 50×10^{11} BTU/square mile (Figure 20).

The highest energy yields/square mile delineate the most prospective areas (Figure 21). These areas do not necessarily coincide with the areas of thickest peat, although they do in part. On an energy yield basis, the most prospective area, exceeding 150×10^{11} BTU/sq. mi., is actually in the Port Mayaca and Bryant Quads, just east of the Lake Okeechobee shoreline. Other prospective areas reaching 125×10^{11} BTU/sq. mi. lie in the Six Mile Bend, Loxahatchee NW, and Loxahatchee SW Quads. All of the above prospects are in the sugar cane agricultural area.

On this basis, the Loxahatchee National Wildlife Refuge (LNWR) is slightly less favorable than the farming areas mentioned above. Except for one small area in the Ft. Lauderdale 2NE Quad, the energy yields would not exceed 125, and most of the LNWR would yield only 75 to 100×10^{11} BTU/square mile.

Overburden thickness

Overburden is another consideration in resource evaluation. As used here, overburden refers to the thickness of non-peat that would have to be removed before exposing the peat. If the overburden is thin and consists of organic muck, as it normally does in this area, it would still have a significant energy value, and might be economically harvested with the peat. However, it is likely that overburden, if thick, would be a deterrent to commercial peat harvesting.

A listing of the non-peat overburden thickness is included in Appendix 1 for each core, and Figure 22 contours the overburden for the area as a whole. In the most prospective areas, described above, the

Figure 20 BTU x 10¹¹ PER SQ MI IN PEAT IN THE NORTHERN EVERGLADES - DECEMBER 1981
Percentage in each class is indicated above the bars.

overburden does not exceed 2 feet. In the Port Mayaca deposit, overburden is in the 0 to 2 foot range, whereas in the other deposits it is less than 1 foot thick.

In parts of the Pahokee Quad near Lake Okeechobee, as much as 7 feet of overburden covers 5 feet of peat. This factor, plus the relatively high ash content ($>20\%$) of the peat, would tend to make harvesting economically unattractive at those sites. However, the northern part of Kreamer Island, also in the Pahokee Quad, has 4 feet of peat overlain by only 2 feet of muck, which would make it more attractive as a prospect.

Proximate, Ultimate, and Heating Value Analyses of
Northern Everglades Peats, Including Elemental
Analyses of Ash after 800°C

Seventy-five samples of Northern Everglades organic sediments were analyzed by the Grand Forks Energy Technology Center of the U.S. Department of Energy. The individual values are listed in Appendix 5; based on these, the average values for the 73 samples that qualified as peats (i.e., $<25\%$ ash, etc.) are listed in Table 8. The ash values quoted by the DOE lab average 2.3% lower than those from the Sedimentology Laboratory of the University of Florida (UF), and the DOE heating value averages 453 BTU/lb higher. These differences are doubtless due to the higher combustion temperature used by DOE (800°C versus 550°C used by the UF lab). However, in examining individual analyses, the differences were not systematic. Therefore, we did not attempt to "correct" or correlate the two data groups for the purposes of this report.

Table 8 - Average Proximate, Ultimate, and Heating Value Analyses for 73 Samples of Northern Everglades Peats (see Appendix 5 for actual data). Analyses provided by the DOE Grand Forks Energy Technology Center, Grand Forks, North Dakota.

No. of Samples	Proximate Analysis			Ultimate Analysis				Heating Value (BTU/lb)
	Moisture "as received" (%)	Moisture-Free Volatile Matter (%)	Ash (800°C) (%)	C (%)	H (%)	N (%)	S (%)	
73	86.05 (±6.39)	58.07 (±3.63)	9.70 (±3.65)	54.59 (±2.38)	4.28 (±0.49)	3.16 (±0.46)	0.77 (±0.30)	9052 (±542)

In addition, 11 analyses of the ash produced by 800°C combustion are included as Appendix 6. These analyses indicate the range of chemical components that are in the ash, but because most of these components are in a rather insoluble state, the list should not be taken as a direct indication of potential contaminants from the ash. It should also be remembered that these are percentages of the ash; percentages of the peat as a whole would be much smaller.

V. FUEL-GRADE PEAT RESOURCES AND DESCRIPTIONS OF INDIVIDUAL DEPOSITS

Total Fuel-Grade Peat Resources of the Northern Everglades

The isopach map of fuel-peat thicknesses (Figure 14) was used to determine the overall peat resources of the Northern Everglades (Table 8). Using a polar planimeter, acreages of 4-6, 6-8, and 8-10 foot peat deposits were measured and multiplied by the average thickness of each category (i.e., 5, 7, and 9 feet) to yield acre feet. The acre footages were then multiplied by the density values taken from Table 7 for the appropriate land-use and peat-thickness categories. Determination of appropriate densities was facilitated by overlaying the peat map (Figure 14) on the density map (Figure 19). Tonnages were then summed to yield the total resource tonnage. Potential energy-yield for the total deposit was calculated as the product of (Equation 3).

Eq. (3)

$$\text{BTU} = (\text{Tons of moisture-free peat})(2000 \text{ lb})(8227 \text{ BTU/lb})$$

A significant problem in resource calculation occurred in assessing the tonnages that are probably present in the northern half of the Loxahatchee National Wildlife Refuge (LNWR). The project was denied a sampling permit in the interior of that area, so no definitive data could be obtained. However, there is every likelihood that a huge amount of fuel-grade peat is present; this is suggested both by cores taken around the perimeter of the LNWR and by Davis' map (1946, p. 122,

his Fig. 13) which shows 7 to 11 feet of peat in the northern half of the LNWR. However, because Davis did not identify his actual core sites either by map or a list of locations, and because most of his thickness data came from probes rather than cores, the 1946 map cannot be accepted without question. There is no fully satisfactory solution to this problem, so the resource data have been calculated in two ways: (1) by extrapolating 6 to 8 foot thicknesses through most of the unsampled area; and (2) by computing the resource on the basis of the unsupported contours, as drawn by the computer through the area on Figure 14. Resources computed both ways are listed in Table 9 and in the state resource calculations of Table 4. In all probability, Davis' (1946) map in that area is more likely to be correct than the unsupported computer map, and that the first method of computation is the more correct.

In Table 9, the resources measured by this survey are compared with older estimates for approximately the same area, recalculated from the data in Davis (1946). In the latter recalculations, an energy value of 6000 BTU/lb was assumed, because Davis' samples were listed as "air-dried", rather than dried in an oven at 110°C. It is evident that the presently available fuel-peat resource is less than one-fifth of that reported by Davis. The reasons for this difference probably include one or more of the following:

- (a) Bacterial oxidation has destroyed a vast quantity of peat in the 35 years between the surveys. The amount lost is evidently on the order of 741 million tons, a rate of loss of about 21 million tons per year.

Table 9 - Estimated Fuel-Grade Peat Resources in the Northern Everglades (Palm Beach and Adjacent Counties).

NORTHERN EVERGLADES PEAT RESOURCES (PALM BEACH AND ADJACENT COUNTIES)						
December 1981						
		Area (Ac.)	Acre Ft.	Tons x 10 ⁶	BTU x 10 ¹⁵	Remarks
1981	This Survey	174,856*	1,044,050*	181*	2.98*	Fuel-grade peat only.
		157,723**	924,119**	163** (moisture-free)	2.68**	"
1946	Fl. Geological Survey Bull. 30 (Davis, 1946)	785,000	5,190,000	922 (air dry)	16.6	All peats, for "not including areas used for agriculture."

*Include estimates of peat in the large unsampled northern half of the Loxahatchee National Wildlife Refuge for which a sampling permit was denied. These values are considered to be the best estimates of the total resource.

**Values do not include the unsampled northern part of the Loxahatchee National Wildlife Refuge.

Assumptions:

- (1) Moisture-free peat in the Northern Everglades yields 3227 BTU/lb.
- (2) Air dry peat yields 6000 BTU/lb.

(b) Differences in the intents of the surveys:

Fuel-grade only for the 1981 survey; all peats in the Davis survey, "...but not including areas used for agriculture."

(c) Differences in analytical procedures and conversion factors: e.g. "moisture-free" tons in the 1981 survey, versus "air-dry" tons in the 1946 survey. However, these differences were partly accommodated in Table 1 by using different BTU/lb. factors, as indicated in the footnote to the table.

Descriptions of Individual Deposits

Twenty-three topographic quads were cored during this survey, and 18 of these contain one or more deposits of fuel-grade peat. Detailed maps of peat thickness in each quad, and for some quads ash and density maps, are grouped in Appendix 3 as Fig. 3-1 to 3-36. Some of the deposits were encountered in only one core, and the acreages have been estimated. Other deposits cover several quads and have vast tonnages. In all, 19 separate deposits were identified.

The tonnages in each deposit are listed in Table 10, proceeding generally from northwest to southeast. Contoured maps of each quadrangle that contains at least one core that encountered 4 feet of fuel-grade peat are cross-referenced in Table 10.

Four of the deposits each contain more than 9 million tons of moisture-free peat that has been cored completely enough to produce reasonably accurate resource data. The largest deposit in this list, the Loxahatchee Border Deposit, may exceed 100 million tons. The four largest deposits are described below.

Table 10 - Individual Peat Deposits Meeting Fuel-Grade Criteria. (Each deposit is shown on one or more detailed quad maps as indicated in Column 2).

Name of Deposit (Approx. Loc. Within Quad /USGS Quad Names)	Quad Map, Appendix 3 Fig. No.	Peat Thickness (Ft.)	Acres (Approx.)	Avg. Density (Tons/AF)	Tons of Moisture Free Peat	Remarks
W/Port Mayaca-Bryant	3-1	5	2,709	155	2,099,475	
	to	7	6,348	150	6,665,400	
	3-6	9	393	149	527,013	
			<u>9,450</u>		<u>9,291,888</u>	
Bryant-Port Mayaca- W. Palm Beach 2SW	3-4	5	6,929	203	7,206,160	
	to	7	1,379	203	2,007,824	
	3-7		<u>8,308</u>		<u>9,213,984</u>	
SW/Bryant	3-4					
	to	5	127	395	250,825	
	3-6					
Six Mile Bend -Loxahatchee NW	3-8	5	14,178	280	19,849,200	
	to	7	206	280	403,760	
	3-13		<u>14,384</u>		<u>20,252,960</u>	
SW/Six Mile Bend	3-8					
	to	5	200	395	395,000	
	3-10					
SE/Six Mile Bend	3-8					
	to	5	544	395	1,074,400	
	3-10					
NW/Loxahatchee SW	3-14	5	290	395	572,750	

Table 10 - Continued.

Name of Deposit (Approx. Loc. Within Quads /USGS Quad Names)	Quad Map, Appendix 3 Fig. No.	Peat Thickness (Ft.)	Acres (Approx.)	Avg. Density (Tons/AF)	Tons of Moisture Free Peat	Remarks
NE/Everglades 1NE	3-15	5	218	395	430,550	
SE/Ft. Lauderdale 2SW	3-16	5	284	395	560,900	
NE/Pahokee	3-17	5	266	435	578,550	
SE Pahokee	3-17	5	520	435	1,131,000	
Pahokee-Belle Glade	3-18	5	278	435	604,650	
NW/Shawano	3-19	5	157	395	310,075	
Cent./Shawano	3-19	5	1,215	395	2,399,625	
Okeelanta	3-20	5	151	395	298,225	
NW/Lake Harbor	3-21	5	181	395	357,475	
Cent./Lake Harbor	3-21	5	200	395	395,000	
Lake Harbor-L. Harbor SE	3-21 to 3-22	5	1,185	395	2,340,375	Deposit may be larger than indi- cated.

Table 10 - Continued.

Name of Deposit (Apprx. Loc. Within Quads /USGS Quad Names)	Quad Map, Appendix 3 Fig. No.	Peat Thickness (Ft.)	Acres (Approx.)	Avg. Density (Tons/AF)	Tons of Moisture Free Peat	Remarks
"Loxahatchee Border Deposit." Includes Parts of all Quads Below:						<u>Areas and Tonnages</u> <u>Include Sampled</u> <u>Areas Only and Do</u> <u>Not Include the</u> <u>Whole Wildlife</u> <u>Refuge.</u>
W. Palm Beach 2SW	3-7	5	1,584	395	3,057,300	
Loxahatchee NW	3-11	5	16,180	250	20,225,000	
	to	7	2,836	250	4,963,000	
	3-13					
Loxahatchee	3-23	5	3,078	155	2,385,450	
Loxahatchee SW	3-14	5	2,970	395	5,865,750	
		7	1,844	150	1,936,200	
Ft. Lauderdale 2 NW	3-24	5	23,907	190	22,711,650	
	to	5	127	155	98,425	
	3-26	7	527	190	700,910	
Everglades 1NE	3-15	5	115	395	227,125	
Ft. Lauderdale 2SW	3-16	5	5,018	395	9,910,550	
Everglades 1SE	3-27	5	91	395	179,725	
Ft. Lauderdale 2SE	3-28	5	1,130	395	2,231,750	

"W/Port Mayaca-Bryant Deposit" (Fig. 3-1 to 3-6)

This deposit is in the sugar cane growing area immediately east of Lake Okeechobee and extends over 9,450 acres from the Port Mayaca Quad into the extreme northern part of the Bryant Quad. Appendix 4, Figures 4-1 and 4-2 show typical cores through the south-central part of the deposit. Most of the peat is in the 6 to 8 foot range, but includes some 9 foot areas (Fig. 3-1 and 3-4).

A muck layer, typically one to two feet thick, overlies 4 to 9 feet of peat. The average ash content of the cores is generally in the 10 to 17 percent range, but varies considerably as shown on both the % ash maps (Fig. 3-2 and 3-5) and in the representative cores.

Evidently the muck has prevented extensive compaction or dewatering of the underlying peat, and typically its density averages 150 to 200 tons/acre foot, fairly similar to that in the water conservation areas (Fig. 3-3 and 3-6). However, density shows the typical vertical profile: relatively dense at the top and bottom, with lower densities at intermediate depths.

The deposit is calculated to contain approximately 9,291,888 tons of moisture-free peat.

"Bryant-Port Mayaca-West Palm Beach 2SW Deposit" (Fig 3-1 to 3-7)

This 8,308 acre deposit extends through parts of three quads, but is mostly within the northern part of the Bryant Quad (Fig. 3-4 to 3-6). Average ash contents tend to be 12 to 16%, but reach 19.5% along the western side of the deposit (Fig. 3-5). Densities are intermediate, typically in the 180-235 tons/acre foot range (Fig. 3-6). The muck overburden, if present, is less than one foot, and the peat is mostly 4 to 6 foot thick.

This is a large, moderately dense deposit containing approximately 9,213,984 tons of moisture-free peat. It presently is used for sugar cane production.

"Six Mile Bend-Loxahatchee NW Deposit" (Fig. 3-8 to 3-13)

This extensive deposit covers 14,384 acres, mostly in the central part of the Six Mile Bend Quad. Nearly all of the peat is in the 4 to 6 foot range, and a small amount exceeds 6 feet in the extreme northern part (Fig. 3-8). There is some doubt about the extent of the western and southern borders of the deposit.

The peat has a relatively high ash content, generally 15 to 20% (Fig. 3-9). Density is also relatively high, mostly averaging between 250 and 310 tons/acre foot (Fig. 3-10). Two cores from the northern part of the deposit show 5 to 6 feet of peat over marl and/or Fort Thompson Limestone (Fig. 4-3 and 4-4). Peat extends nearly to the surface, where many years of cultivation have left a granular surface layer with densities in the 475 to 816 tons/acre foot range. Some of this surface layer has a very high ash content (>60%), but some is within the range for fuel-grade peat.

The moisture-free peat resource is estimated to be 20,252,960 tons. Presently, the area is used for sugar cane production.

"Loxahatchee Border Deposit"

This immense deposit includes large parts of nine quads and very small parts of two others. As indicated in the text, we were not granted a sampling permit for the northern half of the Loxahatchee National Wildlife Refuge (LNWR), so the full extent of the deposit could not be assessed. To illustrate the features of the deposit, three quads will be described.

1. Loxahatchee NW.

This quad includes both old and new sugar cane farming areas, and a small part of the LNWR itself. Some of the farmland has been created by post-1970 drainage. Two cores in Appendix 4 (Fig. 4-5 and 4-6) illustrate the range of properties typically found in the deposit. These two cores show the peat to directly overlie limestone bedrock, but many others have an intervening marl layer.

Figure 3-11 shows that the peat in this deposit is mostly in the 4 to 8 foot range, and Figure 3-12 indicates the ash content generally to be 10 to 15%. Density varies from approximately 127 to 292 tons/acre foot. The lowest density peats are in the LNWR and in the newly drained farming area to its northwest (Fig. 3-13). This variation in density makes reserves difficult to calculate. Based on a density value of 250 tons/acre foot, the resource within this quad is estimated to be 25,188,000 tons of moisture-free peat.

2. Ft. Lauderdale 2NW.

This quad borders the southwest corner of the LNWR and includes about equal parts of: an old agricultural area, water Conservation Area 2A, and the LNWR. Peat greater than 4 feet thick underlies nearly the whole quad except for its western edge (Fig. 3-24). The average ash content usually ranges from 10 to 15%, but is 15 to 20% in a few cores. Ash appears to increase irregularly toward the south (Fig. 3-25), and the deposit as a whole ends in peat less than 3 feet thick about 1 mile south of the quad border.

Bulk density of the peats in the quad varies considerably with land use (Fig. 3-26). In the LNWR and water Conservation Area 2A, the average density ranges from 91 to 166, and one sample had a low of only

85 tons/acre foot (29.3130/05.5545; 4-5 feet). Figures 4-7 and 4-8 illustrate cores from the boundary between the LWR and Conservation Area 2A. Typically marl or sand underlies the peat and overlies hard limestone bedrock.

In the old sugar cane farming part of the quad, the peat is thinner than in the LWR or Conservation Area 2A. Westward from the boundary with those areas, it thins rapidly from the 4-6 foot range to the 2-3 foot range, and in the next quad to the west, it reaches zero thickness. The ash content of the peat in the farm area is generally 10 to 15%, similar to the LWR (Fig. 3-25).

Bulk density is usually in the 150-205 tons/acre foot range, but is highly variable; one core only averaged 98 tons/acre foot (Fig. 3-26). For purposes of reserves calculation, a value of 190 was used in the farming area, and 155 in the undrained areas. On this basis, the deposit in this quad is estimated to contain 23,510,985 tons of moisture-free peat.

3. Ft. Lauderdale 2NE.

Lying entirely within the Loxahatchee National Wildlife Refuge, this is the most nearly virgin area cored. It is entirely covered with peat, mostly 6 to 8 feet thick (Fig. 3-29). The ash content varies greatly, from 3.5 to 21.6%; however, most cores averaged between 5 and 12% (Fig. 3-30). Ash was not uniformly lower in the interior, and the values seem to be rather randomly distributed.

Bulk density averages ranged from 84 to 155 tons/acre foot, with the maximum and minimum values within about one mile of each other (Fig. 3-31).

VI. SUMMARY AND CONCLUSIONS

Florida Fuel-Peat Resources

The fuel-grade peat resources of the State of Florida were evaluated and a map of the prospective areas was drawn (Fig. 5). Using a combination of data from: (1) previous publications, especially Davis (1946); (2) modern soil surveys; and (3) detailed coring in this survey of the Northern Everglades deposits, new resource assessments were computed. It is now estimated that Florida could produce 606 million tons of moisture-free peat, which would yield approximately 10.0×10^{15} BTU of energy (Table 3). These tonnages and energy yields are much less than estimates made by others prior to this survey (Table 4 and text discussion). Nevertheless, the Florida fuel-peat resource is still very large and significant in terms of potential energy production.

Northern Everglades Fuel-Peat Resources

The principal effort of this survey at detailed evaluation of the fuel-peat resources was made in the Northern Everglades region of Palm Beach and adjacent counties. That region had previously been estimated to contain 79% of Florida's peat (Davis, 1946) so it was given the highest priority.

Based on approximately 800 cores (Fig. 10), the thickness and fuel-quality of the Northern Everglades peats were mapped (Fig. 14-21), and the resource base was calculated. It is now estimated that the region contains 181 million tons of moisture-free peat, which could yield approximately 2.98×10^{15} BTU (Table 9). Again, these values are considerably less than previous estimates; possibly due to 35 years of

bacterial oxidation and other forms of "subsidence" in the agricultural area.

The present fuel-peat resources of the Northern Everglades occur in 19 separate deposits, as listed in Table 10. They are also shown on detailed quadrangle maps of each deposit (Fig. 3-1 to 3-28).

Of these prospective deposits, those lying in the Port Mayaca, Bryant, Six Mile Bend, and Loxahatchee Quads probably have the best potential for harvesting for fuel purposes should the present owners decide to do so. These specific areas each are estimated to contain 9 to 20 million tons of moisture-free peat (Table 10). Because they have been drained and used for sugar cane cultivation for many years, and have level surfaces, most of the extensive "bog preparation" work has been done. Therefore, peat harvesting could proceed with little delay from that standpoint.

Some other areas to the west and southwest of the Loxahatchee National Wildlife Refuge (in the "Loxahatchee Border Deposit") also contain sizable deposits, with the same advantages for harvesting. However, the largest single area of fuel-peat lies in the Wildlife Refuge, and here peat harvesting seems highly unlikely to occur. Barring a national emergency so compelling that other considerations must be ignored, the sanctity of the Wildlife Refuge will, in all probability, be maintained. However, in the event that such an emergency should occur, harvesting of the peat from the Refuge would require much more preparation in terms of "bog preparation" and would require much more lead-time than the agricultural areas.

Environmental considerations and the needs and priorities of the various interests competing for usage of the Northern Everglades

peatlands (wildlife, sugar cane and other farming, water storage, building construction, recreation, etc.) could not be considered within the scope and time available for this study. For the same reasons, the socio-economic aspects of peat usage could not be considered. However, these factors would have to be addressed by any large scale effort to harvest peat from the area.

The peat on the privately held lands is presently used for the production of sugar cane and vegetable crops, and, although the individual land owners have the option of converting their property to other uses, it seems likely that they will continue to use them for agricultural purposes. It is also probable that the largest peat deposit of the area, the Loxahatchee National Wildlife Refuge, will continue in its present triple role as wildlife refuge, recreation area, and water storage reservoir, and that the peat there will not be available for fuel-usage except in the most dire national emergency.

VII. APPENDICES

APPENDIX 1

Average Data for Each Core Analyzed

Column headings are denoted by abbreviations as follows:

OBS	Observation number.
CTY	County.
NSCOORD	North-south UTM coordinates of core locations.
EWCOORD	East-west UTM coordinates of core locations.
ORGFT	Total thickness of organic soils (ft.).
PEATFT	Total thickness of peat (ft.)
OVBDFT	Thickness of overburden over peat (ft.)
PEATASH	Avg. % ash in peat samples in core.
PTBTULB	Avg. BTU/lb energy yield of peat samples in core (calculated from ash %).
PTBTUMI	Avg. energy yield of the core in BTU/square mile x 10^{11} .
PTTONAF	Avg. bulk density of peat in core in tons/acre foot.

The values 999 or 999.0 indicate that the type of data did not apply and no analysis was made. These values were excluded from consideration in drawing computer contoured maps.

THICKNESS & AVERAGE CHEMICAL DATA - NORTHERN EVERGLADES JAN 1982

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Obs	CTY	NSCOORD	EWCOORD	ORGFT	PEATFT	OVBOFT	PEATASH	PTBTULB	PTBTUMI	PTTONAF
1	DA	28.4917	5.3280	2.0	1.0	0	22.8	7450	19	203
2	DA	28.4917	5.3545	1.0	1.0	0	18.8	7938	18	174
3	DA	28.5096	5.5179	3.5	3.5	0	18.0	8032	68	190
4	DA	28.5249	5.5177	3.0	2.0	0	18.3	7989	36	178
5	DA	28.5264	5.3278	4.0	2.0	0	17.2	8124	33	157
6	UA	28.5410	5.5177	3.3	3.0	0	20.5	7724	64	217
7	DA	28.5534	5.3445	4.0	2.0	2	20.7	7710	30	151
8	DA	28.5578	5.5177	3.0	3.0	0	17.7	8067	66	214
9	DA	28.5799	5.3629	4.6	3.0	0	17.9	8040	48	154
10	DA	28.6064	5.3812	4.9	3.0	1	12.0	8744	52	155
11	DA	28.6197	5.3904	5.0	5.0	0	12.1	8731	77	137
12	DA	28.6332	5.3996	4.5	4.0	0	13.0	8625	65	148
13	DA	28.6460	5.4036	4.2	4.0	0	13.3	8595	73	166
14	OR	29.0630	5.6590	3.5	3.0	0	12.8	8652	67	202
15	OR	29.0738	5.5880	5.5	3.0	0	14.1	8488	47	144
16	OR	29.0857	5.6146	4.2	4.0	0	16.5	8205	72	171
17	OR	29.1060	5.5500	6.3	3.0	0	7.1	9339	41	116
18	OR	29.1170	5.6300	3.0	3.0	0	14.1	8496	49	151
19	PD	29.1278	5.7265	0.8	0.0	999	999.0	999	999	999
20	PD	29.1287	5.4640	4.0	1.0	1	23.6	7356	21	226
21	PD	29.1356	5.5224	5.0	3.0	0	4.2	9683	49	133
22	PD	29.1420	5.5720	4.0	3.0	0	11.3	8830	56	164
23	PD	29.1426	5.4722	5.0	3.0	0	17.0	8150	54	171
24	PD	29.1428	5.6724	3.9	3.8	0	9.0	9113	52	118
25	PD	29.1515	5.7030	1.0	1.0	0	22.8	7452	17	175
26	PD	29.1516	5.6980	3.9	3.0	0	10.1	8972	40	116
27	PD	29.1522	5.7000	4.0	4.0	0	5.1	9564	58	116
28	PD	29.1528	5.6985	3.4	3.0	0	12.9	8640	39	116
29	PD	29.1535	5.6970	3.9	3.0	0	10.9	8883	38	112
30	PD	29.1560	5.4775	2.9	1.9	1	18.3	7992	33	172
31	PD	29.1579	5.6850	2.8	2.0	0	13.2	8601	33	152
32	PD	29.1587	5.4910	5.0	3.0	0	4.4	9659	51	138
33	PD	29.1612	5.7145	2.2	1.0	1	8.3	9191	15	131
34	PD	29.1616	5.7300	5.0	3.0	0	7.5	9287	40	113
35	PD	29.1616	5.7444	2.0	1.0	0	22.2	7522	12	126
36	PD	29.1627	5.7130	5.0	3.0	0	11.1	8860	35	102
37	PD	29.1628	5.6720	2.6	1.0	0	9.9	8999	16	135
38	PD	29.1630	5.7375	3.0	1.0	0	8.2	9203	13	112
39	PD	29.1638	5.5710	5.0	5.0	0	18.0	8030	65	127
40	PD	29.1650	5.7400	2.8	1.0	0	15.6	8316	13	122
41	PD	29.1667	5.6535	3.0	3.0	0	4.6	9625	36	97
42	PD	29.1676	5.6554	4.0	4.0	0	6.0	9467	49	101
43	PD	29.1705	5.4890	4.0	4.0	0	12.8	8650	66	150
44	PD	29.1720	5.6390	5.3	3.0	0	8.5	9171	47	134
45	PD	29.1724	5.6850	5.0	5.0	0	7.2	9328	75	125
46	PD	29.1750	5.7541	2.0	0.0	999	999.0	999	999	999
47	PD	29.1842	5.7600	2.0	0.0	999	999.0	999	999	999
48	PD	29.1860	5.4989	6.0	5.0	0	16.1	8255	82	155
49	PD	29.1860	5.6133	6.0	4.0	0	16.5	8204	50	118
50	PD	29.1871	5.6447	6.2	4.0	0	12.1	8733	60	133
51	PD	29.1880	5.4970	4.0	3.0	0	17.3	8108	53	170
52	PD	29.1890	5.6140	6.0	5.0	0	10.2	8970	72	158
53	PD	29.1967	5.3905	2.0	1.0	0	18.8	7932	31	305
54	PD	29.1972	5.7600	2.0	0.0	999	999.0	999	999	999
55	PD	29.1985	5.5068	6.0	4.0	0	13.9	8517	69	157
56	PD	29.1990	5.6100	6.4	5.0	0	12.8	8651	79	142
57	PD	29.1995	5.5052	6.0	5.0	0	16.6	8198	71	135
58	PD	29.2000	5.6090	4.7	3.0	0	10.7	8903	41	119
59	PD	29.2102	5.7600	2.0	0.0	999	999.0	999	999	999
60	PD	29.2125	5.6000	5.0	5.0	0	12.9	8637	56	127
61	PD	29.2141	5.3130	5.0	5.0	0	14.9	8398	82	152
62	PD	29.2142	5.3521	1.2	0.2	1	16.1	8356	27	257
63	PD	29.2142	5.3906	2.0	0.0	999	999.0	999	999	999
64	PD	29.2142	5.4072	1.0	0.0	999	999.0	999	999	999
65	PD	29.2142	5.4232	3.6	3.0	0	23.8	7336	86	304
66	PD	29.2142	5.4389	1.0	1.0	0	18.5	7968	35	347
67	PD	29.2142	5.4550	1.5	1.0	0	19.3	7872	42	414
68	PD	29.2142	5.4808	1.6	1.0	0	17.7	8070	59	286
69	PD	29.2157	5.5142	6.0	5.0	0	12.6	8681	81	145
70	PD	29.2173	5.5570	7.4	4.0	0	12.3	8712	44	99
71	PD	29.2173	5.6728	7.0	5.0	0	8.1	9213	78	110
72	PD	29.2173	5.6886	9.4	5.0	0	10.6	8918	69	102
73	PD	29.2173	5.6978	6.0	5.0	0	8.2	9203	67	114
74	PD	29.2191	5.6518	8.0	7.0	0	10.2	8967	96	119
75	PD	29.2191	5.6442	8.0	5.0	0	8.6	9126	73	104
76	PD	29.2295	5.6409	8.5	7.0	0	9.7	9030	94	116

THICKNESS & AVERAGE CHEMICAL DATA - NORTHERN EVERGLADES JAN 1982

2

ORS	CTY	NSCOORD	EWCOORD	ORGFT	PEATFT	OVBFT	PEATASI	PTBTULB	PTBTUMI	PTTONAF
77	PD	29.2228	5.7647	3.5	1.0	1	19.1	7896	21	210
78	PD	29.2233	5.5032	4.0	2.0	1	14.9	8400	40	184
79	PD	29.2244	5.5900	7.0	5.0	1	13.9	8520	90	166
80	PD	29.2258	5.6336	8.0	7.0	0	12.1	8736	89	114
81	PD	29.2282	5.5227	6.0	6.0	0	17.1	8142	115	184
82	PD	29.2285	5.5355	6.0	4.0	1	21.0	7683	56	141
83	PD	29.2285	5.6184	7.0	6.0	0	20.5	7728	68	115
84	PD	29.2285	5.6272	6.8	6.0	0	18.4	7982	80	130
85	PD	29.2292	5.5240	6.0	6.0	0	15.1	8374	120	186
86	PD	29.2309	5.6886	6.0	6.0	0	6.1	9459	108	148
87	PD	29.2311	5.6227	6.0	6.0	0	12.6	8676	67	101
88	PD	29.2330	5.6057	8.0	7.0	0	13.3	8587	89	116
89	PD	29.2389	5.7689	2.2	0.0	999	999.0	999	999	999
90	PD	29.2400	5.5092	4.0	4.0	0	13.0	8625	77	175
91	PD	29.2410	5.5390	6.2	6.0	0	17.1	8140	80	128
92	PD	29.2418	5.5265	4.8	4.0	0	19.6	7839	82	206
93	PD	29.2455	5.6137	6.7	6.0	0	10.1	8976	70	102
94	PD	29.2458	5.3905	2.3	2.0	0	13.6	8562	45	203
95	PD	29.2461	5.4232	3.6	3.6	0	22.1	7542	75	215
96	PD	29.2461	5.4550	4.0	2.0	0	13.4	8574	48	220
97	PD	29.2531	5.2621	1.6	1.0	0	18.9	7920	22	213
98	PD	29.2531	5.2926	2.5	1.0	1	23.8	7332	22	233
99	PD	29.2531	5.3266	1.0	1.0	0	24.5	7248	36	387
100	PD	29.2531	5.3517	1.4	1.0	0	16.9	8160	34	321
101	PD	29.2544	5.7710	2.0	0.0	999	999.0	999	999	999
102	PD	29.2558	5.4865	3.7	2.0	1	17.6	8076	38	184
103	PD	29.2565	5.5955	8.0	6.0	0	10.9	8882	82	120
104	PD	29.2578	5.5314	6.8	5.0	1	15.3	8350	81	152
105	PD	29.2598	5.5815	6.0	5.0	0	15.7	8299	64	120
106	PD	29.2600	5.5990	7.0	6.0	0	7.0	9349	86	119
107	PD	29.2610	5.5650	8.6	4.0	3	13.9	8517	57	130
108	PD	29.2640	5.5262	4.0	3.0	0	11.2	8843	70	205
109	PD	29.2652	5.5518	10.4	6.0	1	13.0	8588	99	151
110	PD	29.2652	5.5618	5.9	5.0	0	10.3	8947	61	91
111	PD	29.2690	5.5034	3.5	3.0	0	14.7	8424	56	172
112	PD	29.2690	5.5066	4.0	3.0	0	11.2	8849	76	223
113	PD	29.2690	5.5095	4.0	4.0	0	14.3	6528	68	204
114	PD	29.2707	5.5476	7.0	6.0	0	12.9	8998	125	181
115	PD	29.2708	5.6946	11.0	10.0	0	14.3	8473	110	101
116	PD	29.2709	5.5396	6.0	5.0	0	18.7	7946	111	218
117	PD	29.2740	5.6779	9.0	7.0	0	4.1	9700	81	93
118	PD	29.2750	5.5547	8.9	5.0	3	15.2	8366	88	166
119	PD	29.2752	5.6620	9.0	8.0	0	3.5	9763	125	125
120	PD	29.2752	5.6663	8.3	7.0	0	5.8	9488	80	94
121	PD	29.2764	5.7745	3.2	1.0	1	18.2	8004	17	164
122	PD	29.2778	5.5341	4.0	3.0	0	11.6	8796	52	157
123	PD	29.2780	5.7308	8.0	8.0	0	8.1	9214	104	110
124	PD	29.2785	5.7145	8.6	8.0	0	9.5	9042	144	155
125	PD	29.2791	5.5064	8.2	7.0	0	14.0	8511	75	98
126	PD	29.2792	5.3905	2.5	0.0	999	999.0	999	999	999
127	PD	29.2797	5.6475	8.3	8.3	0	11.0	8863	84	106
128	PD	29.2818	5.5780	7.4	7.0	0	9.1	9094	79	97
129	PD	29.2821	5.5536	7.0	3.0	3	15.4	8344	42	134
130	PD	29.2830	5.5900	11.0	10.0	0	5.5	9527	129	106
131	PD	29.2850	5.2621	1.1	0.0	999	999.0	999	999	999
132	PD	29.2850	5.2926	1.7	1.0	0	21.1	7656	28	290
133	PD	29.2850	5.3266	1.9	1.0	0	12.6	8676	26	234
134	PD	29.2869	5.5485	6.5	6.0	0	11.3	8836	94	138
135	PD	29.2869	5.5540	6.0	6.0	0	11.9	8758	90	134
136	PD	29.2873	5.4865	2.5	2.5	0	15.9	8280	55	208
137	PD	29.2876	5.4550	4.0	4.0	0	19.1	7893	100	247
138	PD	29.2875	5.5400	4.0	4.0	0	12.2	8721	64	144
139	PD	29.2908	5.7745	1.8	0.0	999	999.0	999	999	999
140	PD	29.2954	5.5265	4.6	4.0	0	10.4	8945	87	190
141	PD	29.2953	5.5103	4.0	4.0	0	18.4	7980	78	192
142	PD	29.2960	5.5108	3.0	3.0	0	10.9	8356	52	161
143	PD	29.2960	5.7308	8.0	6.0	1	21.7	7586	49	84
144	PD	29.2934	5.5523	8.0	6.0	1	13.6	8556	87	133
145	PD	29.2984	5.5549	6.0	6.0	0	13.9	8526	97	148
146	PD	29.3003	5.5382	6.0	6.0	0	14.7	8422	105	162
147	PD	29.3005	5.5500	2.0	1.0	1	17.1	8136	18	175
148	PD	29.3006	5.5442	5.0	5.0	0	12.8	8650	65	118
149	PD	29.3018	5.5530	7.0	6.0	1	17.2	8126	99	158
150	PD	29.3037	5.5523	7.0	2.0	4	22.9	7386	28	147
151	PD	29.3035	5.7120	8.0	7.0	0	11.2	8843	90	113
152	PD	29.3085	5.7427	8.0	6.0	0	6.0	8997	63	91

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UBS	CTY	NSCOORD	EWCOORD	ORGFT	PEATFT	OVBDF	PEATSH	PTDTLB	PTDTMI	PTTOMF
153	PD	29.3100	5.5446	7.0	7.0	0	14.1	8494	149	196
154	PD	29.3100	5.7745	2.0	0.0	999	999.0	999	999	999
155	PD	29.3102	5.5446	6.4	6.4	0	11.9	8763	136	190
156	PD	29.3111	5.7875	2.5	0.0	999	999.0	999	999	999
157	PD	29.3130	5.2855	2.0	2.0	0	19.9	7807	52	288
158	PD	29.3130	5.5545	6.5	6.0	0	10.4	7560	83	142
159	PD	29.3145	5.5530	6.4	6.0	0	9.4	9058	103	149
160	PD	29.3150	5.5180	3.3	3.3	0	17.6	8073	83	242
161	PD	29.3167	5.1395	2.0	2.0	0	17.3	8112	45	216
162	PD	29.3169	5.1553	2.3	2.0	0	18.5	7968	40	198
163	PD	29.3169	5.1348	2.0	2.0	0	18.0	7938	12	59
164	PD	29.3169	5.2122	1.2	0.2	1	18.1	8016	4	205
165	PD	29.3169	5.2441	2.1	1.0	1	17.2	8124	22	212
166	PD	29.3170	5.5340	7.0	7.0	0	10.5	8922	117	147
167	PD	29.3197	5.5523	8.0	8.0	0	12.5	8645	133	149
168	PD	29.3215	5.3491	5.4	4.0	0	12.7	8667	66	149
169	PD	29.3220	5.5020	4.0	1.0	1	21.5	7608	28	286
170	PD	29.3221	5.2610	3.0	2.0	0	15.3	8358	51	236
171	PD	29.3222	5.3823	4.0	3.0	0	17.8	8052	64	207
172	PD	29.3222	5.3980	3.0	2.0	1	18.5	7968	39	190
173	PD	29.3222	5.4141	3.2	3.2	0	13.1	8613	66	186
174	PD	29.3222	5.4308	4.0	3.0	0	16.9	8156	70	222
175	PD	29.3222	5.4464	4.0	3.0	0	21.0	7672	76	258
176	PD	29.3222	5.4704	4.2	3.0	1	16.6	8192	62	197
177	PD	29.3222	5.4968	5.7	3.0	1	19.3	7876	64	211
178	PD	29.3250	5.5310	2.0	2.0	0	14.4	8466	49	225
179	PD	29.3290	5.2055	3.0	1.0	1	18.4	7980	19	188
180	PD	29.3290	5.3004	2.7	1.7	1	18.8	7938	35	201
181	PD	29.3290	5.3005	2.0	1.0	1	16.0	8265	24	226
182	PD	29.3307	5.5342	7.6	7.0	0	15.1	8374	114	152
183	PD	29.3325	5.3138	3.0	3.0	0	21.5	7612	66	227
184	PD	29.3325	5.3500	3.0	2.0	1	21.3	7638	49	249
185	PD	29.3325	5.3826	3.0	2.0	0	21.4	7620	53	270
186	PD	29.3328	5.1395	2.0	2.0	0	23.8	7332	45	239
187	PD	29.3338	5.1553	2.0	1.0	0	25.0	7188	30	321
188	PD	29.3331	5.2610	2.0	2.0	0	20.8	7698	51	259
189	PD	29.3332	5.1802	2.8	2.8	0	18.3	7988	75	262
190	PD	29.3334	5.1965	1.1	0.1	1	23.7	7344	3	271
191	PD	29.3335	5.2116	2.1	1.0	1	18.8	7932	21	207
192	PD	29.3338	5.2282	1.5	1.0	0	22.2	7524	26	267
193	PD	29.3338	5.2445	2.0	1.0	0	15.4	8340	25	233
194	PD	29.3350	5.5523	8.0	8.0	0	16.6	8202	135	160
195	PD	29.3390	5.5112	3.3	2.0	0	7.2	9324	120	502
196	PD	29.3380	5.5238	2.0	2.0	0	19.9	7800	64	320
197	PD	29.3380	5.5370	4.5	4.5	0	12.2	8728	172	343
198	PD	29.3390	5.7690	2.0	0.0	999	999.0	999	999	999
199	PD	29.3456	5.4304	2.0	1.0	1	23.5	7368	22	236
200	PD	29.3456	5.4548	4.0	3.0	0	17.6	8080	69	223
201	PD	29.3456	5.4862	3.0	1.0	1	21.3	7632	24	245
202	PD	29.3470	5.5535	7.0	6.0	0	6.8	9375	92	128
203	PD	29.3495	5.2122	3.2	1.0	1	12.6	8676	27	239
204	PD	29.3495	5.2442	2.0	2.0	0	19.4	7860	58	287
205	PD	29.3495	5.2610	2.0	2.0	0	15.0	8382	48	226
206	PD	29.3496	5.1402	2.8	2.0	0	14.7	8430	77	357
207	PD	29.3500	5.5525	6.6	5.0	1	10.4	8937	81	142
208	PD	29.3508	5.5523	8.0	6.0	1	19.5	7846	85	141
209	PD	29.3510	5.1553	3.0	2.0	0	13.6	8562	41	188
210	PD	29.3536	5.3826	4.0	2.0	2	22.5	7482	45	235
211	PD	29.3536	5.4068	4.0	3.0	0	18.9	7924	74	243
212	PD	29.3540	5.3500	4.0	0.0	999	999.0	999	999	999
213	PD	29.3572	5.7640	1.0	0.0	999	999.0	999	999	999
214	PD	29.3594	5.1902	2.1	2.1	0	21.0	7672	58	281
215	PD	29.3600	5.2595	2.0	2.0	0	14.2	8478	49	227
216	PD	29.3618	5.4786	3.0	1.0	1	11.3	8832	21	185
217	PD	29.3625	5.5073	4.0	4.0	0	9.2	7641	155	398
218	PD	29.3625	5.5228	3.6	1.0	2	18.3	7992	22	212
219	PD	29.3625	5.5394	3.6	3.6	0	12.2	8724	157	390
220	PD	29.3640	5.5534	6.0	5.0	1	14.9	8398	75	140
221	PD	29.3650	5.1395	3.0	2.0	0	16.3	8232	68	321
222	PD	29.3652	5.1556	3.0	2.0	1	20.3	7752	39	195
223	PD	29.3658	5.1553	3.0	1.0	1	10.3	8952	33	287
224	PD	29.3658	5.1878	3.0	2.0	0	16.2	8244	79	376
225	PD	29.3658	5.2038	2.5	2.5	0	16.6	8188	115	440
226	PD	29.3658	5.2198	2.0	2.0	0	14.2	8484	58	269
227	PD	29.3659	5.2349	2.0	2.0	0	11.4	8816	155	473
228	PD	29.3666	5.5523	8.0	8.0	0	11.5	8806	163	181

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DBS	CTY	NSCOORD	EWCOORD	ORGET	PEATFT	OVBUFT	PCATASH	PTBTULB	PTBTUMI	PTTONAF
229	PU	29.3774	5.4718	4.0	4.0	0	19.0	7911	128	317
230	PU	29.3775	5.3905	3.0	3.0	0	14.9	8400	75	232
231	PU	29.3775	5.4220	3.0	2.0	1	23.5	7364	46	243
232	PU	29.3775	5.4452	4.0	3.0	0	13.4	8580	84	256
233	PU	29.3796	5.1306	2.6	2.6	0	17.2	8120	96	355
234	PU	29.3802	5.1460	3.0	2.0	1	8.6	9155	75	322
235	PU	29.3808	5.2500	3.0	2.0	1	14.5	8448	42	193
236	PU	29.3808	5.2660	3.0	1.0	1	10.1	8976	21	182
237	PU	29.3808	5.2376	2.0	1.0	1	14.3	8472	24	218
238	PU	29.3810	5.1620	3.2	2.0	0	16.3	8232	66	314
239	PU	29.3810	5.1780	2.5	1.5	1	9.3	9078	27	154
240	PU	29.3816	5.1977	2.8	2.0	0	17.2	8124	41	198
241	PU	29.3816	5.2093	2.3	1.0	1	16.9	8160	17	161
242	PU	29.3816	5.2254	2.5	1.0	1	20.6	7716	18	178
243	PU	29.3816	5.2418	2.0	0.0	999	999.0	999	999	999
244	PU	29.3834	5.5538	6.4	6.0	0	14.6	8442	104	160
245	PU	29.3857	5.4460	6.0	5.0	0	13.5	8568	117	214
246	PU	29.3857	5.4615	5.0	5.0	0	10.0	8987	131	228
247	PU	29.3858	5.5073	2.2	2.2	0	17.4	8104	57	248
248	PU	29.3866	5.3053	4.5	4.0	0	20.6	7713	85	216
249	PU	29.3866	5.5220	2.5	2.0	0	19.3	7878	52	262
250	PU	29.3908	5.3188	3.0	0.0	999	999.0	999	999	999
251	PU	29.3908	5.3350	3.0	3.0	0	13.3	8592	62	189
252	PU	29.3908	5.3500	3.0	3.0	0	15.9	8275	80	253
253	PU	29.3947	5.4820	3.0	3.0	0	18.4	7985	87	284
254	PU	29.3970	5.1780	3.4	3.4	0	18.8	7935	76	221
255	PU	29.3970	5.1937	3.0	2.0	1	18.5	7968	43	210
256	PU	29.3970	5.2096	3.0	3.0	0	17.8	8056	98	318
257	PU	29.3970	5.2264	2.8	0.0	999	999.0	999	999	999
258	PU	29.3970	5.2418	2.5	1.5	1	16.2	8250	62	393
259	PU	29.3972	5.1460	3.0	3.0	0	12.3	8707	147	438
260	HE	29.3973	5.0070	2.0	0.0	999	999.0	999	999	999
261	HE	29.3973	5.0966	4.0	1.0	1	22.3	7512	17	180
262	PU	29.3976	5.1620	2.7	2.0	0	17.3	8118	43	205
263	PU	29.3977	5.1295	4.3	3.0	0	22.1	7532	71	244
264	PU	29.3982	5.3350	3.5	2.0	1	15.5	8334	45	209
265	PU	29.3982	5.3500	4.0	2.0	1	14.3	8472	39	180
266	PU	29.3985	5.2500	2.2	1.0	1	18.1	8016	23	226
267	PU	29.3985	5.2660	2.0	1.0	1	19.5	7848	25	252
268	PU	29.3985	5.2876	2.0	1.0	0	24.3	7272	30	317
269	PU	29.3985	5.5534	7.9	6.0	1	15.1	8376	96	149
270	PU	29.4011	5.5523	7.0	3.0	3	19.2	7884	54	177
271	PU	29.4024	5.5073	2.7	1.0	1	15.2	8370	29	269
272	PU	29.4024	5.5228	4.2	2.0	1	21.1	7662	46	249
273	PU	29.4024	5.5387	4.0	3.0	0	15.2	8364	66	206
274	PU	29.4028	5.3750	2.8	1.8	1	20.4	7746	49	275
275	PU	29.4028	5.3970	3.0	1.0	2	16.9	8160	21	201
276	PU	29.4029	5.4304	5.0	1.0	1	20.9	7680	37	378
277	PU	29.4032	5.7320	0.5	0.0	999	999.0	999	999	999
278	PU	29.4098	5.4590	3.0	2.0	1	21.1	7662	59	300
279	PU	29.4100	5.4820	2.5	2.0	0	13.7	8550	79	360
280	PU	29.4110	5.5534	7.0	6.0	1	14.2	8482	102	157
281	PU	29.4120	5.5035	2.8	1.8	1	15.4	8339	37	194
282	PU	29.4120	5.5280	4.7	2.0	1	12.2	8730	46	207
283	HE	29.4131	5.1132	4.0	2.0	0	18.9	7928	41	203
284	PU	29.4134	5.1295	4.5	3.0	0	14.5	8452	79	244
285	PU	29.4134	5.1460	2.8	1.0	1	20.1	7776	24	237
286	PU	29.4134	5.1620	2.2	0.0	999	999.0	999	999	999
287	PU	29.4134	5.2196	2.9	1.9	1	18.1	8016	48	244
288	PU	29.4134	5.2260	4.0	2.0	1	16.1	8256	47	220
289	PU	29.4135	5.3350	2.0	0.0	999	999.0	999	999	999
290	PU	29.4142	5.2418	3.0	2.0	1	20.1	7776	58	292
291	PU	29.4142	5.2500	3.0	2.0	1	13.7	8544	42	192
292	PU	29.4142	5.2660	2.0	1.0	1	15.9	8280	24	223
293	PU	29.4142	5.2873	3.0	1.0	1	15.3	8352	22	214
294	PU	29.4143	5.1780	3.8	2.0	1	15.1	8376	40	187
295	PU	29.4180	5.4067	3.0	2.0	1	20.9	7686	58	295
296	PU	29.4180	5.4576	3.0	0.0	999	999.0	999	999	999
297	PU	29.4185	5.3912	3.0	3.0	0	15.6	8308	95	299
298	PU	29.4190	5.3745	3.3	1.0	1	15.2	8370	24	224
299	PU	29.4219	5.7196	1.0	0.0	999	999.0	999	999	999
300	PU	29.4237	5.5612	8.5	7.5	1	10.9	8838	106	125
301	PU	29.4263	5.4220	4.0	2.0	1	22.0	7548	47	241
302	PU	29.4265	5.5037	3.0	2.0	0	18.6	7956	37	184
303	PU	29.4287	5.5637	6.0	2.0	4	12.1	8742	31	138
304	HE	29.4292	5.1129	2.4	0.0	999	999.0	999	999	999

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DBS	CTY	NSECORD	FWCOND	DRFT	PEATFT	OVDRFT	PEATASH	PTUTULB	PTUTUMI	PTTONAF
305	PD	29.4292	5.1295	6.0	5.0	0	14.0	8506	108	199
306	PD	29.4292	5.1460	3.0	2.0	0	15.7	8300	59	277
307	PD	29.4292	5.1610	3.0	3.0	0	16.7	8162	19	178
308	PD	29.4308	5.1780	2.2	2.0	0	17.8	8048	48	233
309	PD	29.4308	5.1937	1.0	0.0	999	999.0	999	999	999
310	PD	29.4308	5.2096	4.0	2.0	1	19.8	7818	45	225
311	PD	29.4308	5.2264	3.7	1.0	1	19.2	7885	27	269
312	PD	29.4309	5.2418	2.5	1.0	1	17.4	8103	30	290
313	PD	29.4312	5.2500	3.0	1.0	1	12.5	8688	24	218
314	PD	29.4312	5.2578	3.0	3.0	0	18.4	7976	112	366
315	PD	29.4312	5.2650	3.0	0.0	999	999.0	999	999	999
316	PD	29.4312	5.2735	2.4	2.4	0	17.9	8044	72	297
317	PD	29.4315	5.3350	3.0	0.0	999	999.0	999	999	999
318	PD	29.4315	5.3500	3.0	2.0	1	19.7	7824	47	236
319	PD	29.4317	5.7097	4.0	0.0	999	999.0	999	999	999
320	PD	29.4318	5.3065	4.0	1.0	1	19.1	7896	22	214
321	PD	29.4318	5.7057	1.0	0.0	999	999.0	999	999	999
322	PD	29.4325	5.2976	4.0	0.0	999	999.0	999	999	999
323	PD	29.4325	5.3110	3.0	3.0	0	20.2	7764	112	376
324	PD	29.4335	5.4063	2.6	1.6	1	16.9	8157	44	266
325	PD	29.4335	5.4450	5.0	3.0	0	18.2	8008	53	258
326	PD	29.4340	5.5200	4.7	4.0	0	16.4	8223	123	291
327	PD	29.4344	5.5513	3.0	1.0	1	22.5	7492	35	363
328	PD	29.4345	5.3355	3.0	0.0	999	999.0	999	999	999
329	PD	29.4347	5.5281	5.0	4.0	0	20.0	7785	93	233
330	PD	29.4350	5.3750	2.8	1.0	1	18.7	7949	21	204
331	PD	29.4350	5.4705	4.0	4.0	0	17.1	8139	99	237
332	PD	29.4350	5.4822	3.0	3.0	0	13.4	8580	81	246
333	PD	29.4350	5.5437	5.0	3.0	1	11.5	8804	58	172
334	PD	29.4350	5.5648	5.0	4.0	1	16.9	8163	66	159
335	PD	29.4390	5.5718	9.0	9.0	0	12.4	8661	121	121
336	PD	29.4403	5.5030	4.0	2.0	0	20.5	7728	82	415
337	PD	29.4411	5.6912	1.0	0.0	999	999.0	999	999	999
338	PD	29.4414	5.5740	7.0	7.0	0	14.4	8455	107	141
339	PD	29.4421	5.5724	9.4	8.0	1	8.7	9148	124	132
340	PD	29.4426	5.3900	4.0	2.0	1	15.9	8286	42	197
341	PD	29.4428	5.4878	5.0	2.0	1	18.3	7992	40	197
342	PD	29.4456	5.1295	7.0	5.0	1	13.7	8546	127	232
343	PD	29.4456	5.1620	3.7	2.7	1	17.4	7888	55	200
344	PD	29.4456	5.1780	3.2	3.0	0	17.0	8144	77	245
345	PD	29.4460	5.1937	2.8	2.0	0	22.7	7464	65	342
346	PD	29.4460	5.2193	3.5	2.0	1	17.7	8064	48	232
347	PD	29.4460	5.2254	4.0	0.0	999	999.0	999	999	999
348	PD	29.4460	5.2418	2.0	2.0	0	24.2	7290	57	304
349	PD	29.4460	5.2555	2.4	2.0	0	20.0	7788	45	224
350	PD	29.4467	5.6794	4.0	1.0	1	22.1	7536	17	178
351	PD	29.4502	5.3754	3.0	3.0	0	20.2	7760	90	302
352	PD	29.4505	5.5520	6.0	3.0	1	14.9	8400	65	200
353	PD	29.4515	5.5756	6.0	6.0	0	15.6	8314	112	175
354	PD	29.4525	5.6728	4.0	1.0	0	12.3	8712	16	144
355	PD	29.4544	5.4250	5.0	0.0	999	999.0	999	999	999
356	PD	29.4547	5.4152	4.0	1.0	1	21.5	7608	25	260
357	PD	29.4550	5.6662	3.0	1.0	0	24.8	7209	19	203
358	PD	29.4578	5.3104	2.0	1.0	1	18.5	7668	26	250
359	PD	29.4578	5.3260	4.2	2.0	1	21.0	7668	47	237
360	PD	29.4578	5.3435	3.3	2.0	1	18.1	8016	37	182
361	PD	29.4581	5.4382	4.5	4.0	0	19.5	7854	110	274
362	PD	29.4581	5.4708	4.0	3.0	0	14.0	8504	84	257
363	PD	29.4581	5.4878	4.0	4.0	0	19.4	7863	102	252
364	PD	29.4583	5.4041	3.0	3.0	0	17.2	8128	104	332
365	PD	29.4586	5.5760	5.0	3.0	1	9.6	9035	65	188
366	PD	29.4590	5.5043	4.0	3.0	0	13.2	8604	91	274
367	PD	29.4591	5.3910	4.0	2.0	1	18.8	7932	50	246
368	PD	29.4610	5.1129	4.0	0.0	999	999.0	999	999	999
369	PD	29.4612	5.1452	3.4	2.0	1	22.1	7535	46	238
370	PD	29.4612	5.1620	4.0	2.0	1	20.3	7752	52	264
371	PD	29.4612	5.1785	3.0	2.0	1	16.7	8190	42	200
372	PD	29.4612	5.1932	4.0	2.0	1	18.0	8028	40	192
373	PD	29.4618	5.1296	3.6	1.0	1	19.2	7889	23	227
374	PD	29.4620	5.2253	2.9	1.0	1	15.0	8388	20	190
375	PD	29.4620	5.2900	1.9	1.9	0	16.1	8256	50	248
376	PD	29.4620	5.6590	4.8	3.0	0	10.3	8948	58	167
377	PD	29.4621	5.6609	4.0	3.0	0	15.8	8292	53	166
378	PD	29.4627	5.2533	2.1	1.0	1	20.2	7762	25	249
379	PD	29.4627	5.2740	2.3	0.8	2	16.1	8255	21	245
380	PD	29.4629	5.2105	2.7	1.0	1	18.3	7993	23	223

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DBS	CTY	NSCOORD	EWCOORD	ORGET	PEATFT	OVBDF	PEATASH	PTBTULB	PTBTUMI	PTTONAF
381	PU	29.4629	5.2427	2.7	1.0	1	17.1	8136	25	279
382	PU	29.4633	5.4690	4.0	0.0	999	999.0	999	999	999
383	PU	29.4652	5.5038	6.0	6.0	0	9.6	9036	118	170
384	PU	29.4665	5.6548	5.0	3.0	1	10.8	8892	52	151
385	PU	29.4671	5.3757	4.3	1.0	1	19.9	7800	25	246
386	PU	29.4672	5.5921	8.5	7.5	1	12.0	8925	126	147
387	PU	29.4675	5.4056	5.3	5.0	0	20.6	7718	132	268
388	PU	29.4675	5.5892	8.0	8.0	0	12.8	8653	122	138
389	PU	29.4678	5.6632	3.5	1.0	0	20.0	7788	23	231
390	PU	29.4688	5.5913	7.0	2.0	5	17.0	8148	34	165
391	PU	29.4695	5.4550	4.3	2.0	1	15.8	8298	48	224
392	PU	29.4738	5.3260	4.0	1.0	3	20.5	7728	22	226
393	PU	29.4740	5.5048	4.0	2.0	1	19.8	7818	39	196
394	PU	29.4740	5.5405	2.0	2.0	0	14.0	8506	65	300
395	PU	29.4741	5.6498	5.5	3.0	0	17.7	8060	46	147
396	PU	29.4745	5.3104	2.5	2.5	0	19.7	7820	58	233
397	PU	29.4747	5.4708	4.5	4.0	0	15.9	8280	117	275
398	PU	29.4747	5.4097	4.0	2.0	1	23.0	7434	50	263
399	PU	29.4750	5.3915	4.5	2.0	1	18.0	8040	55	267
400	PU	29.4764	5.4394	5.3	4.0	0	15.9	8283	125	295
401	PU	29.4767	5.5282	4.0	4.0	0	15.7	8301	102	241
402	PU	29.4767	5.5517	3.0	3.0	0	15.9	8280	75	235
403	PU	29.4767	5.5036	5.0	5.0	0	13.7	8549	133	243
404	PU	29.4770	5.5129	3.0	1.0	1	22.7	7464	18	187
405	PU	29.4770	5.5145	4.8	3.0	1	14.9	8400	53	166
406	PU	29.4770	5.5178	3.4	3.4	0	18.8	8265	80	222
407	PU	29.4770	5.5194	4.0	3.0	1	20.5	7724	66	221
408	PU	29.4770	5.5210	3.5	2.5	1	15.4	8340	42	159
409	PU	29.4770	5.5256	4.0	2.0	1	14.9	8394	39	183
410	PU	29.4770	5.5216	2.2	0.0	999	999.0	999	999	999
411	PU	29.4787	5.5182	4.5	2.0	1	18.1	8022	46	224
412	PU	29.4790	5.5253	4.1	1.0	3	17.5	8088	25	241
413	PU	29.4790	5.5245	3.0	1.0	3	23.1	7416	25	240
414	PU	29.4790	5.5200	7.0	5.0	2	17.2	8124	71	226
415	PU	29.4792	5.5461	7.0	5.0	2	10.2	8963	75	130
416	PU	29.4793	5.5379	4.0	4.0	0	16.2	8247	139	329
417	PU	29.4820	5.6014	7.8	4.0	0	16.0	8268	94	127
418	PU	29.4828	5.4875	3.7	2.0	1	17.0	8154	65	313
419	PU	29.4864	5.4560	3.0	2.0	0	18.0	8028	65	317
420	PU	29.4885	5.5050	8.4	2.0	1	16.5	9037	116	143
421	PU	29.4902	5.5367	3.0	2.0	1	19.9	7804	42	209
422	PU	29.4908	5.4708	3.5	3.0	0	18.9	7916	72	246
423	PU	29.4910	5.5060	4.0	2.0	1	18.7	7944	69	341
424	PU	29.4912	5.4875	4.0	3.7	1	18.4	7980	108	285
425	PU	29.4918	5.5233	4.0	4.0	1	15.5	8328	125	292
426	PU	29.4918	5.5336	5.0	5.0	0	13.2	8606	133	241
427	PU	29.4930	5.6075	5.0	8.0	0	12.6	8037	132	143
428	PU	29.4932	5.6387	5.0	3.0	1	14.1	8496	51	155
429	PU	29.4936	5.5942	4.0	1.0	1	19.9	7800	26	260
430	PU	29.4936	5.5265	3.0	2.0	1	21.2	7642	51	259
431	PU	29.4938	5.5333	4.4	0.0	999	999.0	999	999	999
432	PU	29.4945	5.5454	3.4	1.0	1	16.5	8208	24	231
433	PU	29.4947	5.5245	3.0	1.0	2	15.3	8352	22	204
434	PU	29.4950	5.5100	4.0	1.0	1	21.1	7652	26	264
435	PU	29.4950	5.5415	4.0	0.0	999	999.0	999	999	999
436	PU	29.4950	5.5815	4.0	0.0	0	20.1	7770	79	396
437	PU	29.4950	5.6100	9.0	8.0	1	9.9	9002	131	142
438	PU	29.4959	5.6019	8.0	8.0	0	12.8	8415	118	137
439	PU	29.4960	5.6110	9.0	7.0	1	7.5	8674	120	137
440	PU	29.4980	5.4892	5.0	5.0	0	22.6	7721	126	259
441	PU	29.4990	5.5815	4.0	4.0	0	20.5	8931	103	225
442	PU	29.4995	5.5421	4.0	0.0	0	10.9	8402	91	169
443	PU	29.4997	5.6111	6.5	2.5	2	12.3	8714	82	164
444	PU	29.5036	5.6351	6.0	0.0	999	999.0	999	999	999
445	PU	29.5055	5.6019	4.0	0.0	1	11.9	8756	61	182
446	PU	29.5057	5.5810	4.5	3.5	1	21.0	7665	74	214
447	PU	29.5060	5.6130	8.4	7.0	1	17.7	9015	109	135
448	PU	29.5071	5.4350	5.0	4.0	0	17.2	8122	136	270
449	PU	29.5080	5.5916	5.0	5.0	1	13.5	8563	134	245
450	PU	29.5097	5.6209	4.0	4.0	1	20.7	7710	29	146
451	PU	29.5100	5.5620	4.0	2.0	1	17.1	7892	68	224
452	PU	29.5100	5.5194	4.3	0.0	999	999.0	999	999	999
453	PU	29.5107	5.3460	4.0	2.0	2	22.8	7482	57	206
454	PU	29.5110	5.2938	2.0	0.0	999	999.0	999	999	999
455	PU	29.5110	5.3870	4.1	1.0	2	19.7	7824	25	240
456	PU	29.5138	5.5170	6.0	5.0	0	16.0	8273	95	180

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DBS	CTY	NSCOORD	EWCOORD	URGFT	PEATFT	OVBFT	PEATASH	PTBTULB	PTBTUMI	PTTCNAF
457	PH	29.5138	5.6130	5.8	5.0	0	10.2	8961	131	228
458	PH	29.5156	5.1375	6.0	5.0	1	19.8	7819	104	208
459	PH	29.5156	5.6334	2.0	0.0	999	999.0	999	999	999
460	PH	29.5172	5.6192	5.0	2.0	1	15.8	8172	45	215
461	PH	29.5200	5.5916	4.7	4.7	0	13.6	8561	123	238
462	PH	29.5200	5.6221	2.1	2.0	0	19.7	7831	49	246
463	PH	29.5218	5.2100	6.5	2.0	4	19.7	7830	43	215
464	PH	29.5224	5.2253	6.0	1.0	5	23.7	7344	22	235
465	PH	29.5230	5.1946	5.0	2.0	2	17.1	8136	48	231
466	PH	29.5232	5.1782	5.3	1.0	2	19.3	7872	34	337
467	PH	29.5258	5.1454	5.0	2.0	1	19.5	7855	41	205
468	PH	29.5259	5.5231	3.0	2.0	0	16.3	8233	63	301
469	PH	29.5262	5.1288	6.0	3.0	1	13.9	8524	70	215
470	PH	29.5268	5.4110	5.7	1.0	1	24.7	7224	37	400
471	PH	29.5268	5.4267	5.0	5.0	0	18.0	8028	161	313
472	PH	29.5268	5.4910	5.0	5.0	0	16.0	8273	149	282
473	PH	29.5270	5.4938	4.9	4.9	0	17.7	8057	162	320
474	PH	29.5273	5.5968	5.3	5.3	0	12.5	8690	109	185
475	PH	29.5279	5.5397	4.0	4.0	0	12.7	8651	83	188
476	PH	29.5279	5.5712	3.4	3.4	0	16.5	8208	99	277
477	PH	29.5287	5.3130	4.7	0.0	999	999.0	999	999	999
478	PH	29.5335	5.3070	5.0	3.8	2	19.0	7911	109	284
479	PH	29.5405	5.6100	4.4	1.0	2	17.7	8064	25	246
480	PH	29.5420	5.5931	5.6	5.0	0	10.7	8899	144	253
481	PH	29.5422	5.5233	3.0	2.0	0	18.2	8000	51	248
482	PH	29.5422	5.5397	4.2	4.0	0	15.8	8289	85	199
483	PH	29.5425	5.1298	5.4	2.4	1	17.0	8140	49	194
484	PH	29.5425	5.4988	3.0	2.0	1	17.9	8044	51	248
485	PH	29.5428	5.1608	6.0	4.0	1	20.0	7791	89	223
486	PH	29.5432	5.2974	5.0	1.0	3	16.0	8268	22	212
487	PH	29.5432	5.3465	4.8	3.0	1	21.7	7580	81	277
488	PH	29.5432	5.3616	3.0	0.0	999	999.0	999	999	999
489	PH	29.5432	5.3870	4.5	1.0	1	21.9	7560	30	310
490	PH	29.5432	5.4110	2.0	0.0	999	999.0	999	999	999
491	PH	29.5432	5.4585	3.0	2.0	1	20.3	7756	60	304
492	PH	29.5432	5.4747	5.0	5.0	0	15.6	8318	144	270
493	PH	29.5435	5.2800	6.0	2.0	3	19.3	7866	33	166
494	PH	29.5448	5.5860	7.6	7.0	0	6.4	9419	131	155
495	PH	29.5459	5.3882	2.6	1.0	0	21.3	7627	34	344
496	PH	29.5459	5.3892	3.6	1.0	0	20.7	7703	45	460
497	PH	29.5485	5.6014	6.0	4.0	0	9.6	9039	94	204
498	PH	29.5500	5.5770	6.9	6.9	0	11.1	8861	209	267
499	PH	29.5517	5.6192	1.0	0.0	999	999.0	999	999	999
500	PH	29.5559	5.5397	4.0	4.0	0	13.3	8595	91	207
501	PH	29.5576	5.2800	6.5	3.0	3	16.3	8228	57	180
502	PH	29.5584	5.1288	3.0	1.0	1	17.2	8121	26	245
503	PH	29.5584	5.1448	7.3	3.0	2	16.7	8176	67	213
504	PH	29.5589	5.4910	5.0	4.0	0	16.3	8232	87	207
505	PH	29.5589	5.5075	3.7	3.7	0	19.5	8019	85	223
506	PH	29.5590	5.5397	4.6	3.6	1	14.6	8433	61	157
507	PH	29.5590	5.5718	5.0	5.0	0	12.3	8712	75	134
508	PH	29.5590	5.5808	7.0	6.0	1	10.5	8926	117	171
509	PH	29.5590	5.5964	7.0	4.0	0	15.1	8381	104	243
510	PH	29.5590	5.6114	1.0	0.0	999	999.0	999	999	999
511	PH	29.5592	5.2974	4.8	1.8	3	20.9	7680	36	201
512	PH	29.5592	5.3465	4.3	3.0	1	21.1	7656	75	256
513	PH	29.5592	5.3616	4.1	0.0	999	999.0	999	999	999
514	PH	29.5592	5.4265	5.0	2.0	0	18.1	8016	68	330
515	PH	29.5595	5.4110	2.0	2.0	0	18.0	8025	61	299
516	PH	29.5595	5.4595	4.0	4.0	0	14.9	8403	96	222
517	PH	29.5595	5.4747	6.0	6.0	0	16.5	8206	160	253
518	PH	29.5595	5.4917	5.0	5.0	0	16.8	8170	134	257
519	PH	29.5596	5.3143	4.0	3.0	1	20.2	7768	77	258
520	PH	29.5596	5.3295	4.0	3.0	1	19.2	7852	61	201
521	PH	29.5598	5.3870	3.0	0.0	999	999.0	999	999	999
522	PH	29.5738	5.5808	5.0	2.0	1	17.1	8142	43	207
523	PH	29.5738	5.5964	1.0	0.0	999	999.0	999	999	999
524	PH	29.5745	5.3787	5.0	2.0	2	19.1	7890	44	220
525	PH	29.5746	5.4265	4.3	2.0	1	20.4	7746	15	269
526	PH	29.5748	5.4585	5.2	4.0	1	17.9	8031	90	220
527	PH	29.5748	5.5075	5.0	3.0	2	13.4	8576	67	203
528	PH	29.5750	5.4100	4.0	2.0	0	19.0	7914	56	277
529	PH	29.5750	5.4275	4.0	1.0	1	24.7	7224	27	291
530	PH	29.5750	5.4422	4.0	1.0	3	25.0	7188	22	239
531	PH	29.5750	5.4525	5.0	5.0	0	20.4	7102	116	255
532	PH	29.5750	5.4747	5.0	2.0	2	17.5	8086	45	217

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OUS	CTY	NSCOORD	EWCOORD	URGFT	PEATFT	OVBDFT	PEATASH	PTBTULO	PTBTUMI	PTTONAF
533	PD	29.5750	5.4900	3.0	2.0	1	20.3	7750	55	278
534	PD	29.5750	5.5425	4.7	4.0	0	11.9	8759	107	239
535	PD	29.5753	5.3143	4.8	3.0	1	19.2	7884	70	232
536	PD	29.5753	5.3295	5.2	0.0	999	999.0	999	999	999
537	PD	29.5753	5.3465	4.8	2.0	1	19.7	7824	53	263
538	PD	29.5753	5.3616	5.0	2.0	2	16.3	8226	49	233
539	PD	29.5753	5.3870	5.0	0.0	999	999.0	999	999	999
540	PD	29.5756	5.3949	4.0	1.0	2	24.7	7224	24	260
541	PD	29.5834	5.2750	6.0	2.0	4	13.0	8634	35	157
542	PD	29.5864	5.5405	4.5	3.5	1	13.6	8556	87	227
543	PD	29.5887	5.2996	6.4	4.0	2	14.3	8466	76	175
544	PD	29.5896	5.3242	3.0	2.0	0	18.6	7956	73	359
545	PD	29.5910	5.4597	5.0	2.0	1	20.8	7692	53	269
546	PD	29.5910	5.4755	4.7	2.0	2	18.4	7986	40	196
547	PD	29.5910	5.4915	4.0	3.0	1	20.4	7740	61	206
548	PD	29.5912	5.3860	4.0	0.0	999	999.0	999	999	999
549	PD	29.5912	5.4025	5.0	0.0	999	999.0	999	999	999
550	PD	29.5912	5.4350	4.0	2.0	1	16.8	8172	46	218
551	PD	29.5913	5.5808	2.4	1.0	0	22.6	7474	29	301
552	PD	29.5913	5.5964	2.0	0.0	999	999.0	999	999	999
553	PD	29.5917	5.3406	7.0	1.0	2	19.8	7812	25	246
554	PD	29.5917	5.3545	6.0	4.0	1	17.6	8076	103	250
555	PD	29.5917	5.3700	4.0	3.0	0	20.5	7728	72	248
556	PD	29.6068	5.5400	4.7	4.7	0	11.6	8796	126	238
557	PD	29.6071	5.5783	2.0	0.0	999	999.0	999	999	999
558	PD	29.6073	5.3845	5.0	0.0	999	999.0	999	999	999
559	PD	29.6073	5.4014	7.0	0.0	999	999.0	999	999	999
560	PD	29.6073	5.4175	5.0	4.0	0	17.4	8103	93	224
561	PD	29.6073	5.4493	4.0	3.0	0	17.4	8104	88	282
562	PD	29.6073	5.4652	4.0	2.0	2	15.9	8280	40	189
563	PD	29.6073	5.4810	5.0	3.0	1	14.3	8476	66	203
564	PD	29.6074	5.3406	4.0	0.0	999	999.0	999	999	999
565	PD	29.6074	5.3540	5.2	4.0	1	17.2	8121	97	233
566	PD	29.6075	5.5142	4.0	3.0	1	14.8	8408	61	188
567	PD	29.6075	5.5292	5.2	5.2	0	13.7	8540	116	204
568	PD	29.6076	5.3257	4.0	2.0	1	18.7	7950	59	292
569	PD	29.6078	5.3688	7.0	3.0	1	20.3	7748	71	239
570	PD	29.6078	5.5621	5.0	1.0	2	21.2	7644	20	205
571	PD	29.6079	5.3115	3.0	0.0	999	999.0	999	999	999
572	PD	29.6080	5.5455	6.0	5.0	0	14.5	8450	136	252
573	PD	29.6111	5.4949	4.5	1.0	2	14.1	8496	20	184
574	PD	29.6225	5.5311	4.0	3.0	0	14.7	8424	65	200
575	PD	29.6225	5.5455	6.0	3.0	2	22.5	7484	70	242
576	PD	29.6228	5.4014	5.0	2.0	2	20.0	7794	50	250
577	PD	29.6230	5.3845	5.0	0.0	999	999.0	999	999	999
578	PD	29.6230	5.4175	4.0	0.0	999	999.0	999	999	999
579	PD	29.6230	5.4340	4.0	2.0	2	22.5	7488	54	281
580	PD	29.6230	5.4423	5.0	2.0	1	21.2	7650	53	270
581	PD	29.6231	5.3529	6.4	2.0	3	20.4	7746	58	290
582	PD	29.6231	5.3688	6.0	2.0	1	22.4	7506	61	319
583	PD	29.6232	5.4656	4.0	1.0	1	23.0	7428	28	295
584	PD	29.6232	5.5133	3.7	3.0	0	19.2	7890	87	287
585	PD	29.6234	5.3363	5.0	2.0	3	16.3	8232	49	232
586	PD	29.6237	5.3190	4.6	2.6	1	18.4	7980	64	235
587	PD	29.6238	5.4949	4.0	2.0	1	23.8	7338	40	215
588	PD	29.6240	5.4810	5.0	3.0	1	19.8	7812	92	307
589	PD	29.6280	5.3380	6.0	0.0	999	999.0	999	999	999
590	PD	29.6320	5.3400	5.7	0.0	999	999.0	999	999	999
591	PD	29.6325	5.3438	4.8	1.8	3	17.6	8076	46	248
592	PD	29.6330	5.5455	3.7	2.0	1	15.9	8286	59	278
593	PD	29.6390	5.3686	6.0	0.0	999	999.0	999	999	999
594	PD	29.6390	5.3848	7.0	0.0	999	999.0	999	999	999
595	PD	29.6390	5.4014	6.0	3.0	3	20.9	7680	66	224
596	PD	29.6390	5.4175	5.0	2.0	1	13.2	8610	56	256
597	PD	29.6390	5.4340	3.0	2.0	1	16.8	8172	55	261
598	PD	29.6390	5.4493	4.0	3.0	1	20.8	7692	120	406
599	PD	29.6390	5.5311	5.6	2.0	1	22.0	7548	38	198
600	PD	29.6394	5.5129	4.6	3.0	1	16.2	8240	62	196
601	PD	29.6395	5.4800	3.6	2.0	1	20.0	7794	41	205
602	PD	29.6396	5.4667	4.4	3.4	1	17.0	8145	67	188
603	PD	29.6397	5.3041	12.6	2.5	7	17.1	8004	57	185
604	PD	29.6398	5.3210	7.0	0.0	999	999.0	999	999	999
605	PD	29.6398	5.3364	7.0	1.0	6	19.9	7800	25	246
606	PD	29.6490	5.4949	4.0	3.0	0	15.0	8380	78	244
607	PD	29.6545	5.5311	4.0	1.0	1	14.4	8460	24	218
608	PD	29.6546	5.3531	8.0	4.0	3	18.6	7527	80	207

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THICKNESS & AVERAGE CHEMICAL DATA - NORTHERN EVERGLADES JAN 1982

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POS	CTY	NSCOORD	EWCOORD	URGFT	PEATFT	OVBDFT	PEATASH	PTOTULR	PTBTUMI	PTTONAF
609	PH	29.6546	5.3602	7.0	1.0	5	24.4	7260	22	234
610	PH	29.6548	5.3014	7.3	0.0	999	979.0	999	999	999
611	PH	29.6548	5.3844	8.0	0.0	999	999.0	999	999	999
612	PH	29.6548	5.4010	5.0	1.0	3	20.9	7680	25	254
613	PH	29.6548	5.4168	5.0	1.0	4	22.4	7500	25	261
614	PH	29.6548	5.4335	4.0	3.0	1	18.2	8008	71	232
615	PH	29.6548	5.5129	6.0	5.0	0	18.1	8006	187	365
616	PH	29.6555	5.4435	4.3	3.0	1	19.0	7908	76	250
617	PH	29.6555	5.4679	2.5	0.0	999	999.0	999	999	999
618	PH	29.6555	5.4802	5.1	3.1	2	17.0	8145	63	196
619	PH	29.6560	5.3210	7.5	1.0	2	21.9	7560	25	260
620	PH	29.6713	5.3680	5.2	2.0	2	23.5	7368	49	258
621	PH	29.6719	5.5129	3.4	2.0	0	15.2	8370	33	152
622	PH	29.6719	5.5311	1.0	0.0	999	999.0	999	999	999
623	PH	29.6719	5.5455	0.8	0.0	999	999.0	999	999	999
624	PH	29.6720	5.3525	5.5	1.0	3	23.3	7392	22	234
625	PH	29.6720	5.3838	8.0	0.0	999	999.0	999	999	999
626	PH	29.6720	5.4010	7.0	5.0	1	15.3	8357	130	243
627	PH	29.6735	5.4335	5.0	4.0	0	15.0	8388	110	257
628	PH	29.6735	5.4492	6.0	4.0	1	13.7	8544	77	176
629	PH	29.6735	5.4667	5.4	4.0	1	13.0	8628	76	173
630	PH	29.6735	5.4802	2.0	0.0	999	999.0	999	999	999
631	PH	29.6735	5.4949	5.9	0.0	0	14.2	8487	87	201
632	PH	29.6845	5.3531	8.9	2.9	5	18.0	8028	61	206
633	PH	29.6868	5.4015	7.0	2.0	2	19.4	7866	51	256
634	PH	29.6870	5.4172	5.7	5.0	0	19.5	7846	115	230
635	PH	29.6970	5.4645	4.0	1.0	1	21.2	7644	20	208
636	PH	29.6872	5.5129	2.0	0.0	999	999.0	999	999	999
637	PH	29.6873	5.4325	7.5	6.0	0	12.8	8648	133	201
638	PH	29.6873	5.4802	7.0	6.0	0	15.2	8360	150	234
639	PH	29.6875	5.3853	6.0	1.0	4	24.7	7224	20	220
640	PH	29.6880	5.4949	4.3	2.0	1	20.0	7794	42	213
641	PH	29.6882	5.3686	6.2	3.0	3	19.8	7808	62	208
642	PH	29.6898	5.4487	4.0	2.0	0	16.6	8190	60	287
643	PH	29.6990	5.3530	10.0	3.0	7	18.1	8012	71	232
644	PH	29.7021	5.3686	8.4	0.0	999	999.0	999	999	999
645	PH	29.7025	5.3947	5.5	4.5	1	16.7	8189	113	242
646	PH	29.7030	5.4012	2.0	0.0	999	999.0	999	999	999
647	PH	29.7030	5.4172	6.0	5.0	1	18.5	7966	136	267
648	PH	29.7030	5.4316	6.8	6.8	0	16.1	8244	145	202
649	PH	29.7035	5.4487	6.0	4.0	0	18.3	7992	83	203
650	PH	29.7035	5.4632	5.0	2.0	1	16.7	8184	41	195
651	PH	29.7037	5.4802	9.0	7.0	0	13.0	8629	142	184
652	PH	29.7047	5.4950	6.0	2.0	1	16.3	8238	49	235
653	PH	29.7150	5.3768	8.7	2.0	4	18.3	7998	45	222
654	PH	29.7187	5.4161	1.0	0.0	999	999.0	999	999	999
655	PH	29.7187	5.4487	6.7	5.7	0	14.8	8412	142	232
656	PH	29.7187	5.4632	6.8	6.0	0	11.5	8812	124	183
657	PH	29.7187	5.4802	2.0	1.0	0	11.9	8760	41	371
658	PH	29.7187	5.4949	1.5	0.0	999	999.0	999	999	999
659	PH	29.7188	5.4321	5.3	3.0	1	17.0	9148	66	212
660	PH	29.7190	5.3943	10.0	9.0	1	11.0	8868	168	164
661	PH	29.7190	5.4036	6.7	6.0	0	13.1	8616	139	210
662	PH	29.7355	5.3855	10.3	7.3	3	17.1	8141	180	237
663	PH	29.7355	5.3928	8.0	7.0	1	11.6	8794	165	209
664	PH	29.7355	5.4005	8.0	6.0	1	15.1	8372	112	174
665	PH	29.7355	5.4170	7.0	6.0	1	12.9	8636	111	168
666	PH	29.7355	5.4482	4.0	1.0	1	14.8	8412	25	228
667	PH	29.7355	5.4631	6.0	3.0	0	16.9	8164	84	268
668	PH	29.7355	5.4790	1.3	0.0	999	999.0	999	999	999
669	PH	29.7511	5.4014	8.0	7.0	1	12.1	8739	121	155
670	PH	29.7511	5.4170	8.4	7.0	1	10.1	8970	122	152
671	PH	29.7511	5.4326	2.0	0.0	999	999.0	999	999	999
672	PH	29.7511	5.4482	4.5	2.0	1	13.1	8622	43	196
673	PH	29.7511	5.4631	1.0	0.0	999	999.0	999	999	999
674	PH	29.7667	5.4005	10.0	9.0	1	13.4	8580	154	156
675	PH	29.7667	5.4170	6.5	5.0	1	11.4	8823	99	176
676	PH	29.7667	5.4326	3.0	1.0	1	18.4	7978	21	210
677	PH	29.7667	5.4478	0.5	0.0	999	999.0	999	999	999
678	PH	29.7668	5.4005	8.0	7.0	1	11.8	8775	177	225
679	PH	29.7830	5.3998	7.7	6.7	1	15.3	8312	125	175
680	PH	29.8000	5.3899	9.0	6.0	3	16.0	8272	135	212
681	PH	29.8030	5.3930	4.3	2.0	2	15.7	8304	51	240
682	PH	29.8081	5.3839	10.8	3.0	7	11.3	8831	45	134

APPENDIX 2

Logs of Chemical and Lithologic Data for Each Sample Analyzed

Abbreviations were used as follows:

Co	County
DA	Dade County
BR	Broward County
PB	Palm Beach County
HE	Hendry County
MA	Martin County
Moist	% moisture
Dens	Bulk density in tons/acre foot
Litho.	Lithology = soil type
Fib Pt	Fibric peat
Hem Pt	Hemic peat
Sap Pt	Sapric peat
Location	Core location in terms of UTM coordinates

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
DA	28.4917 05.3380	0-1 1-2	86.6 60.6	203 695	22.8 80.6	7450 515	Hem Pt	BR	29.0690 05.6590	0-1 1-2 2-3 3-3.5 Sand Substrate	88.6 84.1 87.4 82.2	162 242 203 269	12.6 11.4 14.4 51.3	8676 8820 8460 4034	Hem Pt " " " " Muck
DA	28.4917 05.3545	0-1	88.1	174	18.8	7938	Sap Pt								
DA	28.5086 05.5179	0-1 1-2 2-3 3-3.5 Limestone Substrate	84.1 87.7 87.6 87.0	246 171 173 169	19.3 19.1 15.8 17.7	7867 7902 8298 8059	Sap Pt Hem Pt " " " "	BR	29.0738 05.5880	0-1 1-2 2-3 3-4 4-5 5-5.5 Marl Substrate	89.3 89.8 90.7 87.4 76.2 55.2	161 139 133 179 394 870	14.4 13.3 14.8 30.6 49.8 84.6	8460 8592 8412 6517 4214 39	Fib Pt Hem Pt " " Muck " " Marl
DA	28.5249 05.5177	0-1 1-2 2-3	87.9 87.7 86.0	188 167 231	19.6 17.1 42.4	7840 8138 5107	Sap Pt Hem Pt Muck	BR	29.0857 05.6146	0-1 1-2 2-3 3-4 4-4.2 Marl Substrate	88.2 86.9 88.7 89.2 71.2	178 178 174 152 436	23.0 10.0 9.7 23.4 73.3	7380 8988 9024 7280 1395	Fib Pt Sap Pt Fib Pt Sap Pt Muck
DA	28.5264 05.3278	0-1 1-2 2-3 3-4 Limestone Substrate	89.7 87.5 89.1 82.6	165 167 150 280	18.1 26.8 16.3 52.4	8016 6972 8232 3902	Sap Pt Muck Sap Pt Muck								
DA	28.5410 05.5177	0-1 1-2 2-3 3-3.8 Marl over Limestone Substrate	84.1 86.4 87.2 86.7	258 204 189 212	20.5 17.3 23.7 48.1	7724 8108 7339 4420	Sap Pt " " Hem Pt Muck	BR	29.1060 05.3500	0-1 1-2 2-3 3-4 4-5 5-6 6-6.3	92.6 91.1 91.8 92.0 82.1 55.5 57.1	104 116 127 111 243 758 733	7.2 6.5 7.5 38.5 55.1 90.8 89.4	9323 9407 9287 5569 3578	Hem Pt " " " " Muck " "
DA	28.5534 05.3445	0-1 1-2 2-3 3-4 Marl Substrate	80.8 87.1 89.4 88.4	294 177 147 154	54.1 32.3 17.5 23.8	3698 6313 8088 7332	Muck " " Sap Pt " "	BR	29.1170 05.6300	0-1 1-2 2-3 Sand Substrate	90.0 91.5 86.0	139 121 192	12.7 14.9 14.7	8660 8405 8423	Fib Pt Hem Pt " "
DA	28.5578 05.5177	0-1 1-2 2-3 Limestone Substrate	81.2 88.4 87.3	291 169 181	21.0 16.9 15.0	7664 8155 8383	Sap Pt " " Hem Pt	PB	29.1278 05.7265	0-0.8 Sand Substrate	57.2	405	38.0	5629	Muck
DA	28.5799 05.3629	0-1 1-2 2-3 3-4 4-4.6 Marl Substrate	89.4 84.9 89.2 90.8 88.6	170 215 155 136 178	16.8 50.8 21.9 15.0 25.9	8172 4118 7560 8388 7080	Sap Pt Muck Sap Pt " " Muck	PB	29.1287 05.4640	0-1 1-2 2-3 3-4	63.4 80.2 82.1 78.4	371 226 210 254	56.6 23.6 35.3 41.9	3398 7356 5953 5161	Muck Sap Pt Muck " "
DA	28.6064 05.3812	0-1 1-2 2-3 3-4 4-4.9 Limestone Substrate	85.0 87.9 89.5 90.4 84.6	246 173 152 140 239	36.4 11.0 12.5 12.6 48.2	5821 8868 8688 8676 4405	Muck Sap Pt Hem Pt " " Muck	PB	29.1356 05.5224	0-1 1-2 2-3 3-4 4-4.7 4.7-5	90.0 90.1 90.8 83.8 85.9 64.5	131 146 121 233 192 524	4.2 5.6 2.8 33.3 27.4 72.7	9683 9515 9851 6193 6900 1467	Sap Pt Hem Pt " " Muck " " Marl
DA	28.6197 05.3904	0-1 1-2 2-3 3-4 4-5 Marl Substrate	90.6 89.6 90.1 90.7 90.7	140 148 139 131 128	13.5 11.0 7.8 10.4 18.0	8568 8868 9251 8940 8028	Sap Pt " " Hem Pt " " Fib Pt	PB	29.1420 05.5720	0-1 1-2 2-3 3-4	91.5 89.9 91.9 88.8	247 136 110 163	10.3 12.5 11.1 30.0	8955 8683 8853 6587	Hem Pt " " " " Muck
DA	28.6332 05.3996	0-1 1-2 2-3 3-4 4-4.5 Marl Substrate	87.5 89.8 89.5 91.2 87.0	170 141 162 120 184	16.0 12.5 13.4 10.4 42.9	8268 8688 8580 8964 5041	Sap Pt " " Hem Pt " " Muck	PB	29.1426 05.4722	0-1 1-2 2-3 3-4 4-5	78.3 85.0 85.4 81.8 61.6	183 160 170 226 573	16.7 17.4 16.8 32.0 82.6	8180 8102 8165 6748 279	Sap Pt " " Hem Pt Muck
DA	28.6460 05.4086	0-1 1-2 2-3 3-4 4-4.2 Limestone Substrate	84.9 89.4 89.0 90.9 71.1	241 143 148 133 506	19.7 10.4 12.8 10.2 79.3	7824 8940 8652 8964 675	Sap Pt " " Hem Pt " " Marl	PB	29.1428 05.6724	0-1 1-2 2-3 3-3.8 Sand over Marl Substrate	91.1 89.3 91.2 92.5	116 143 119 92	9.9 11.4 8.6 5.9	8992 8821 9161 9477	Fib Pt Hem Pt Fib Pt Sap Pt
								PB	29.1515 05.7030	0-1	82.6	175	22.8	7452	Fib Pt
								PB	29.1516 05.6980	0-2 1-2 2-3 3-3.9 Limestone Substrate	90.6 91.7 92.6 89.0	132 120 97 153	11.1 8.8 10.5 47.8	8856 9131 8928 4453	Hem Pt Fib Pt " " Muck

Depth	Moist	Dens	Ash	BTU/lb	Litho.
0-1	92.8	94	3.4	9779	Hem Pt
1-2	90.4	119	6.9	9359	Fib Pt
2-3	93.8	78	3.5	9767	" "
0-1	90.6	120	4.0	9707	Hem Pt
1-2	92.7	90	3.9	9719	" "
2-3	92.1	104	9.2	9083	" "
3-4	93.5	88	6.9	9359	" "
0-1	83.9	169	20.4	7738	Sap Pt
1-2	88.6	129	8.4	9177	" "
2-3	89.1	148	10.9	8872	Hem Pt
3-4	88.9	154	11.5	8811	" "
0-1	89.9	149	9.1	9095	Hem Pt
1-2	91.8	120	3.9	9719	Fib Pt
2-3	91.3	132	12.4	8700	" "
3-4	86.3	220	29.8	6612	Muck
4-5	71.8	460	63.7	2566	" "
5-5.3	17.3	1997	98.4		Marl
0-1	93.6	95	3.1	9035	Hem Pt
1-2	93.3	95	1.4	10019	Fib Pt
2-3	92.8	109	3.1	9815	" "
3-4	92.5	114	12.4	8700	" "
4-5	85.0	211	16.8	8172	" "
0-1	84.7	221	27.5	6888	Muck
1-2	78.6	315	59.9	3002	" "
0-1	55.6	853	84.9	3	Sand
1-2	20.6	1448	98.0		" "
Limestone Substrate					
0-1	78.2	177	17.6	8073	Sap Pt
1-2	84.4	168	15.8	8293	" "
2-3	87.5	150	15.9	8279	" "
3-4	88.4	144	14.7	8430	" "
4-5	88.7	137	16.6	8201	Hem Pt
5-6	79.0	284	54.7	3622	Muck
0-1	88.7	137	20.3	7752	Hem Pt
1-2	89.5	126	16.6	8197	" "
2-3	91.5	104	13.8	8533	" "
3-4	92.0	105	15.5	8334	Fib Pt
4-5	80.3	277	59.8	3014	Muck
5-5.3	74.9	350	67.8	2050	" "
6-6	32.5	1510	96.7		Sand
0-1	90.9	137	14.9	8400	Hem Pt
1-2	91.4	129	9.5	9047	" "
2-3	89.4	152	14.3	8472	Fib Pt
3-4	92.4	112	9.8	9011	" "
4-5	89.8	150	34.6	6037	Muck
5-6	36.5	1331	94.8		Sand
6-6.2	30.4	1624	95.7		" "
0-1	81.4	184	21.0	7670	Sap Pt
1-2	86.4	159	15.4	8342	Hem Pt
2-3	86.9	165	15.6	8313	" "
3-4	88.2	156	52.9	3843	Muck
0-1	80.0	154	15.2	8364	Sap Pt
1-2	89.0	136	11.0	8868	" "
2-3	87.4	184	7.0	9347	" "
3-4	89.4	156	7.4	9299	Fib Pt
4-5	82.8	241	43.0	5029	Muck
Sand Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.1967 05.3905	0-1 1-1.7 1.7-2	74.0 76.0 61.6	305 280 501	18.8 30.9 66.2	7932 6481 2246	Sap Pt Muck "	PB	29.2142 05.4550	0-1 1-1.5 Marl over Limestone Substrate	60.5 78.7	414 223	19.3 27.4	7872 6900	Sap Pt Muck
PB	29.1972 05.7600	0-1 1-2 Limestone Substrate	82.0 50.1	251 995	34.5 88.3	6049 8784	Muck Sand	PB	29.2142 05.4808	0-1 1-2 2-2.6 Limestone Substrate	60.8 77.3 64.6	334 239 513	18.2 17.1 60.4	8004 8136 2942	Sap Pt " Muck
PB	29.1985 05.5068	0-1 1-2 2-3 3-4 4-5 5-6	82.4 87.0 89.5 88.8 81.3 81.0	183 159 129 158 264 263	17.1 11.5 14.3 12.8 43.3 30.7	8136 8808 8472 8652 4993 6505	Sap Pt " Hem Pt " Muck "	PB	29.2157 05.5142	0-1 1-2 2-3 3-4 4-5 5-6	85.4 86.8 89.7 89.2 89.8 84.7	158 156 141 136 133 197	12.1 14.8 9.6 13.0 13.3 32.4	8736 8412 9036 8628 8592 6301	Sap Pt Hem Pt Fib Pt " " Muck
PB	29.1990 05.6100	0-1 1-2 2-3 3-4 4-5 5-6 6-6.4	89.9 91.8 92.4 88.4 87.1 67.5 44.1	124 107 148 158 173 492 1050	11.1 8.2 6.0 16.4 22.4 78.4 92.9	8858 9202 9471 8220 7506 782	Hem Pt " " " Sap Pt "	PB	29.2173 05.6570	0-1 1-2 2-3 3-4 4-5 5-5.4 Sand Substrate	92.6 92.2 92.1 93.2 91.6 77.8	97 105 104 92 114 318	11.3 11.6 13.0 13.3 34.1 74.4	8832 8796 8628 8592 6097 1263	Hem Pt " Fib Pt " Muck "
PB	29.1995 05.5052	0-1 1-2 2-3 3-4 4-5 5-6	86.5 85.6 89.2 90.9 90.7 89.9	150 165 132 107 112 123	13.1 23.0 19.5 12.0 31.5 15.3	8618 7426 7843 8746 6415 8357	Hem Pt " " Fib Pt Muck Fib Pt	PB	29.2173 05.6728	0-1 1-2 2-3 3-4 4-5 5-6 6-7	92.3 91.8 91.7 92.2 92.8 91.9 81.6	103 118 118 107 102 110 292	9.2 4.6 6.9 7.6 8.0 12.4 66.1	9083 9635 9359 9275 9227 8700 2258	Sap Pt Hem Pt " " " " Muck
PB	29.2000 05.6090	0-1 1-2 2-3 3-4 4-4.7 Sand over Limestone Substrate	91.5 92.1 91.6 84.5 77.0	124 114 120 248 389	10.7 9.2 12.2 28.5 49.0	8903 9083 8724 6768 4309	Hem Pt Sap Pt " Muck "	PB	29.2173 05.6886	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 Marl over Limestone Substrate	92.8 93.5 92.3 93.0 92.7 91.7 85.6 79.7 76.1	104 95 107 91 102 114 197 301 315	8.5 10.0 10.7 8.8 10.7 14.8 30.5 50.5 65.6	9167 8988 8904 9131 8904 8412 6529 4130 2318	Hem Pt " " " " " Muck " "
PB	29.2102 05.7600	0-1 1-2 Limestone Substrate	86.7 62.2	200 596	27.6 82.5	6876 291	Muck Sand	PB	29.2173 05.6978	0-1 1-2 2-3 3-4 4-5 5-6	92.9 92.1 90.7 92.0 93.6 58.5	105 109 135 118 102 823	9.0 6.2 7.0 6.8 12.0 90.1	9107 9443 9347 9371 8748	Hem Pt " " " " Sand
PB	29.2125 05.6000	0-1 1-2 2-3 3-4 4-5 Sand Substrate	90.5 91.4 92.2 91.6 90.4	140 127 115 125 140	18.8 11.8 9.8 11.3 34.7	7932 8772 9011 8832 6025	Hem Pt " Fib Pt Hem Pt Muck	PB	29.2181 05.6518	0-1 1-2 2-3 3-4 4-5 5-6	92.1 90.4 91.1 91.3 92.5 93.1	120 136 131 122 107 102	7.9 9.0 7.3 7.8 8.9 5.3	9239 9107 9311 9251 9119 9551	Sap Pt Hem Pt " " Fib Pt Hem Pt
PB	29.2142 05.3521	0-1 1-1.2 Limestone Substrate	50.9 79.0	598 257	35.2 16.1	5965 8256	Muck Sap Pt	PB	29.2191 05.6442	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 Sand over Marl Substrate	91.8 90.7 92.2 93.7 94.8 93.9 68.8 55.8	122 136 122 93 73 87 548 785	10.0 10.0 8.5 8.8 11.1 4.7 74.7 85.6	8988 8988 9167 9131 8856 9623 1227	Sap Pt " Hem Pt " " " Muck Sand
PB	29.2142 05.3905	0-1 1-2 Marl over Limestone Substrate	47.9 65.9	581 324	55.5 36.6	3530 5797	Muck "	PB	29.2142 05.4072	0-1 Limestone Substrate	69.5	342	33.6	6157	Muck
PB	29.2142 05.4232	0-1 1-2 2-3 3-3.6 Limestone Substrate	61.9 78.2 79.0 74.0	381 276 256 407	24.1 24.9 22.3 49.6	7296 7200 7512 4238	Sap Pt Hem Pt " Muck	PB	29.2142 05.4389	0-1 Limestone Substrate	71.2	347	18.5	7968	Sap Pt

Co.	Location	Depth	Moist	Dens.	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens.	Ash	BTU/lb	Litho.		
PB	29.2205 05.6409	0-1	91.5	131	10.4	8937	Hem Pt	PB	29.2292 05.5240	0-1	72.6	252	18.1	8016	Sap Pt		
		1-2	90.7	129	10.5	8924	" "			1-2	80.9	210	15.8	8292	" "		
		2-3	91.8	128	9.6	9039	" "			2-3	85.1	159	11.9	8760	Hem Pt		
		3-4	91.7	122	8.9	9121	" "			3-4	87.1	154	10.6	8916	" "		
		4-5	92.9	101	9.5	9053	Fib Pt			4-5	86.5	174	17.1	8135	" "		
		5-6	92.9	102	8.0	9227	" "			5-6	85.6	170	17.2	8124	Sap Pt		
		6-7	92.5	102	10.7	8907	" "										
		7-8	82.9	256	58.5	3169	Muck	PB	29.2309 05.6886	0-1	90.9	133	7.1	9335	Hem Pt		
		8-8.5	61.3	752	86.4		Sand			1-2	91.7	117	4.6	9635	" "		
PB	29.2228 05.7647	0-1	82.2	270	32.7	6265	Muck			2-3	53.6	120	7.9	9240	" "		
		1-2	85.0	210	19.1	7896	Fib Pt			3-4	91.5	128	5.3	9551	" "		
		2-3	79.2	319	54.3	3674	Muck			4-5	92.9	103	7.8	9251	" "		
		3-3.5	51.0	998	89.1		Marl			5-6	80.9	288	3.7	9743	" "		
							Limestone Substrate								Marl over Limestone Substrate		
PB	29.2233 05.5092	0-1	73.0	267	26.0	7068	Muck	PB	29.2311 05.6227	0-1	92.2	113	13.3	8592	Sap Pt		
		1-2	84.6	183	11.8	8772	Hem Pt			1-2	92.7	102	12.0	+8748	" "		
		2-3	84.7	185	18.0	8028	" "			2-3	92.7	106	12.8	8652	Hem Pt		
		3-4	85.9	193	36.6	5797	Muck			3-4	93.6	90	9.1	9096	" "		
										4-5	93.7	88	9.2	9034	Fib Pt		
										5-6	92.8	106	19.2	7884	Fib Pt		
															Limestone Substrate		
PB	29.2244 05.5900	0-1	78.6	533	56.5	3410	Muck			PB	29.2380 05.6057	0-1	91.8	122	12.2	8724	Hem Pt
		1-2	83.3	179	8.0	9227	Hem Pt					1-2	92.1	109	15.0	8308	" "
		2-3	88.9	129	21.6	7596	" "					2-3	91.8	116	10.6	8916	" "
		3-4	92.9	80	13.8	8532	" "					3-4	92.7	103	13.2	8604	Fib Pt
		4-5	69.0	305	7.6	9275	" "					4-5	92.4	109	15.0	8388	Hem Pt
		5-6	88.4	158	18.3	7908	" "					5-6	90.1	151	14.4	8460	" "
		6-6.4	86.6	168	29.5	6649	Muck					6-7	92.7	105	13.0	8628	Fib Pt
		6.4-7	44.1	1030	91.6		Marl					7-8	88.8	173	31.5	6409	Muck
															Marl Substrate		
PB	29.2258 05.6336	0-1	93.1	98	13.9	8520	Sap Pt			PB	29.2389 05.7689	0-1	85.0	192	31.4	6421	Muck
		1-2	92.8	116	10.6	8916	" "					1-2	86.3	172	30.4	6541	Muck
		2-3	90.8	132	10.3	8952	Hem Pt					2-2.2	47.0	962	90.7	Sand	
		3-4	92.4	114	13.1	8616	" "								Limestone Substrate		
		4-5	93.0	98	9.7	9023	Fib Pt										
		5-6	93.1	98	11.1	8856	" "										
		6-7	89.6	144	16.0	8268	Hem Pt										
		7-8	78.0	337	70.2	1767	Muck										
							Sand-Marl Substrate			PB	29.2400 05.5092	0-1	79.8	201	13.5	8568	Sap Pt
												1-2	86.3	148	11.2	8844	Hem Pt
PB	29.2282 05.5227	0-1	76.1	205	19.3	7872	Sap Pt					2-3	85.0	182	12.7	8664	" "
		1-2	81.3	231	19.1	7896	" "					3-4	86.9	167	14.7	8424	" "
		2-3	86.4	161	15.2	8364	" "										
		3-4	88.4	141	12.1	8736	Hem Pt			PB	29.2410 05.5800	0-1	89.6	145	22.6	7476	Hem Pt
		4-5	87.1	154	14.6	8436	" "					1-2	89.2	147	16.7	8184	" "
		5-6	84.0	209	22.0	7548	Sap Pt					2-3	90.4	118	20.4	7740	Fib Pt
												3-4	92.4	97	14.0	8508	" "
PB	29.2285 05.5855	0-1	82.3	221	54.6	3638	Muck					4-5	91.0	119	13.7	8544	Hem Pt
		1-2	87.0	167	22.0	7548	Sap Pt					5-6	89.1	145	15.0	8388	Fib Pt
		2-3	90.0	139	20.3	7752	Hem Pt					6-6.2	88.4	163	25.5	7128	Muck
		3-4	90.5	130	17.3	8148	" "										
		4-5	90.5	126	24.2	7284	Fib Pt			PB	29.2418 05.5265	0-1	79.8	227	17.0	8148	Sap Pt
		5-6	87.9	161	27.7	6864	Muck					1-2	84.1	167	13.6	8556	Hem Pt
												2-3	79.7	245	26.5	7008	Muck
PB	29.2285 05.6184	0-1	92.3	104	21.4	7620	Hem Pt					3-4	84.2	186	21.2	7644	Sap Pt
		1-2	91.8	115	21.3	7632	" "					4-4.8	77.8	267	48.2	4405	Muck
		2-3	90.9	126	21.5	7608	" "										
		3-4	93.0	105	20.8	7692	" "			PB	29.2455 05.6137	0-1	92.9	110	11.1	8856	Sap Pt
		4-5	91.2	125	18.5	7968	" "					1-2	94.4	86	4.8	9611	Hem Pt
		5-6	91.9	118	19.5	7848	Fib Pt					2-3	92.3	109	10.0	8988	" "
		6-7	85.6	202	56.4	3422	Muck					3-4	93.4	99	12.3	8712	" "
							Marl over Limestone Substrate					4-5	93.5	94	10.2	8964	" "
												5-6	91.9	112	12.2	8724	" "
PB	29.2285 05.6272	0-1	91.3	119	19.4	7860	Hem Pt					6-6.7	86.5	201	31.8	6373	Muck
		1-2	91.6	123	17.7	8064	" "									Limestone Substrate	
		2-3	90.2	139	18.6	7956	" "										
		3-4	90.5	124	18.1	8016	Fib Pt			PB	29.2458 05.3905	0-1	79.3	219	14.2	8484	Sap Pt
		4-5	90.2	130	18.9	7920	" "					1-2	83.7	187	12.9	8640	" "
		5-6	89.9	147	17.6	8076	" "					2-2.3	82.8	196	29.8	6613	Muck
		6-6.8	83.4	258	63.1	2618	Muck									Limestone Substrate	
							Marl over Limestone Substrate										
										PB	29.2461 05.4232	0-1	71.1	286	20.2	7764	Sap Pt
												1-2	76.4	203	19.5	7848	" "
												2-3	82.7	202	25.6	7116	Hem Pt
												3-3.6	84.0	169	22.9	7440	" "
																Limestone Substrate	

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.2461	0-1	79.2	255	13.6	8556	Sap Pt	PB	29.2640	0-1	80.2	245	12.2	8724	Sap Pt
	05.4550	1-2	81.4	184	13.3	8592	" "		05.5262	1-2	85.5	175	11.6	8796	" "
		2-3	72.2	395	53.4	3782	Muck			2-3	86.6	194	9.8	9011	Hem Pt
		3-4	61.2	632	74.9	1203	Marl			3-3.5	85.5	232	31.4	6421	Muck
		Limestone Substrate								3.5-4	48.3	1019	88.3		Marl
										Marl Substrate					
PB	29.2465	0-1	62.5	357	35.1	5977	Muck	PB	29.2652	0-1	71.0	413	65.0	2390	Muck
	05.4865	1-2	79.4	197	17.7	2243	Sap Pt		05.5518	1-2	87.0	180	20.0	7788	Hem Pt
		2-3	82.9	171	17.4	8100	Hem Pt			2-3	90.0	121	10.0	8988	" "
		3-3.7	86.6	157	46.4	4621	Muck			3-4	92.0	118	11.0	8868	Fib Pt
		Limestone Substrate								4-5	91.0	133	11.0	8868	Hem Pt
PB	29.2531	0-1	81.3	213	18.9	7920	Sap Pt			5-6	89.0	161	14.0	8507	" "
	05.2621	1-1.6	63.7	488	58.4	3182	Muck			6-7	87.0	194	14.0	8507	Sap Pt
PB	29.2531	0-1	48.3	607	38.4	5581	Muck			7-8	70.0	495	75.0	1191	" "
	05.2926	1-2	77.9	233	23.8	7332	Sap Pt			8-9	68.0	534	79.0	711	" "
		2-2.5	67.3	435	58.5	3170	Muck			9-10	43.0	1120	90.0		" "
		Limestone Substrate								10-10.4	44.0	1075	88.0		" "
PB	29.2531	0-1	56.7	387	24.5	7248	Sap Pt	PB	29.2652	0-1	89.2	162	11.3	8832	Sap Pt
	05.3266	Limestone Substrate							05.5618	1-2	89.8	158	10.5	8928	" "
PB	29.2531	0-1	73.8	321	16.9	8160	Sap Pt			2-3	92.1	117	8.0	9227	Fib Pt
	05.3517	1-1.4	61.5	362	26.6	6996	Muck			3-4	92.3	119	9.9	8999	Sap Pt
		Limestone Substrate								4-5	91.1	133	12.0	8748	Hem Pt
PB	29.2544	0-1	79.8	319	50.1	4178	Muck			5-5.9	87.6	201	27.2	6924	Muck
	05.7710	1-2	45.1	1132	91.0		Sand	PB	29.2690	0-1	74.3	279	11.7	8784	Peat
		Limestone Substrate							05.5066	1-2	84.6	154	9.7	9027	" "
PB	29.2565	0-1	88.9	151	12.6	8676	Sap Pt			2-3	79.8	235	12.1	8736	" "
	05.5955	1-2	91.2	120	7.9	9239	" "			3-4	85.5	200	28.8	6732	Muck
		2-3	92.7	109	12.5	8688	Hem Pt			Marl Substrate					
		3-4	92.1	110	8.6	9155	" "	PB	29.2690	0-1	82.9	162	12.2	8724	Sap Pt
		4-5	92.3	105	10.4	8940	" "		05.5034	1-2	84.0	168	18.1	8016	Hem Pt
		5-6	91.8	122	13.3	8592	" "			2-3	85.3	187	13.8	8532	" "
		7-8	79.7	336	78.5	771	Marl			3-3.5	83.7	231	32.2	6325	Muck
PB	29.2578	0-1	70.3	251	31.4	6421	Muck	PB	29.2690	0-1	77.1	244	15.9	8280	Sap Pt
	05.5314	1-2	84.4	167	15.0	8308	Sap Pt		05.5095	1-2	84.3	181	12.8	8652	Hem Pt
		2-3	87.6	143	11.9	8760	Hem Pt			2-3	86.2	166	13.0	8628	" "
		3-4	88.6	131	14.6	8436	Fib Pt			3-4	84.0	214	15.6	8316	" "
		4-5	86.5	154	15.1	8376	Hem Pt	PB	29.2707	0-1	82.9	180	20.1	9935	Hem Pt
		5-6	85.7	167	20.0	7788	" "		05.5476	1-2	86.6	168	5.4	9531	" "
		6-6.8	82.0	243	33.2	6205	Muck			2-3	87.9	156	5.1	9575	" "
PB	29.2598	0-1	91.0	128	20.2	7764	Hem Pt			3-4	86.8	197	15.8	8292	" "
	05.5815	1-2	90.8	132	16.5	8208	" "			4-5	86.0	196	22.8	7452	" "
		2-3	91.5	128	13.8	8532	" "			5-6	86.9	187	8.2	9203	" "
		3-4	92.5	107	15.2	8364	" "			6-7	66.3	531	77.2	927	Marl
		4-5	92.9	105	13.0	8628	" "	PB	29.2708	0-1	93.4	84	13.0	8628	Hem Pt
		5-6	89.2	158	30.2	6565	Muck		05.6946	1-2	93.5	88	11.6	8796	" "
		Marl over Limestone Substrate								2-3	92.9	95	12.1	8736	" "
PB	29.2600	0-1	86.2	208	7.8	9251	Hem Pt			3-4	93.1	101	11.6	8796	" "
	05.6990	1-2	94.1	87	6.2	9443	" "			4-5	93.5	92	10.3	8952	" "
		2-3	92.0	117	8.1	9215	" "			5-6	92.1	108	12.9	8640	" "
		3-4	92.8	107	7.5	9207	" "			6-7	92.5	92	11.8	8772	" "
		4-5	92.8	107	6.3	9431	" "			7-8	91.8	116	20.6	7716	" "
		5-6	94.0	90	6.0	9467	" "			8-9	91.2	118	22.5	7488	" "
		6-7	89.0	160	54.2	3686	Muck			9-10	90.4	124	16.5	8208	" "
		Sand Substrate								10-11	77.3	342	65.7	2306	Muck
PB	29.2610	0-1	74.1	409	60.9	2882	Muck			Sand & Marl over Limestone Substr.					
	05.5650	1-2	71.6	421	57.0	3350	" "	PB	29.2709	0-1	79.3	218	20.9	7680	Sap Pt
		2-3	80.0	309	49.3	4274	" "		05.5396	1-2	82.8	179	17.9	8040	Hem Pt
		3-4	88.1	150	18.2	8004	Sap Pt			2-3	86.6	314	16.0	8268	Sap Pt
		4-5	89.2	144	12.7	8664	Hem Pt			3-4	87.7	175	15.2	8364	" "
		5-6	91.8	120	10.8	8892	" "			4-5	85.3	202	23.4	7380	" "
		6-7	91.9	107	14.0	8508	" "			5-6	69.7	467	67.5	2090	Muck
		7-8	86.3	197	27.5	6888	Muck	PB	29.2740	0-1	90.2	136	2.2	9923	Hem Pt
		8-8.6	86.0	194	25.0	7188	" "		05.6779	1-2	93.8	83	1.6	9995	" "
		Marl over Limestone Substrate								2-3	94.7	78	1.7	9983	" "
										3-4	93.7	91	1.5	9999	" "
										4-5	94.2	80	1.7	9983	" "
										5-6	94.6	71	2.8	9851	" "
										6-7	91.4	117	16.9	8160	" "
										7-8	92.7	105	32.8	6249	Muck
										8-9	74.5	401	77.9	843	Sand
										Limestone Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.2750	0-1	78.6	315	52.3	3914	Muck	PB	29.2792	0-1	70.4	318	35.8	5893	Muck
	05.5547	1-2	72.3	427	61.4	2822	"		05.3905	1-2	76.9	231	26.8	6972	"
		2-3	70.8	457	63.1	2618	"			2-2.5	80.1	262	32.5	6289	"
		3-4	84.9	214	18.3	7992	Sap Pt			Limestone Substrate					
		4-5	86.9	175	14.4	8460	Hem Pt	PB	29.2797	0-1	92.6	104	9.1	9097	Sap Pt
		5-6	88.0	154	13.7	8544	"		05.6475	1-2	94.5	84	8.1	9220	"
		6-7	89.2	148	13.0	8628	"			2-3	93.6	98	6.9	9355	"
		7-8	89.7	140	16.5	8208	Fib Pt			3-4	92.2	118	10.3	8947	"
		8-8.9	90.5	122	25.0	7188	Muck			4-5	93.8	93	10.1	8953	"
		Limestone Substrate								5-6	94.0	90	9.1	9097	"
PB	29.2752	0-1	83.4	210	3.6	9755	Sap Pt			6-7	89.7	156	23.5	7371	"
	05.6620	1-2	89.6	136	2.5	9887	"			7-8	79.5	359	67.8	2054	Muck
		2-3	90.3	126	3.3	9791	"			8-8.3	33.1	1599	97.5		Sand
		3-4	90.4	124	4.4	9659	Hem Pt			Limestone Substrate					
		4-5	90.5	122	4.5	9647	"	PB	29.2818	0-1	94.1	86	7.9	9239	Hem Pt
		5-6	92.8	93	2.9	9839	"		05.5780	1-2	94.3	84	8.0	9227	"
		6-7	92.7	93	2.9	9839	Fib Pt			2-3	92.5	117	10.4	8940	"
		7-8	92.6	98	4.2	9683	"			3-4	94.1	84	8.0	9227	"
		8-9	80.4	281	59.5	3050	Muck			4-5	94.6	78	5.2	9563	"
		Marl over Limestone Substrate								5-6	92.3	107	8.8	9131	"
PB	29.2732	0-1	92.9	110	6.1	9455	Hem Pt			6-7	91.6	122	15.5	8328	"
	05.6663	1-2	92.2	114	2.3	9911	"			7-7.4	09.3	151	27.0	6948	Muck
		2-3	92.2	103	6.5	9407	"	PB	29.2821	0-1	70.4	461	59.5	3050	Muck
		3-4	94.3	79	5.1	9575	Sap Pt		05.5538	1-2	73.0	412	30.6	6517	"
		4-5	94.1	84	4.8	9611	Hem Pt			2-3	83.3	250	38.5	5569	"
		5-6	94.9	73	7.4	9299	"			3-4	88.9	139	15.6	8316	Hem Pt
		6-7	93.6	94	8.6	9155	"			4-5	88.9	144	17.9	8040	"
		7-8	89.4	164	38.0	5629	Muck			5-6	91.1	118	12.6	8676	"
		8-8.3	55.3	895	86.9		Sand			6-7	89.2	152	25.3	7092	Muck
		Sand Substrate								Marl Substrate					
PB	29.2764	0-1	83.0	239	41.5	5209	Muck	PB	29.2830	0-1	91.8	108	7.3	9311	Hem Pt
	05.7745	1-2	87.2	163	18.2	8004	Sap Pt		05.5900	1-2	94.1	79	6.0	9467	"
		2-3	77.2	277	76.7	987	"			2-3	92.6	97	3.5	9767	"
		3-3.3	65.3	340	63.9	2522	Muck			3-4	92.8	101	3.3	9791	"
PB	29.2778	0-1	80.9	181	11.3	8832	Sap Pt			4-5	92.9	92	5.2	9563	"
	05.5341	1-2	92.1	142	9.6	9035	Hem Pt			5-6	92.3	100	4.1	9695	"
		2-3	87.3	147	13.9	8520	"			6-7	92.8	97	3.6	9755	Sap Pt
		3-4	75.7	358	63.2	2606	Muck			7-8	90.0	131	6.8	9371	"
		Marl Substrate								8-9	90.1	135	7.6	9275	"
PB	29.2780	0-1	92.4	111	10.3	8952	Hem Pt			9-10	91.4	117	7.6	9275	"
	05.7308	1-2	92.3	114	6.7	9383	"			10-11	79.5	286	58.8	3134	Muck
		2-3	92.3	111	7.9	9239	"			Limestone Substrate					
		3-4	85.7	114	7.1	9335	"	PB	29.2850	0-1	66.8	338	31.1	6457	Muck
		4-5	92.9	103	7.9	9239	"		05.2621	1-1.1	71.2	320	40.6	5317	"
		5-6	93.0	97	8.3	9191	"			Limestone Substrate					
		6-7	93.0	94	6.5	9407	Fib Pt	PB	29.2850	0-1	68.4	290	21.1	7656	Sap Pt
		7-8	90.7	139	10.2	8964	Hem Pt		05.2926	1-1.7	68.8	277	27.3	6912	Muck
		Sand Substrate								Limestone Substrate					
PB	29.2785	0-1	88.4	185	7.4	9305	Sap Pt								
	05.7145	1-2	88.1	178	7.6	9272	"	PB	29.2850	0-1	74.7	234	12.6	8676	Sap Pt
		2-3	88.7	172	8.7	9148	Hem Pt		05.3266	1-1.9	65.2	418	54.5	3650	Muck
		3-4	88.8	159	12.0	8751	"			Marl over Limestone Substrate					
		4-5	88.7	157	12.1	8739	"								
		5-6	88.5	149	12.7	8660	"	PB	29.2889	0-1	85.8	140	13.3	8592	Sap Pt
		6-7	91.4	125	8.7	9143	"		05.5485	1-2	86.1	160	12.3	8712	Hem Pt
		7-8	93.0	113	7.2	9320	"			2-3	89.0	132	11.3	8832	"
		8-8.8	50.5	1051	94.7		Sand			3-4	90.4	127	10.7	8903	"
		Limestone Substrate								4-5	90.7	120	9.6	9035	Sap Pt
PB	29.2791	0-1	93.0	105	15.5	8328	Hem Pt			5-6	89.5	119	10.4	8940	Hem Pt
	05.5064	1-2	94.1	80	10.1	8976	"			6-6.5	83.1	239	31.2	6445	Muck
		2-3	92.7	110	14.8	8412	Fib Pt	PB	29.2869	0-1	90.4	138	10.5	8928	Sap Pt
		3-4	93.9	92	11.7	8784	Hem Pt		05.5540	1-2	90.1	151	11.5	8808	Hem Pt
		4-5	94.6	79	13.7	8544	"			2-3	91.3	126	9.7	9023	"
		5-6	94.0	88	10.6	8916	"			3-4	92.1	109	9.6	9035	"
		6-7	91.3	133	21.4	7620	"			4-5	92.0	125	9.8	9011	"
		7-8	72.6	442	74.7	1227	Muck			5-6	90.0	152	20.4	7740	Fib Pt
		8-8.2	72.3	431	73.1	1419	"			Marl over Limestone Substrate					
		Marl over Limestone													

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.2873	0-1	76.8	269	19.7	7825	Sap Pt	PB	29.3018	0-1	78.6	338	48.4	4381	Muck
	05.4865	1-2	83.3	169	13.3	8592	" "		05.5530	1-2	90.0	137	22.7	7464	Hem Pt
		2-2.5	85.1	186	14.7	8424	" "			2-3	89.1	153	18.1	8016	" "
										3-4	81.6	173	3.3	8592	" "
PB	29.2876	0-1	78.0	279	13.7	8544	Sap Pt			4-5	88.5	160	12.7	8664	Fib Pt
	05.4550	1-2	84.0	181	16.4	8220	" "			5-6	88.4	158	16.7	8184	" "
		2-3	75.1	227	21.4	7620	" "			6-7	88.0	165	19.6	7836	" "
		3-4	80.5	300	25.0	7188	" "	PB	29.3037	1-2	82.3	224	37.3	5713	Muck
		Limestone Substrate							05.5523	2-3	88.8	139	37.4	5700	" "
PB	29.2895	0-1	82.9	171	13.9	8520	Sap Pt			3-4	88.0	160	25.8	7092	" "
	05.5400	1-2	86.9	127	9.1	9095	" "			4-5	86.7	146	20.8	7692	Hem Pt
		2-3	88.3	142	10.0	8988	" "			5-6	88.3	147	24.9	7200	" "
		3-4	89.4	137	15.9	8280	Fib Pt			6-7	86.9	170	34.0	6108	Muck
		Marl Substrate						PB	29.3085	0-1	92.7	102	9.9	8999	Hem Pt
PB	29.2908	0-1	78.0	300	58.8	3134	Muck		05.7120	2-3	92.6	99	9.6	9035	" "
	05.7745									3-4	92.6	105	9.6	9035	" "
PB	29.2954	0-1	82.9	179	10.2	8963	Sap Pt			4-5	92.9	100	8.9	9119	Fib Pt
	05.5265	1-2	86.7	149	6.4	9419	" "			5-6	91.5	121	7.2	9323	" "
		2-3	81.7	258	8.4	9179	Hem Pt			6-7	88.8	152	22.0	7548	" "
		3-4	86.4	175	16.4	8220	" "			7-8	83.6	250	34.0	6109	Muck
		4-4.6	84.1	216	38.0	5629	Muck			Sand & Marl over Limestone Substr.					
PB	29.2958	0-1	74.9	235	24.7	7224	Sap Pt	PB	29.3085	0-1	93.1	101	16.7	8184	Hem Pt
	05.5103	1-2	81.3	188	15.9	8280	Hem Pt		05.7427	1-2	94.1	88	9.9	8999	" "
		2-3	85.8	141	14.5	8448	" "			2-3	93.1	100	10.1	8976	" "
		3-4	84.2	204	18.5	7968	" "			3-4	94.3	84	8.0	9227	" "
PB	29.2960	0-1	84.8	157	13.1	7044	Sap Pt			4-5	93.7	94	7.3	9311	" "
	05.5108	1-2	85.3	164	8.7	9143	Hem Pt			5-6	94.2	82	7.5	9287	" "
		2-3	86.1	167	10.9	8880	" "			6-7	91.6	124	29.1	6696	Muck
		Marl Substrate								7-8	59.6	744	83.7	147	Sand
PB	29.2960	0-1	92.5	110	50.6	4118	Muck			Sand over Limestone Substrate					
	05.7308	1-2	94.3	79	24.1	7296	Hem Pt	PB	29.3100	0-1	76.1	227	13.7	8544	Fib Pt
		2-3	93.6	90	19.7	7824	" "		05.5446	1-2	81.9	217	14.7	8424	Sap Pt
		3-4	93.8	88	18.5	7968	" "			2-3	83.8	203	12.1	8700	Hem Pt
		4-5	94.5	80	22.0	7548	" "			3-4	86.8	170	12.4	8700	Fib Pt
		5-6	93.7	90	21.2	7644	" "			4-5	88.7	159	11.5	8808	Hem Pt
		6-7	94.1	78	24.6	7236	" "			5-6	83.5	217	13.3	8616	Sap Pt
		7-8	88.4	182	71.6	1599	Muck			6-7	86.1	180	21.0	7668	" "
		Sand Substrate						PB	29.3100	0-1	79.6	269	49.5	4250	Muck
PB	29.2984	0-1	75.3	266	40.9	5281	Muck		05.7745	1-1.3	62.3	562	80.5	531	Sand
	05.5523	1-2	88.1	147	14.9	8412	Hem Pt			1.3-2	39.1	1149	94.3		Sand
		2-3	87.6	154	17.7	8064	Sap Pt	PB	29.3102	0-1	77.7	210	11.9	8760	Sap Pt
		3-4	91.0	119	11.4	8820	Fib Pt		05.5446	1-2	85.6	167	11.4	8820	" "
		4-5	90.9	122	11.0	8868	" "			2-3	85.1	209	11.0	8868	" "
		5-6	91.2	121	10.6	8916	" "			3-4	89.1	141	8.6	9155	Fib Pt
		6-7	90.1	135	16.1	8256	Hem Pt			4-5	88.1	163	10.0	8988	Hem Pt
		7-8	75.6	357	57.3	3314	Muck			5-6	83.7	224	11.5	8808	Sap Pt
PB	29.2984	0-1	90.3	141	12.4	8700	Hem Pt			6-6.4	83.5	214	18.7	7944	" "
	05.5549	1-2	88.8	162	14.6	8436	" "	PB	29.3111	0-1	55.8	894	85.6		
		2-3	90.4	141	9.6	9035	" "		05.7875	1-2	31.5	1538	94.4		Sand
		3-4	91.1	133	11.2	8844	" "			2-2.5	36.1	1580	94.7		Sand
		4-5	95.3	137	17.2	8124	" "			Sand Substrate					
		5-6	89.4	175	18.2	8016	" "	PB	29.3130	0-1	61.0	395	20.9	7680	Sap Pt
PB	29.3003	0-1	81.9	198	15.8	8292	Sap Pt		05.2855	1-2	82.9	181	18.8	7933	Hem Pt
	05.5382	1-2	85.2	173	16.4	8220	" "	PB	29.3130	0-1	89.8	156	11.9	8760	Hem Pt
		2-3	87.4	163	13.9	8520	Hem Pt		05.5545	1-2	88.8	176	11.6	8796	" "
		3-4	89.9	135	13.1	8616	" "			2-3	91.0	141	9.0	9107	" "
		4-5	89.9	148	14.1	8496	" "			3-4	91.6	128	9.6	9035	Fib Pt
		5-6	88.9	152	15.0	8388	" "			4-5	92.6	109	8.7	9143	" "
PB	29.3005	0-1	62.0	403	27.8	6852	Muck			5-6	90.8	144	12.0	8748	Hem Pt
	05.3500	1-2	82.0	175	17.1	8136	Hem Pt			6-6.5	86.8	220	26.1	7056	Muck
PB	29.3006	0-1	80.0	229	16.4	8220	Sap Pt			Marl over Limestone Substrate					
	05.5442	1-2	85.9	175	12.9	8640	" "								
		2-3	89.2	145	9.8	9012	Hem Pt								
		3-4	87.7	22	12.7	8664	Sap Pt								
		4-5	88.9	20	12.3	8712	Hem Pt								

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.		
PB	29.3145	0-1	88.3	155	9.6	9036	Hem Pt	PB	29.3222	0-1	76.3	265	23.6	7356	Sap Pt		
	05.5530	1-2	90.3	133	12.2	8724	" "		05.3823	1-2	83.1	169	13.3	8592	Hem Pt		
		2-3	88.7	149	7.4	9299	" "			2-3	83.1	186	16.5	8208	" "		
		3-4	89.3	146	7.6	9275	Fib Pt			3-4	56.1	673	78.7	747	Marl		
		4-5	91.4	113	11.0	8868	Hem Pt	PB	29.3222	0-1	61.6	540	44.0	4909	Muck		
		5-6	85.8	196	8.7	9143	" "		05.3980	1-2	63.5	164	17.8	8052	Hem Pt		
		6-6.4	83.4	238	25.9	3540	Muck			2-3	83.1	216	19.2	7884	" "		
		Marl Substrate							Limestone Substrate								
PB	29.3150	0-1	74.1	329	18.6	7956	Sap Pt										
	05.5180	1-2	83.9	191	16.4	8220	" "	PB	29.3222	0-1	72.4	260	16.7	8184	Sap Pt		
		2-3	84.9	197	17.5	8088	" "		05.4141	1-2	83.2	154	11.0	8868	Hem Pt		
		3-3.3	82.6	248	18.0	8028	" "			2-3	84.8	167	11.3	8832	" "		
		Sand over Limestone Substrate								3-3.2	87.0	161	13.5	8568	" "		
PB	29.3167	0-1	71.2	263	24.2	7284	Sap Pt			Limestone Substrate							
	05.1395	1-2	83.3	169	10.4	8940	Hem Pt	PB	29.3222	0-1	74.4	271	19.6	7836	Sap Pt		
		Sand over Limestone Substrate						05.4308	1-2	82.6	195	14.6	8436	Hem Pt			
PB	29.3169	0-1	77.2	227	20.6	7716	Sap Pt			2-3	84.8	201	16.6	8196	" "		
	05.1553	1-2	83.7	169	16.4	8220	Hem Pt			3-4	62.4	654	78.4	783	Marl		
		2-2.3	68.6	390	64.0	2510	Muck	PB	29.3222	0-1	75.5	354	25.0	7188	Sap Pt		
		Sand over Limestone Substrate						05.4464	1-2	81.3	212	20.6	7716	Hem Pt			
PB	29.3169	0-1	64.6	50	16.9	8160	Sap Pt			2-3	85.0	207	17.3	8112	" "		
	05.1848	1-2	64.7	68	20.6	7716	" "			3-4	72.5	441	67.3	2114	Muck		
PB	29.3169	0-1	56.0	473	38.0	5629	Muck	PB	29.3222	0-1	65.9	430	35.9	5881	Muck		
	05.2122	1-1.2	76.2	205	18.1	8016	Sap Pt		05.4704	1-2	81.7	221	17.8	8052	Sap Pt		
		Limestone Substrate							2-3	84.7	200	16.0	8268	Hem Pt			
PB	29.3169	0-1	50.2	515	28.2	6804	Muck			3-4	85.8	169	16.1	8256	" "		
	05.2441	1-2	79.1	212	17.2	8124	Sap Pt			4-4.2	83.8	232	33.2	6205	Muck		
		2-2.1	56.8	675	71.2	1647	Muck	PB	29.3222	0-1	57.5	568	50.4	4142	Muck		
		Limestone Substrate						05.4868	1-2	79.9	235	19.0	7908	Hem Pt			
PB	29.3170	0-1	89.2	156	12.7	8664	Hem Pt			2-3	84.4	192	21.1	7656	" "		
	05.5540	1-2	89.4	157	9.0	9107	Fib Pt			3-4	84.1	205	17.7	8064	" "		
		2-3	88.3	186	9.9	8999	Hem Pt			4-5	80.8	289	35.9	5881	Muck		
		3-4	90.9	143	7.0	9347	Fib Pt			5-5.7	59.1	744	80.1	579	Marl		
		4-5	92.3	109	8.1	9215	" "	PB	29.3250	0-1	67.5	280	9.9	7800	Sap Pt		
		5-6	91.6	127	10.1	8976	Sap Pt		05.5310	1-2	84.9	170	8.8	9131	" "		
		6-7	90.2	149	17.0	8148	" "			PB	29.3290	0-1	57.8	480	26.6	6996	Muck
		Limestone Substrate						05.2833	1-2	81.8	180	10.4	7900	Sap Pt			
PB	29.3197	0-1	75.7	212	14.1	8496	Sap Pt			2-3	78.3	307	41.6	5197	Muck		
	05.5523	1-2	84.0	154	12.3	8712	" "	PB	29.3290	0-1	58.1	515	25.8	7097	Muck		
		3-3	87.1	143	11.0	8868	" "		05.3004	1-2	81.7	186	14.2	8404	Hem Pt		
		3-4	86.1	184	14.0	8508	" "			2-2.7	82.1	216	23.3	7392	" "		
		4-5	88.6	186	10.0	8988	Hem Pt	PB	29.3290	0-1	55.1	290	47.7	4465	Muck		
		5-6	89.5	139	9.8	9011	Fib Pt		05.3005	1-2	80.3	226	16.0	8268	Sap Pt		
		6-7	87.8	150	12.7	8664	Hem Pt										
		7-8	87.8	166	16.3	8232	Fib Pt	PB	29.3307	0-1	88.6	178	17.6	8081	Sap Pt		
PB	29.3215	0-1	85.0	177	14.6	8436	Sap Pt		05.5542	1-2	88.8	155	13.2	8609	" "		
	05.5491	1-2	86.8	155	12.3	8712	Hem Pt			2-3	09.3	154	12.4	0701	" "		
		2-3	09.3	110	11.5	0000	" "			3-4	90.0	139	11.8	8776	Hem Pt		
		3-4	87.8	144	12.3	8712	" "			4-5	91.3	127	15.1	8382	" "		
		4-5	84.7	197	36.9	5761	Muck			5-6	89.8	147	13.0	8633	" "		
		5-5.4	84.1	213	44.7	4825	" "			6-7	89.5	166	23.0	7434	" "		
		Marl Substrate							7-7.6	90.4	144	26.4	7019	Muck			
PB	29.3220	0-1	65.9	497	33.9	6121	Muck			Marl over Limestone Substrate							
	05.5020	1-2	74.1	335	21.5	7608	Hem Pt	PB	29.3325	0-1	75.5	271	24.2	7284	Sap Pt		
		2-3	79.3	286	31.8	6373	Muck		05.3138	1-2	83.3	196	17.7	8064	Hem Pt		
		3-4	81.4	254	30.4	6541	" "			2-3	80.2	214	22.5	7488	" "		
PB	29.3221	0-1	68.8	290	17.0	8148	Sap Pt										
	05.2610	1-2	83.1	181	13.5	8568	" "	PB	29.3325	0-1	51.1	617	44.4	4861	Muck		
		2-3	81.3	231	27.7	6864	Muck		05.3500	1-2	79.8	231	19.1	7896	Sap Pt		
		Limestone Substrate							2-3	80.0	267	23.4	7380	" "			
		Limestone Substrate							PB	29.3325	0-1	71.5	314	23.6	7356	Sap Pt	
		Limestone Substrate						05.3826	1-2	79.5	226	19.2	7884	" "			
		Limestone Substrate							2-3	79.3	248	34.8	6013	Muck			

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.3328 05.1395	0-1 1-2 Limestone Substrate	75.4 81.2	256 221	23.7 23.9	7344 7320	Sap Pt Hem Pt	PB	29.3495 05.2122	0-1 1-2 2-3 3-3.2 Limestone Substrate	41.4 82.9 71.9 46.5	623 239 337 747	31.9 12.6 29.4 60.2	6361 8676 6661 2966	Muck Sap Pt Muck "
PB	29.3328 05.1553	0-1 1-2 Sand over Limestone Substrate	68.6 70.7	326 321	25.0 37.9	7188 5641	Sap Pt Muck	PB	29.3495 05.2442	0-1 1-2 Limestone Substrate	68.2 76.7	336 239	19.4 19.4	7860 7860	Sap Pt " "
PB	29.3331 05.2610	0-1 1-2	71.8 84.4	369 150	23.9 17.6	7320 8076	Peat "	PB	29.3495 05.2610	0-1 1-2	75.4 83.5	277 175	16.9 13.2	8160 8604	Sap Pt " "
PB	29.3332 05.1802	0-1 1-2 2-2.8 Limestone Substrate	54.4 83.2 82.8	419 181 187	21.9 12.8 20.3	7560 8652 7752	Sap Pt " "	PB	29.3496 05.1402	0-1 1-2 2-2.8 Limestone Substrate	55.3 74.2 65.1	462 252 413	14.7 14.6 49.3	8424 8436 4274	Sap Pt Hem Pt Muck
PB	29.3334 05.1965	0-1 1-1.1 Limestone Substrate	55.0 69.4	439 271	31.7 23.7	6385 7344	Muck Sap Pt	PB	29.3500 05.5525	0-1 1-2 2-3 3-4 4-5 5-6 6-6.6 Sand Substrate	85.6 91.0 88.2 90.5 91.2 91.6 82.5	208 130 182 144 123 129 290	28.0 10.8 12.4 8.0 9.2 11.7 25.3	6828 8892 8699 9227 9083 8784 7552	Muck Sap Pt " " Hem Pt Fib Pt Hem Pt Muck
PB	29.3335 05.2116	0-1 1-2 2-2.1 Limestone Substrate	58.3 76.5 43.7	421 207 594	36.4 18.8 65.0	5821 7932 2390	Muck Sap Pt Muck	PB	29.3508 05.5523	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	82.7 85.1 57.6 86.9 90.4 88.9 86.5 68.7	191 150 136 126 129 126 178 434	26.0 21.6 20.0 16.7 25.7 11.3 21.7 73.8	7068 7592 7788 8184 7092 8836 7583 1335	Muck Sap Pt " " Hem Pt " " " " " " Muck
PB	29.3338 05.2282	0-1 1-1.5	74.2 65.7	267 322	22.2 26.2	7524 7044	Sap Pt Muck	PB	29.3510 05.1553	0-1 1-2 2-3	75.7 84.6 75.8	205 172 342	15.3 11.8 52.6	8352 8772 3878	Sap Pt Hem Pt Muck
PB	29.3338 05.2445	0-1 1-2	78.9 77.2	233 275	15.4 43.8	8340 4933	Sap Pt Muck	PB	29.3536 05.3826	0-1 1-2 2-3 3-4	63.6 72.1 81.7 78.8	382 308 209 250	35.9 35.4 20.7 24.4	5881 5941 7704 7260	Muck " " Sap Pt " "
PB	29.3350 05.5523	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	77.4 85.2 79.8 85.8 85.7 88.9 85.3 86.4	201 146 197 150 139 115 177 160	17.2 16.4 12.4 14.9 15.7 15.4 15.8 24.6	8124 8220 8700 8400 8304 8340 8292 7236	Sap Pt Hem Pt " " " " Sap Pt Hem Pt Fib Pt Hem Pt	PB	29.3536 05.3826	0-1 1-2 2-3 3-4	63.6 72.1 81.7 78.8	382 308 209 250	35.9 35.4 20.7 24.4	5881 5941 7704 7260	Muck " " Sap Pt " "
PB	29.3380 05.5112	0-1 1-2 2-3 3-3.3	62.1 49.4 53.9 45.8	388 615 669 743	10.7 3.7 34.7 25.1	8904 9743 6025 7296	Sap Pt " " Muck "	PB	29.3536 05.4068	0-1 1-2 2-3 3-4	65.6 78.8 83.5 77.9	335 207 187 273	25.0 16.4 15.2 26.7	7188 8220 8364 6984	Sap Pt " " " " Muck
PB	29.3380 05.5370	0-1 1-2 2-3 3-4 4-4.5	49.4 74.4 73.7 64.5 67.6	454 240 135 458 426	21.5 9.4 7.1 7.9 14.9	7608 9060 9335 9239 8400	Sap Pt " " " " " " " "	PB	29.3540 05.3500	0-1 1-2 2-3 3-4	49.8 73.2 73.9 74.6	550 268 271 324	49.9 25.1 30.7 38.0	4201 7176 6505 5629	Muck " " " " "
PB	29.3390 05.7690	0-1 1-2 Sand over Marl Substrate	59.4 50.2	672 955	83.9 86.5	123	Muck	PB	29.3572 05.7640	0-1 Sand Substrate	25.9	1026	89.7		Sand
PB	29.3456 05.4304	0-1 1-2	69.5 80.3	321 236	27.3 23.5	6912 7368	Muck Sap Pt	PB	29.3594 05.1802	0-1 1-2 2-2.1 Limestone Substrate	67.7 71.4 70.2	318 283 242	23.4 19.7 19.8	7380 7824 7812	Sap Pt " " " "
PB	29.3456 05.4548	0-1 1-2 2-3 3-4	75.3 83.2 82.5 65.4	252 187 229 470	19.9 15.9 16.9 40.7	7800 8280 8160 5305	Sap Pt Hem Pt " "	PB	29.3600 05.2595	0-1 1-2	71.5 86.3	302 152	19.6 8.9	7836 9120	Sap Pt " "
PB	29.3456 05.4862	0-1 1-2 2-3	62.3 76.5 68.1	435 245 446	28.6 21.3 48.3	6756 7632 4393	Muck Sap Pt Muck	PB	29.3618 05.4786	0-1 1-2 2-3	71.5 83.7 81.0	277 185 201	35.6 11.3 32.5	5917 8832 6289	Muck Sap Pt Muck
PB	29.3470 05.5535	0-1 1-2 2-3 3-4 4-5 5-6 6-7 Marl over Limestone Substrate	91.2 89.3 88.9 90.9 91.9 91.5 78.6	119 180 133 118 105 111 301	10.9 9.8 7.2 4.0 3.2 5.5 47.6	8880 9012 9323 9707 9803 9527 4477	Sap Pt " " " " Hem Pt " " " " " " Muck	PB	29.3625 05.5073	0-1 1-2 2-3 3-4 Marl Substrate	58.2 68.7 62.8 65.1	410 327 430 428	14.1 5.6 5.5 11.7	8496 4758 9527 8784	Sap Pt " " " " " "

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.3625 05.5228	0-1 1-2 2-3 3-3.6	61.0 85.0 84.2 84.8	441 166 212 199	44.9 43.9 18.3 34.2	4801 4921 7992 6085	Muck " Sap Pt Muck	PB	29.3802 05.1460	0-1 1-2 2-3	54.2 77.8 68.8	522 248 396	41.2 9.8 7.4	5245 9011 9299	Muck Sap Pt Hem Pt
PB	29.3625 05.5394	0-1 1-2 2-3 3-3.6 Marl Substrate	65.0 82.9 51.0 65.2	336 148 653 424	13.1 8.8 4.1 22.8	8616 9131 9695 7452	Sap Pt " " Hem Pt	PB	29.3808 05.2500	0-1 1-2 2-3	61.7 82.0 85.8	468 199 186	44.7 14.0 15.0	4825 8508 8388	Muck Hem Pt "
PB	29.3640 05.5534	0-1 1-2 2-3 3-4 4-5 5-6	84.5 87.3 89.6 89.5 91.7 89.4	210 165 137 138 118 140	32.0 14.0 13.9 14.0 13.2 19.5	6349 8508 8520 8508 8604 7848	Muck Sap Pt " Hem Pt " "	PB	29.3808 05.2660	0-1 1-2 2-3	57.2 83.6 72.6	522 182 273	37.8 10.1 28.6	5653 8976 6756	Muck Sap Pt Muck
PB	29.3650 05.1395	0-1 1-2 2-3 Limestone Substrate	57.6 74.3 57.4	389 254 554	21.7 10.9 33.4	7584 8879 6181	Sap Pt Hem Pt Muck	PB	29.3808 05.2876	0-1 1-2	60.7 84.1	471 218	42.0 14.3	5149 8472	Muck Hem Pt
PB	29.3652 05.1556	0-1 1-2 2-3	46.3 82.6 83.8	679 202 187	52.7 17.0 23.6	3866 8148 7356	Muck Hem Pt "	PB	29.3810 05.1620	0-1 1-2 2-3 3-3.2	55.3 80.0 73.4 55.6	439 189 246 615	24.7 7.9 27.3 66.6	7224 9239 6912 2198	Sap Pt Hem Pt Muck "
PB	29.3658 05.1553	0-1 1-2 2-3 Limestone Substrate	45.3 73.3 35.8	621 287 1099	33.8 10.3 79.7	6133 8952 627	Muck Hem Pt Sand	PB	29.3810 05.1780	0-1 1-2 2-2.5	53.1 81.5 82.5	415 160 147	30.1 7.7 10.8	6577 9263 8842	Muck Hem Pt "
PB	29.3658 05.1878	0-1 1-2 2-3 Limestone Substrate	58.9 74.0 47.2	460 292 798	22.8 9.6 47.0	7452 9035 4549	Sap Pt Hem Pt Muck	PB	29.3816 05.1937	0-1 1-2 2-2.0	78.9 81.2 79.0	203 192 269	18.1 16.3 27.6	8016 8232 6876	Sap Pt " Muck
PB	29.3658 05.2038	0-1 1-2 2-2.5 Limestone Substrate	54.7 63.2 60.9	485 372 463	22.9 8.9 18.2	7440 9119 8004	Sap Pt Hem Pt "	PB	29.3816 05.2093	0-1 1-2 2-2.3	51.4 83.8 74.8	481 161 256	32.9 16.9 31.5	6241 8160 6409	Muck Sap Pt Muck
PB	29.3658 05.2198	0-1 1-2 Limestone Substrate	72.2 77.1	275 264	14.1 14.3	8496 8472	Sap Pt Hem Pt	PB	29.3816 05.2264	0-1 1-2 2-2.5	65.9 83.9 66.3	367 178 471	26.4 20.6 57.0	7020 7716 3350	Muck Sap Pt Muck
PB	29.3658 05.2349	0-1 1-2 2-2.9 Limestone Substrate	60.5 71.3 43.9	422 290 708	19.3 9.3 5.7	7872 9072 9503	Sap Pt " "	PB	29.3816 05.2418	0-1 1-2	51.7 73.5	577 911	53.9 42.3	3622 5113	Muck "
PB	29.3666 05.5523	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	81.7 82.4 83.4 87.6 89.2 89.0 87.9 84.0	212 232 182 171 133 151 157 208	11.4 18.7 12.2 6.3 3.5 6.2 9.0 24.8	8820 7944 8723 9431 9767 9443 9107 7212	Sap Pt " " Hem Pt Fib Pt " " Hem Pt	PB	29.3834 05.5538	0-1 1-2 2-3 3-4 4-5 5-6 6-6.4	86.9 87.5 88.8 89.7 90.8 81.8 81.3	171 145 137 130 118 260 278	23.0 12.7 10.4 7.8 12.1 21.3 34.6	7428 8664 8940 9751 8736 7632 6037	Sap Pt " " Hem Pt " " Muck
PB	29.3774 05.4718	0-1 1-2 2-3 3-4	61.1 69.7 84.3 80.1	452 375 183 256	24.1 23.2 13.0 15.6	7296 7404 8628 8316	Sap Pt Hem Pt " Sap Pt	PB	29.3857 05.4460	0-1 1-2 2-3 3-4 4-5 5-6	53.8 80.7 82.6 83.2 83.1 81.3	453 222 186 189 212 262	26.9 10.9 10.2 11.4 12.8 22.2	6960 8880 8964 8820 8652 7524	Muck Hem Pt " " Sap Pt Hem Pt
PB	29.3775 05.3905	0-1 1-2 2-3	73.7 82.4 79.0	260 182 253	16.0 9.7 19.0	8268 9024 7908	Sap Pt " "	PB	29.3857 05.4615	0-1 1-2 2-3 3-4 4-5	69.5 79.4 85.0 86.3 85.8	369 241 180 167 181	13.9 8.7 6.0 6.8 14.6	8519 9143 9467 9371 8436	Sap Pt Hem Pt " " "
PB	29.3775 05.4220	0-1 1-2 2-3	58.8 76.5 79.0	392 255 232	26.3 22.8 24.3	7032 7455 7272	Muck Sap Pt "	PB	29.3858 05.5073	0-1 1-2 2-2.2	73.8 81.4 76.3	268 228 248	22.1 14.3 15.7	7536 8472 8304	Sap Pt " "
PB	29.3775 05.4452	0-1 1-2 2-3 3-4	70.9 83.3 81.7 67.0	332 196 241 439	16.8 8.7 14.7 65.1	8172 9143 8424 2378	Sap Pt Hem Pt " Muck	PB	29.3866 05.5220	0-1 1-2 2-2.5	71.5 83.1 79.3	317 207 277	22.1 16.4 26.0	7536 8220 7068	Sap Pt " Muck
PB	29.3796 05.1306	0-1 1-2 2-2.6	70.0 67.8 63.7	309 344 411	21.1 10.0 20.6	7656 8988 7716	Sap Pt Hem Pt "	PB	29.3908 05.3188	0-1 1-2 2-3	64.4 76.2 67.8	352 265 480	28.2 38.5 62.1	3402 5569 2738	Muck " "

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.3908 05.3350	0-1 1-2 2-3	78.2 83.6 86.4	239 174 155	18.1 10.9 10.9	8016 8880 8880	Sap Pt Hem Pt " "	PB	29.3985 05.2876	0-1 1-2	69.2 77.2	317 219	24.3 25.8	7272 7082	Sap Pt Muck
PB	29.3908 05.3500	0-1 1-2 2-3	62.1 83.5 81.2	386 156 218	23.8 9.1 14.9	7332 9095 8299	Sap Pt Hem Pt " "	PB	29.3985 05.5534	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-7.9	86.8 88.3 89.7 90.6 91.9 90.0 88.9 84.8	208 177 150 141 118 146 163 249	30.1 16.2 11.8 14.4 14.9 15.0 18.3 26.2	6581 8250 8769 8457 8395 8394 7988 7041	Muck Sap Pt Hem Pt " " " " " " " " Muck
PB	29.3947 05.4820	0-1 1-2 2-3	63.7 82.6 80.7	389 205 257	16.2 20.4 18.5	8244 7744 7968	Sap Pt Hem Pt Sap Pt	PB	29.4011 05.5523	0-1 1-2 2-3 3-4 4-5 5-6 6-7	45.1 47.2 61.9 85.1 89.2 85.4 51.7	1068 996 615 171 146 214 955	88.9 90.3 78.5 771 7524 8616 7512 86.2		
PB	29.3970 05.1780	0-1 1-2 2-3 3-3.4	69.5 81.9 83.6 84.2	303 175 209 195	21.6 13.1 17.8 22.6	7596 8618 8052 7476	Sap Pt " " Hem Pt " "	PB	29.4024 05.5073	0-1 1-2 2-3 3-4 4-5 5-6 6-7	58.9 81.1 67.6 85.1 89.2 85.4 51.7	427 269 477 615 171 146 955	28.0 15.2 76.4 78.5 13.1 22.3 86.2	6825 8370 1023 771 7524 8616 7512	Muck Sap Pt Marl " " Hem Pt " " " "
PB	29.3970 05.1937	0-1 1-2 2-3	62.4 74.9 85.5	351 253 168	25.5 18.1 18.9	7128 8016 7920	Muck Sap Pt Hem Pt	PB	29.4024 05.5228	0-1 1-2 2-3 3-4 4-4.2	48.6 80.2 79.8 76.5 57.5	537 230 268 332 748	47.8 17.2 24.9 41.4 78.0	4453 8124 7200 5221 831	Muck Sap Pt " " Muck "
PB	29.3970 05.2418	0-1 1-2 2-2.5	56.6 67.5 58.0	227 339 448	33.7 15.8 16.5	6145 8292 8208	Muck Sap Pt " "	PB	29.4024 05.5387	0-1 1-2 2-3 3-4	75.3 84.5 83.5 78.1	229 180 209 335	17.3 12.1 16.2 41.1	8112 8736 8244 5257	Sap Pt " " " " Muck
PB	29.3972 05.1460	0-1 1-2 2-3	61.2 73.7 50.5	382 271 662	18.2 9.2 9.6	8004 9083 9035	Sap Pt Hem Pt " "	PB	29.4028 05.3750	0-1 1-2 2-2.8	37.9 73.9 78.5	685 310 241	48.4 21.5 19.2	4380 7609 7883	Muck Sap Pt " "
HE	29.3973 05.0870	0-1 1-2 Sand Substrate	72.2 60.1	259 481	49.0 62.7	4310 2666	Muck "	PB	29.4028 05.3970	0-1 1-2 2-3	56.6 73.2 81.4	541 355 201	38.4 57.1 16.9	5581 3338 8160	Muck " " Hem Pt
HE	29.3973 05.0966	0-1 1-2 2-3 3-4 Marl over Limestone Substrate	63.8 85.7 67.4 39.5	477 180 544 1214	43.5 22.3 72.9 90.5	4969 7512 1443 90.5	Muck Sap Pt Muck Sand	PB	29.4029 05.4304	0-1 1-2 2-3 3-4 4-5	55.1 66.7 64.4 74.9 71.9	473 374 426 322 388	33.9 20.9 36.2 41.8 66.3	6121 7680 5845 5173 2234	Muck Sap Pt Muck " " "
PB	29.3976 05.1620	0-1 1-2 2-2.7	76.2 82.9 68.9	218 192 403	16.5 18.0 36.0	8208 8028 5869	Sap Pt " " Muck	PB	29.4032 05.7328	0-0.5 Sand Substrate	50.0	783	78.7	747	Sand
PB	29.3977 05.1295	0-1 1-2 2-3 3-4 4-4.3 Marl Substrate	70.9 80.4 85.1 64.2 63.2	319 221 193 586 339	24.2 19.4 22.8 71.8 67.2	7284 7860 7452 1575 2126	Sap Pt " " Hem Pt Muck "	PB	29.4098 05.4580	0-1 1-2 2-3	55.6 75.8 75.9	596 311 288	47.7 21.8 20.3	4465 7572 7752	Muck Fib Pt Hem Pt
PB	29.3982 05.3350	0-1 1-2 2-3 3-3.5	62.3 82.3 84.1 59.5	409 190 228 698	28.2 13.6 17.3 72.1	6804 8556 8112 1539	Muck Hem Pt Sap Pt Muck	PB	29.4100 05.4820	0-1 1-2 2-2.5	65.3 81.0 74.3	475 245 379	14.0 13.3 32.6	8508 8592 6277	Sap Pt Hem Pt Muck
PB	29.3982 05.3500	0-1 1-2 2-3 3-4	75.2 82.8 83.9 79.2	265 173 187 279	27.1 14.1 14.5 37.6	6936 8496 8448 5677	Muck Hem Pt Sap Pt Muck	PB	29.4110 05.5534	0-1 1-2 2-3 3-4 4-5 5-6 6-7 Limestone Substrate	81.8 87.7 88.4 89.1 91.2 89.9 87.5	279 174 144 154 120 152 196	41.0 14.8 10.4 10.6 12.5 13.4 23.6	5269 8412 8940 8916 8688 8580 7356	Muck Sap Pt Hem Pt " " " " " " " "
PB	29.3985 05.2500	0-1 1-2 2-2.2	58.9 83.4 75.4	521 226 333	49.9 18.1 37.1	4202 8016 5737	Muck Hem Pt Muck	PB	29.4120 05.5035	0-1 1-2 2-2.8	56.7 81.3 83.3	530 203 185	34.6 16.1 14.7	6034 8255 8423	Muck Sap Pt " "
PB	29.3985 05.2660	0-1 1-2	63.8 79.2	435 252	29.7 19.5	6625 7848	Muck Sap Pt	PB	29.4120 05.5280	0-1 1-2 2-3 3-4 4-4.7	52.3 81.2 83.8 70.2 47.8	596 204 211 442 972	41.8 12.7 11.6 65.5 87.8	5173 8664 8796 2330	Muck Sap Pt " " Muck

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
HE	29.4131	0-1	80.1	235	16.1	8256	Sap Pt	PB	29.4237	0-1	75.5	375	50.4	4142	Muck
	05.1132	1-2	86.0	170	21.6	7596	" "		05.5612	1-2	86.9	173	19.2	7884	Hem Pt
		2-3	78.8	325	57.7	3266	Muck			2-3	89.0	133	12.3	8712	Fib Pt
		3-4	48.7	1076	88.7		Sand			3-4	90.6	127	9.1	9096	" "
		Sand over Limestone Substrate								4-5	92.4	101	8.3	9191	" "
PB	29.4134	0-1	66.8	311	16.2	8244	Sap Pt			5-6	90.8	126	8.8	9131	" "
	05.1295	1-2	86.7	161	11.0	8868	Hem Pt			6-7	89.7	139	9.3	9072	" "
		2-3	81.6	261	16.2	8244	" "			7-8	90.4	137	5.9	9479	" "
		3-4	65.3	560	60.9	2882	Muck			8-8.5	87.1	178	17.1	8136	" "
		4-4.5	65.0	594	69.6	.838	"			Marl over Limestone Substrate					
PB	29.4134	0-1	60.7	498	31.2	6445	Muck	PB	29.4263	0-1	53.8	683	42.6	5077	Muck
	05.1460	1-2	79.9	237	20.1	7776	Hem Pt		05.4220	1-2	77.3	248	22.0	7548	Sap Pt
		2-2.8	62.4	577	56.1	3458	Muck			2-3	81.7	235	22.0	7548	" "
										3-4	82.8	246	29.8	6673	Muck
PB	29.4134	0-1	68.2	404	40.7	5305	Muck	PB	29.4265	0-1	82.6	196	19.3	7872	Sap Pt
	05.1620	1-2	67.5	426	63.6	2558	"		05.5037	1-2	82.9	171	17.9	8040	Hem Pt
		2-2.2	43.2	915	819	363				2-3	80.6	230	30.7	6505	Muck
										Limestone Substrate					
PB	29.4134	0-1	42.8	794	55.7	3506	Muck	PB	29.4287	0-1	64.1	555	47.1	4537	Muck
	05.2196	1-2	79.2	235	17.3	8112	Sap Pt		05.5637	1-2	76.6	359	60.2	2966	"
		2-2.9	81.8	252	18.9	7920	" "			2-3	86.1	192	44.7	4825	"
PB	29.4134	0-1	35.7	826	62.4	2707	Muck			3-4	86.1	208	19.9	5401	"
	05.2260	1-2	09.1	195	13.9	8320	Sap Pt			4-5	90.9	120	0.5	9167	Hem Pt
		2-3	81.5	245	18.3	7992	" "			5-6	89.4	148	15.6	8316	" "
		3-4	83.9	223	32.9	6241	Muck								
PB	29.4135	0-1	53.9	566	35.6	5917	Muck	HE	29.4292	0-1	79.5	233	25.2	7164	Muck
	05.3350	1-2	78.5	268	28.4	6780	"		05.1129	1-2	77.2	297	48.6	4357	"
										2-2.4	27.8	1680	95.5		Sand
										Sand Substrate					
PB	29.4142	0-1	57.3	453	26.7	6984	Muck	PB	29.4292	0-1	82.7	211	14.8	8412	Sap Pt
	05.2418	1-2	78.5	263	18.1	8016	Sap Pt		05.1295	1-2	83.7	209	14.3	8472	Hem Pt
		2-3	78.2	320	22.1	7536	Hem Pt			2-3	87.3	159	10.3	8952	" "
PB	29.4142	0-1	65.5	390	26.5	7008	Muck			3-4	86.2	196	13.9	8520	" "
	05.2500	1-2	82.4	193	13.5	8568	Hem Pt			4-5	84.1	219	16.8	8172	Sap Pt
		2-3	83.8	190	13.9	8520	" "			5-6	59.9	639	80.9	483	
PB	29.4142	0-1	58.4	597	41.0	5269	Muck	PB	29.4292	0-1	64.4	394	22.1	7540	Sap Pt
	05.2660	1-2	82.4	223	15.9	8280	Hem Pt		05.1460	1-2	85.6	159	9.4	9059	" "
										2-3	79.9	309	42.3	5113	Muck
PB	29.4142	0-1	65.5	450	39.9	5401	Muck	PB	29.4292	0-1	81.5	212	18.6	7957	Sap Pt
	05.2873	1-2	84.4	214	15.3	8352	Hem Pt		05.1610	1-2	86.4	186	16.1	8261	" "
		2-3	74.5	400	37.4	5701	Muck			2-3	89.8	136	16.0	8268	Hem Pt
PB	29.4143	0-1	47.7	658	40.3	5353	Muck	PB	29.4308	0-1	78.3	239	17.6	8075	Sap Pt
	05.1780	1-2	78.3	199	18.5	7968	Sap Pt		05.1780	1-2	82.8	226	18.1	8020	" "
		2-3	80.6	174	11.7	8784	" "			2-2.2	74.9	326	30.8	6493	Muck
		3-3.8	62.3	926	78.4	783									
PB	29.4180	0-1	61.3	487	31.8	6373	Muck	PB	29.4308	0-1	49.4	545	48.1	4417	Muck
	05.4067	1-2	73.8	355	23.8	7332	Sap Pt		05.1937	1-2	65.9	409	36.9	5761	"
		2-3	82.6	235	17.9	8040	Hem Pt			2-3	60.7	445	19.9	6600	"
PB	29.4180	0-1	55.6	547	36.3	5833	Muck	PB	29.4308	0-1	42.1	805	60.8	2894	Muck
	05.4576	1-2	67.8	419	27.6	6876	"		05.2096	1-2	80.0	248	21.4	7620	Sap Pt
		2-3	63.9	461	28.0	6828	"			2-3	81.3	201	18.1	8016	Hem Pt
										3-4	74.7	362	57.9	3242	Muck
PB	29.4185	0-1	59.3	481	20.9	7680	Sap Pt	PB	29.4308	0-1	59.9	501	31.3	6439	Muck
	05.3912	1-2	82.4	218	13.1	8616	" "		05.2264	1-2	77.2	269	19.2	7885	Sap Pt
		2-3	83.2	199	13.0	8628	" "			2-3	67.2	545	61.4	2822	Muck
		Limestone Substrate								3-3.7	50.6	975	89.8		
PB	29.4190	0-1	49.9	617	38.6	5563	Muck	PB	29.4308	0-1	51.5	571	33.1	6217	Muck
	05.3745	1-2	80.9	224	15.3	8370	Sap Pt		05.2418	1-2	76.9	290	17.4	8103	Sap Pt
		2-3	78.8	299	32.3	6313	Muck			2-2.5	79.8	272	28.5	6768	Muck
		3-3.3	53.5	732	74.4	1263	"								
PB	29.4219	0-1	68.7	351	58.3	3194	Muck	PB	29.4312	0-1	58.2	617	49.3	4274	Muck
	05.7196	Sand Substrate							05.2500	1-2	82.4	218	12.5	8688	Hem Pt
										2-3	83.2	242	32.6	6277	Muck

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.4312 05.2578	0-1 1-2 2-3 Limestone Substrate	61.0 80.4 85.0	579 288 231	21.7 14.4 19.2	7584 8460 7884	Sap Pt " Hem Pt	PB	29.4350 05.3750	0-1 1-2 2-2.8	49.6 79.4 71.2	675 204 373	40.9 18.7 63.9	5277 7949 2522	Muck Hem Pt Muck
PB	29.4312 05.2660	0-1 1-2 2-3	64.6 79.7 64.0	456 282 583	29.0 25.6 51.3	6708 7116 4034	Muck " "	PB	29.4350 05.4705	0-1 1-2 2-3 3-4	68.7 42.5 84.4 86.7	348 184 223 193	22.3 12.6 16.5 16.9	7512 8676 8208 8160	Hem Pt Fib Pt Hem Pt Sap Pt
PB	29.4312 05.2735	0-1 1-2 2-2.4 Limestone Substrate	53.4 85.1 84.3	398 235 259	18.9 13.2 21.5	7920 8604 7608	Sap Pt " " "	PB	29.4350 05.4822	0-1 1-2 2-3 Limestone Substrate	72.8 82.7 84.0	288 223 228	13.7 12.8 13.7	8544 8652 8544	Sap Pt " " "
PB	29.4315 05.3350	0-1 1-2 2-3	52.2 78.6 73.8	730 303 373	61.8 29.6 44.5	2774 6636 4849	Muck " "	PB	29.4350 05.5437	0-1 1-2 2-3 3-4 4-5	65.5 81.6 85.0 87.5 80.1	345 211 167 137 250	33.2 14.2 11.0 9.4 31.1	6202 8484 8868 9059 6457	Muck Sap Pt Hem Pt " Muck
PB	29.4315 05.3500	0-1 1-2 2-3	53.0 82.0 80.0	589 218 253	53.3 16.3 23.1	3794 8232 7416	Muck Hem Pt "	PB	29.4350 05.5648	0-1 1-2 2-3 3-4 4-5 Marl over Limestone Substrate	66.9 85.8 87.2 86.1 84.2	322 146 142 158 188	29.4 11.9 16.5 15.5 23.6	6660 8760 8208 8328 7356	Muck Hem Pt " Fib Pt "
PB	29.4318 05.3065	0-1 1-2 2-3 3-4	49.5 81.9 79.4 67.9	706 214 287 487	52.2 19.1 36.0 62.6	3926 7896 5869 2678	Muck Sap Pt Muck "	PB	29.4390 05.5718	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 Marl Substrate	90.2 88.7 89.3 92.0 91.6 90.8 91.4 89.8 88.3	120 114 127 99 110 118 114 137 153	13.6 13.7 10.7 10.7 12.1 13.1 13.0 15.1	8196 8544 8904 8868 8736 8616 8628 8376	Hem Pt " Fib Pt " " " Hem Pt "
PB	29.4318 05.7057	0-1	61.3	520	77.8	855	Muck	PB	29.4403 05.5030	0-1 1-2 2-3 3-4	65.4 67.8 78.6 74.8	464 366 297 394	20.5 20.5 32.9 59.3	7728 7728 6241 3074	Sap Pt " Muck "
PB	29.4325 05.2876	0-1 1-2 2-3 3-4	43.6 71.9 80.6 53.5	881 365 261 809	58.8 42.9 29.7 83.9	3134 5441 6624 123	Muck " " "	PB	29.4411 05.6912	0-1	70.4	356	60.3	2954	Muck
PB	29.4335 05.4063	0-1 1-2 2-2.6	52.3 79.8 76.8	608 219 313	34.0 14.3 19.6	6109 8473 7840	Muck Sap Pt "	PB	29.4414 05.5740	0-1 1-2 2-3 3-4 4-5 5-6 6-7 Marl Substrate	91.1 89.9 90.2 91.6 90.2 90.7 85.9	132 136 132 109 143 151 188	12.4 14.0 11.3 13.8 13.3 15.3 21.0	8700 8508 8832 8532 8592 8352 7668	Hem Pt " " " " " "
PB	29.4340 05.5280	0-1 1-2 2-3 3-4 4-4.9	54.4 79.6 82.5 82.2 67.1	481 224 220 238 503	18.9 15.8 14.8 16.0 39.2	7920 8292 8412 8268 5485	Sap Pt " " Hem Pt Muck	PB	29.4421 05.5724	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-9.4	78.3 86.7 87.4 88.9 91.1 90.5 90.0 88.4 88.5 65.3	222 135 146 145 115 118 128 133 139 558	36.4 4.1 6.0 6.5 4.1 5.2 10.6 16.4 16.4 80.0	5821 9695 9467 9407 9695 9563 8916 8220 8220 591	Muck Sap Pt " Hem Pt " " " " "
PB	29.4344 05.5513	0-1 1-2 2-3	63.2 73.3 78.2	465 363 292	34.2 22.5 31.6	6084 7492 6397	Muck Sap Pt Muck	PB	29.4426 05.3900	0-1 1-2 2-3 3-4	70.8 85.2 82.9 54.9	348 173 220 808	37.1 12.6 19.1 82.8	5737 8676 7896 255	Muck Sap Pt " "
PB	29.4345 05.3265	0-1 1-2 2-3	59.8 72.9 78.1	462 273 272	34.1 26.9 34.5	6097 6960 6049	Muck " "	PB	29.4428 05.4878	0-1 1-2 2-3 3-4 4-5	60.9 82.0 84.5 82.0 28.9	540 204 190 243 407	35.5 18.7 17.9 33.5 61.2	5929 7944 8040 6169 2606	Muck Hem Pt " Muck "

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.4456 05.1295	0-1 1-2 2-3 3-4 4-5 5-6 6-7	60.9 83.1 85.8 85.5 85.7 85.3 72.3	533 256 223 226 226 228 484	37.4 12.7 12.6 12.4 13.6 17.1 65.8	5701 8664 8676 8700 8557 8136 2294	Muck Hem Pt Sap Pt " " " " " " Muck	PB	29.4547 05.4152	0-1 1-2 2-3 3-4	60.1 78.0 64.6 76.2	467 260 464 354	39.7 21.5 35.2 39.2	5425 7608 5965 5485	Muck Sap Pt Muck "
PB	29.4456 05.1620	0-1 1-2 2-3 3-3.7	44.2 84.0 84.6 84.5	709 180 216 204	48.4 12.1 25.2 22.7	4381 8736 7164 7764	Muck Sap Pt " " " "	PB	29.4550 05.6662	0-1 1-2 2-3	86.7 84.4 59.3	203 226 719	24.8 32.5 86.2	7209 6289	Sap Pt Muck Sand
PB	29.4456 05.1780	0-1 1-2 2-3 3-3.2	68.8 84.4 83.7 78.6	340 181 214 273	22.8 10.5 17.8 29.4	7452 8928 8052 6660	Sap Pt " " " " Muck	PB	29.4578 05.3104	0-1 1-2	57.0 80.1	530 250	30.8 18.5	6493 7968	Muck Sap Pt
PB	29.4460 05.1937	0-1 1-2 2-2.8	67.2 68.7 71.9	377 307 310	24.2 21.2 25.6	7784 7644 7116	Sap Pt " " Muck	PB	29.4578 05.3260	0-1 1-2 2-3 3-4 4-4.2	48.6 77.5 81.9 79.4 60.8	665 256 218 298 643	50.9 20.7 21.3 42.9 73.8	4082 7704 7632 5041 1335	Muck Sap Pt Hem Pt Muck "
PB	29.4460 05.2193	0-1 1-2 2-3 3-3.3	61.7 81.3 80.7 74.3	438 207 257 360	31.4 15.8 19.6 31.3	6421 8292 7836 6433	Muck Sap Pt " " Muck	PB	29.4578 05.3435	0-1 1-2 2-3	69.6 81.0 83.1	368 178 186	27.5 19.8 16.4	6888 7812 8220	Muck Sap Pt " "
PB	29.4460 05.2264	0-1 1-2 2-3 3-4	45.1 73.8 73.8 58.6	592 310 363 672	43.9 26.3 40.4 71.3	4921 7032 5341 1635	Muck " " " " "	PB	29.4581 05.4382	0-1 1-2 2-3 3-4 4-4.5	61.7 80.9 81.9 81.8 67.2	441 223 209 223 435	23.1 16.5 16.9 21.3 64.3	7416 8208 8160 7632 2474	Sap Pt " " " " Hem Pt Muck
PB	29.4460 05.2418	0-1 1-2	73.4 76.4	317 291	24.9 23.4	7200 7380	Sap Pt " "	PB	29.4581 05.4708	0-1 1-2 2-3 3-4	64.3 84.4 83.8 81.9	400 171 200 257	19.7 9.5 12.9 39.7	7824 9048 8640 5425	Sap Pt " " " " Muck
PB	29.4460 05.2565	0-1 1-2 2-3	64.5 78.2 78.8	550 347 344	24.4 15.6 28.5	7260 8316 6768	Sap Pt " " Muck	PB	29.4581 05.4878	0-1 1-2 2-3 3-4	69.9 83.8 83.5 83.4	347 181 207 272	21.9 15.0 19.1 21.5	7560 8388 7896 7608	Hem Pt " " " " Sap Pt
PB	29.4467 05.6794	0-1 1-2 2-3 3-3.4 3.4-4	77.8 86.4 81.2 41.2 49.9	366 178 256 1206 804	47.9 22.1 37.2 91.3 90.6	4441 7536 5725 91.3 90.6	Muck Hem Pt Muck " " Marl over Sand Substrate	PB	29.4583 05.4041	0-1 1-2 2-3	57.8 78.7 77.8	471 239 207	20.2 14.2 17.1	7764 8484 0136	Sap Pt " " " "
PB	29.4502 05.3754	0-1 1-2 2-3	67.1 77.9 81.2	389 280 237	24.1 19.4 17.2	7796 7860 8124	Sap Pt " " Hem Pt	PB	29.4586 05.5760	0-1 1-2 2-3 3-4 4-5	57.2 83.9 86.2 88.3 82.4	679 207 193 163 254	48.7 8.6 11.9 8.3 38.0	4345 9155 8760 9191 5629	Muck Hem Pt " " " " Muck
PB	29.4505 05.5520	0-1 1-2 2-3 3-4 4-5 5-6	61.0 82.6 84.9 84.7 87.9 57.9	668 195 201 205 719 709	50.5 13.3 14.2 17.2 26.1 81.9	4130 8592 8484 8124 7056 363	Muck Hem Pt " " " " Muck "	PB	29.4590 05.5043	0-1 1-2 2-3 3-4	72.1 77.5 85.9 80.1	337 301 185 310	18.9 10.4 10.3 40.8	7920 8940 8952 5293	Sap Pt " " Hem Pt Muck
PB	29.4515 05.5756	0-1 1-2 2-3 3-4 4-5 5-6	74.4 87.5 88.5 89.3 89.3 88.4	288 167 146 146 152 158	19.8 11.8 14.0 14.0 14.3 19.8	7812 8777 8508 8508 8472 7812	Sap Pt Hem Pt " " " " Sap Pt " "	PB	29.4591 05.3910	0-1 1-2 2-3 3-4	61.4 76.4 59.7 71.9	511 252 239 446	33.2 21.1 16.5 57.0	6205 7656 0200 3350	Muck Sap Pt Hem Pt Muck
PB	29.4525 05.6728	0-1 1-2 2-3 3-4	88.6 84.2 73.9 28.3	144 214 375 1851	12.3 43.3 72.5 96.5	8712 4993 1491	Hem Pt Muck " " Sand	HE	29.4610 05.1129	0-1 1-2 2-3 3-4	34.3 75.2 38.9 25.2	1023 267 1103 1878	70.5 26.0 88.0 94.8	1731 7068	Muck " " " " Sand
PB	29.4544 05.4250	0-1 1-2 2-3 3-4 4-5	68.0 77.2 79.7 82.4 83.3	333 291 265 241 230	39.2 32.7 25.6 27.7 36.7	5485 6265 7116 6864 5785	Muck " " " " " " "	PB	29.4612 05.1452	0-1 1-2 2-3 3-4	61.0 76.3 83.9 68.3	416 256 220 551	39.9 24.5 19.8 52.8	5405 7252 7818 3854	Muck Sap Pt Hem Pt Muck
PB	29.4544 05.4250	0-1 1-2 2-3 3-4 4-5	68.0 77.2 79.7 82.4 83.3	333 291 265 241 230	39.2 32.7 25.6 27.7 36.7	5485 6265 7116 6864 5785	Muck " " " " " " "	PB	29.4612 05.1620	0-1 1-2 2-3 3-4	67.5 82.9 76.5 68.3	375 195 333 530	30.8 16.1 24.5 62.1	6493 8256 7248 2618	Muck Sap Pt " " Muck

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.4612 05.1785	0-1 1-2 2-3	61.4 83.3 82.0	394 192 208	26.9 16.3 17.0	6960 8231 8149	Muck Sap Pt Hem Pt	PB	29.4672 05.5921	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.5	69.7 88.2 88.7 90.4 91.0 91.2 90.3 90.0 86.9	506 177 148 133 124 121 141 144 186	57.7 14.6 11.9 8.1 9.8 8.9 10.5 13.2 7.2	3266 8436 8760 9215 9011 9119 8928 8604 9323	Muck Hem Pt Fib Pt " " " " " " " " Hem Pt " "
PB	29.4612 05.1932	0-1 1-2 2-3 3-4	51.4 81.1 85.2 82.8	594 209 175 215	53.5 18.2 17.8 25.9	3570 8004 8052 7188	Muck Sap Pt " " Muck								
PB	29.4618 05.1296	0-1 1-2 2-3 3-3.6	37.9 79.3 77.8 39.4	709 227 256 997	67.4 19.2 41.0 87.9	2106 7889 5269	Muck Sap Pt Muck Sand	PB	29.4675 05.4056	0-1 1-2 2-3 3-4 4-5 5-5.3	72.2 76.6 79.3 80.1 82.4 66.8	322 254 248 275 241 554	20.3 21.4 18.1 22.8 20.3 60.2	7752 7620 8016 7452 7752 2966	Sap Pt " " " " " " " " Muck
PB	29.4620 05.2253	0-1 1-2 2-2.9	55.2 84.1 74.9	456 190 298	36.1 15.0 28.7	5857 8388 6744	Muck Sap Pt Muck								
PB	29.4620 05.2900	0-1 1-1.9 Limestone Substrate	69.7 84.2	301 195	21.7 10.5	7584 8928	Sap Pt " "	PB	29.4675 05.5892	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	86.8 88.8 89.1 91.6 92.4 92.6 91.3 90.4	190 165 150 122 105 112 136 128	23.6 14.1 10.9 10.0 7.8 12.2 10.0 13.8	7360 8502 8878 8988 9253 8725 8988 8529	Hem Pt " " Fib Pt " " Hem Pt " " " " " "
PB	29.4620 05.6590	0-1 1-2 2-3 3-4 4-4.8	87.0 89.2 90.2 84.9 64.8	204 153 145 240 685	11.3 9.7 10.0 32.6 81.9	8832 9023 8988 6277 363	Hem Pt Sap Pt Fib Pt Muck Sand								
PB	29.4621 05.6609	0-1 1-2 2-3 3-3.4 3.4-4	86.5 87.4 87.8 82.2 46.0	182 163 152 239 1008	16.4 16.7 14.3 56.8 94.1	8220 8184 8472 3374	Sap Pt Hem Pt " " Muck Sand	PB	29.4678 05.6632	0-1 1-2 2-3 3-3.5	82.8 83.0 51.4 32.1	231 234 956 1431	20.0 32.6 86.5 94.0	7788 6277	Sap Pt Muck Sand "
PB	29.4627 05.2583	0-1 1-2 2-2.1 Limestone Substrate	44.9 79.9 72.0	685 249 389	51.0 20.2 49.0	4071 7762 4309	Muck Sap Pt Muck	PB	29.4688 05.5913	2-3 3-4 4-5 5-6 6-7	74.0 79.6 80.9 87.5 88.1	340 273 252 171 158	70.0 46.3 52.4 15.9 18.1	1790 4633 3902 8280 8016	Muck " " " " Hem Pt " "
PB	29.4627 05.2740	0-1 1-2 2-2.8 Limestone Substrate	33.8 46.9 81.4	964 801 245	76.9 70.0 16.1	966 1797 8255	Muck Sap Pt	PB	29.4695 05.4550	0-1 1-2 2-3 3-4 4-4.3	57.2 81.7 81.9 80.5 75.3	467 203 245 275 408	28.9 14.8 16.7 33.2 49.7	6720 8412 8184 6205 4225	Muck Sap Pt " " Muck "
PB	29.4629 05.2105	0-1 1-2 2-2.7	73.5 81.0 79.8	359 223 263	62.5 18.3 26.9	2690 7993 6960	Muck Sap Pt Muck	PB	29.4738 05.3260	0-1 1-2 2-3 3-4	38.9 56.6 70.1 79.9	918 611 345 226	69.6 69.7 38.2 20.5	1839 1827 5605 7728	Muck " " " " Sap Pt
PB	29.4629 05.2427	0-1 1-2 2-2.7	75.3 80.5 61.1	287 279 458	29.4 17.1 44.2	6661 8136 4885	Muck Sap Pt Muck								
PB	29.4633 05.4690	0-1 1-2 2-3 3-4	78.6 83.4 78.7 78.3	1069 1133 328 328	32.7 25.1 47.6 48.5	6265 7176 4477 4369	Muck " " " " "	PB	29.4740 05.5048	0-1 1-2 2-3 3-4	67.0 84.5 86.2 64.6	460 200 192 286	25.7 19.7 19.8 35.2	7104 7824 7812 5965	Muck Hem Pt " " Muck
PB	29.4652 05.5998	0-1 1-2 2-3 3-4 4-5 5-6	76.2 88.1 89.7 89.1 90.0 89.4	275 151 141 151 147 155	10.4 9.0 6.7 9.0 9.3 13.2	8940 9108 9383 9108 9072 8604	Sap Pt Fib Pt " " Hem Pt " " " "	PB	29.4740 05.5405	0-1 1-2	71.8 83.5	354 246	14.2 13.8	8480 8531	Sap Pt Hem Pt
PB	29.4665 05.6548	0-1 1-2 2-3 3-4 4-5 Limestone Substrate	83.5 85.9 87.7 89.3 64.2	227 171 144 137 597	33.5 10.3 11.3 10.8 79.9	6169 8952 8832 8892 603	Muck Hem Pt " " Fib Pt Sand	PB	29.4741 05.6498	0-1 1-2 2-3 3-4 4-5 5-5.5	84.9 89.7 90.0 89.0 59.9 45.7	178 129 133 162 764 1038	22.1 15.8 15.3 26.1 85.9 93.5	7536 8292 8352 7056	Hem Pt " " " " Muck
PB	29.4671 05.3757	0-1 1-2 2-3 3-4 4-4.3	61.7 77.8 68.8 57.6 59.7	479 246 403 714 734	27.3 19.9 31.8 78.5 74.8	6912 7800 6373 770 1215	Muck Sap Pt Muck " " Muck								

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.4747 05.4708	0-1 1-2 2-3 3-4 4-4.5	60.6 78.8 82.9 79.0 76.2	423 219 188 271 354	19.3 14.9 13.8 15.6 35.8	7872 8400 8532 8316 5893	Sap Pt " " " Muck	PB	29.4787 05.1620	0-1 1-2 2-3 3-4 4-4.5	57.0 85.0 81.1 82.9 81.1	428 180 267 237 284	27.3 15.2 20.9 27.0 38.8	6913 8364 7680 6948 5533	Muck Sap Pt Hem Pt Muck "
PB	29.4747 05.4887	0-1 1-2 2-3 3-4	64.1 78.9 82.0 69.3	548 275 252 490	33.2 22.7 23.2 51.4	6205 7464 7404 4022	Muck Hem Pt " Muck	PB	29.4790 05.2583	0-1 1-2 2-3 3-4 4-4.1	46.1 73.0 72.5 82.4 73.1	760 292 345 241 313	49.6 26.1 37.0 17.5 37.4	4238 7056 5749 8088 5701	Muck " " Hem Pt Muck
PB	29.4750 05.3915	0-1 1-2 2-3 3-4 4-4.5	59.9 71.7 79.7 73.0 70.2	465 302 233 359 449	30.1 19.4 16.4 37.5 46.7	6577 7860 8220 5689 4585	Muck Sap Pt " Muck "	PB	29.4790 05.2745	0-1 1-2 2-3 3-4 4-5	39.8 61.4 69.9 74.2 53.4	688 581 331 240 832	63.4 68.0 40.5 23.1 82.2	2582 2030 5390 7416 327	Muck " " Hem Pt "
PB	29.4764 05.4394	0-1 1-3 2-3 3-4 4-5 5-5.3	61.8 75.9 78.8 81.9 81.7 79.1	403 288 264 224 246 210	16.2 16.5 14.4 16.4 19.8 21.5	8244 8244 8460 8220 6613 1611	Sap Pt " " " Muck "	PB	29.4790 05.2900	0-1 1-2 2-3 3-4 4-5 5-6 6-7	47.7 73.1 69.9 81.0 83.4 79.1 60.9	620 467 239 226 212 257 747	69.3 37.8 18.2 21.0 12.4 33.6 74.4	1874 5653 8004 7668 8700 6157 1263	Muck " Sap Pt Hem Pt " Muck "
PB	29.4767 05.3282	0-1 1-2 2-3 3-4	70.4 83.1 83.4 84.9	325 190 215 233	18.8 12.1 13.9 18.1	7932 8736 8520 8016	Sap Pt Hem Pt Sap Pt Hem Pt	PB	29.4792 05.6461	0-1 1-2 2-3 3-4 4-5 5-6 6-7	82.8 88.3 89.3 90.9 91.1 90.3 85.4	258 137 136 121 125 132 215	27.3 8.9 8.0 10.1 8.6 15.4 37.9	6912 9119 9227 8976 9155 8340 5641	Muck Hem Pt Fib Pt " " Hem Pt Muck
PB	29.4767 05.5517	0-1 1-2 2-3	77.2 84.8 85.1	297 200 208	18.4 11.6 17.7	7980 8796 8064	Hem Pt " "	PB	29.4793 05.3793	0-1 1-2 2-3 3-4	56.0 72.9 78.2 79.2	480 336 280 219	17.9 15.0 13.6 18.2	8040 8388 8556 8004	Sap Pt " " "
PB	29.4767 05.5836	0-1 1-2 2-3 3-4 4-5	75.4 86.4 86.4 86.8 79.7	320 195 193 177 331	21.7 10.5 12.0 13.8 10.3	7584 8928 8748 8532 8952	Sap Pt Fib Pt Hem Pt Sap Pt "	PB	29.4820 05.6014	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-7.8	87.7 88.8 89.4 90.2 91.8 90.5 90.5 88.2	153 135 127 129 106 120 116 148	15.5 21.6 18.2 18.4 8.9 15.4 14.0 30.8	8328 7596 8004 7980 9119 8340 8508 6492	Hem Pt " " " " " Fib Pt Muck
PB	29.4770 05.1295	0-1 1-2 2-3	67.3 82.9 45.2	322 187 142	39.8 22.7 93.1	5413 7464	Muck Hem Pt Sand	PB	29.4828 05.4875	0-1 1-2 2-3 3-3.7	55.8 76.3 82.5 81.6	596 346 280 304	41.4 19.6 14.3 39.6	5221 7836 8472 5437	Muck Sap Pt " Muck
PB	29.4770 05.1454	0-1 1-2 2-3 3-4 4-4.8	55.9 83.8 84.0 85.7 73.5	524 161 165 173 348	39.4 11.8 15.3 17.6 56.8	5461 8772 8352 8076 3374	Muck Sap Pt Hem Pt " Muck	PB	29.4864 05.4560	0-1 1-2 2-3	65.5 82.5 69.8	426 208 471	23.6 12.4 62.1	7356 8700 2738	Sap Pt " Muck
PB	29.4770 05.1780	0-1 1-2 2-3 3-3.4	74.1 85.0 84.7 86.5	309 156 154 135	19.6 15.6 16.4 12.5	7836 8316 8220 8688	Sap Pt " Hem Pt "	PB	29.4885 05.6050	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.4	87.8 89.1 89.3 90.4 92.3 91.0 90.9 90.8 86.7	179 162 148 152 120 137 144 141 215	26.6 9.5 8.9 8.5 7.6 9.6 11.3 11.7 28.1	6996 9047 9119 9167 9275 9035 8832 8784 6816	Muck Hem Pt " Fib Pt Hem Pt " " " Muck
PB	29.4770 05.1942	0-1 1-2 2-3 3-4	47.0 82.7 84.6 83.9	696 224 230 209	51.0 14.5 23.7 23.4	4070 8448 7344 7300	Muck Hem Pt " "	PB	29.4885 05.6050	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.4	87.8 89.1 89.3 90.4 92.3 91.0 90.9 90.8 86.7	179 162 148 152 120 137 144 141 215	26.6 9.5 8.9 8.5 7.6 9.6 11.3 11.7 28.1	6996 9047 9119 9167 9275 9035 8832 8784 6816	Muck Hem Pt " Fib Pt Hem Pt " " " Muck
PB	29.4770 05.2101	0-1 1-2 2-3 3-3.5	59.3 84.7 84.1 86.9	539 167 171 140	53.9 15.8 14.3 16.1	3722 8292 8472 8256	Muck Hem Pt " "	PB	29.4885 05.6050	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.4	87.8 89.1 89.3 90.4 92.3 91.0 90.9 90.8 86.7	179 162 148 152 120 137 144 141 215	26.6 9.5 8.9 8.5 7.6 9.6 11.3 11.7 28.1	6996 9047 9119 9167 9275 9035 8832 8784 6816	Muck Hem Pt " Fib Pt Hem Pt " " " Muck
PB	29.4770 05.2256	0-1 1-2 2-3 3-4	51.6 80.6 85.2 81.8	461 201 165 194	33.2 16.2 13.7 36.6	6205 8244 8544 5797	Muck Sap Pt Hem Pt Muck	PB	29.4885 05.6050	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.4	87.8 89.1 89.3 90.4 92.3 91.0 90.9 90.8 86.7	179 162 148 152 120 137 144 141 215	26.6 9.5 8.9 8.5 7.6 9.6 11.3 11.7 28.1	6996 9047 9119 9167 9275 9035 8832 8784 6816	Muck Hem Pt " Fib Pt Hem Pt " " " Muck
PB	29.4770 05.2416	0-1 1-2 2-2.2	48.7 70.0 50.2	730 468 710	50.7 60.2 70.9		Muck " "	PB	29.4885 05.6050	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.4	87.8 89.1 89.3 90.4 92.3 91.0 90.9 90.8 86.7	179 162 148 152 120 137 144 141 215	26.6 9.5 8.9 8.5 7.6 9.6 11.3 11.7 28.1	6996 9047 9119 9167 9275 9035 8832 8784 6816	Muck Hem Pt " Fib Pt Hem Pt " " " Muck

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.4902	0-1	52.1	744	60.9	2884	Muck	PB	29.4950	0-1	39.6	714	68.4	1982	Muck
	05.5367	1-2	84.2	208	20.3	7757	Hem Pt		05.2415	1-2	73.9	340	29.2	6685	"
		2-3	85.3	209	19.5	7850	" "			2-3	78.2	298	31.1	6433	"
										3-4	79.5	299	34.5	6049	"
PB	29.4908	0-1	71.3	303	24.7	7224	Sap Pt	PB	29.4950	0-1	63.6	537	24.3	7272	Sap Pt
	05.4708	1-2	82.7	226	13.9	8520	" "		05.3835	1-2	80.1	254	16.0	8268	" "
		2-3	85.2	209	18.2	8004	" "			2-3	79.7	298	29.2	6685	Muck
		3-3.5	77.2	344	49.4	4261	Muck			3-4	81.4	286	32.9	6241	"
										Limestone Substrate					
PB	29.4910	0-1	64.1	552	32.8	6253	Muck	PB	29.4950	0-1	82.0	264	32.0	6349	Muck
	05.5060	1-2	77.2	337	17.7	8064	Sap Pt		05.6100	1-2	88.9	166	9.1	9095	Sap Pt
		2-3	75.5	345	19.7	7824	" "			2-3	90.5	150	9.4	9059	Fib Pt
		3-4	81.6	260	26.2	7044	Muck			3-4	91.3	128	6.5	9407	" "
PB	29.4912	0-1	48.9	708	45.3	3626	Muck			4-5	93.0	105	7.2	9323	" "
	05.4875	1-2	78.6	324	18.3	7992	Sap Pt			5-6	91.8	127	8.4	9179	" "
		2-3	82.0	285	14.3	8472	" "			6-7	91.0	143	9.6	9035	Hem Pt
		3-4	81.9	281	16.3	8232	" "			7-8	90.6	148	12.3	8712	Sap Pt
		4-4.7	83.9	249	24.7	7224	" "			8-9	89.6	166	16.5	8208	" "
		Limestone Substrate								Marl Substrate					
PB	29.4918	0-1	75.7	268	12.7	8664	Sap Pt	PB	29.4959	0-1	89.9	135	12.1	8736	Hem Pt
	05.5525	1-2	85.9	186	11.7	8784	Hem Pt		05.6019	1-2	89.2	159	18.8	7932	" "
		2-3	85.8	190	15.0	8388	Sap Pt			2-3	90.5	128	11.7	8784	" "
		3-4	82.2	523	22.6	7476	" "			3-4	89.6	148	25.0	7104	" "
PB	29.4918	0-1	70.0	299	17.3	8112	Sap Pt			4-5	91.2	116	10.6	8916	" "
	05.5836	1-2	83.6	211	9.0	9108	Hem Pt			5-6	90.2	135	14.1	8496	" "
		2-3	81.6	269	12.6	8676	Sap Pt			6-7	91.6	117	11.6	8796	" "
		3-4	84.0	234	12.2	8724	Hem Pt			7-8	87.8	161	13.6	8556	" "
		4-5	85.6	193	14.8	8412	Sap Pt			Marl over Limestone Substrate					
PB	29.4930	0-1	88.8	174	11.7	8784	Hem Pt	PB	29.4960	0-1	83.9	224	33.1	6217	Muck
	05.6075	1-2	90.4	149	9.8	9011	" "		05.6110	1-2	87.8	181	16.1	8256	Hem Pt
		2-3	90.8	139	8.0	9227	Fib Pt			2-3	89.4	145	12.2	8724	" "
		3-4	92.2	121	6.9	9359	" "			3-4	91.4	119	8.6	9155	Fib Pt
		4-5	91.4	134	8.3	9191	" "			4-5	93.0	99	10.3	8952	" "
		5-6	91.3	136	9.1	9095	" "			5-6	90.9	129	11.1	8856	Hem Pt
		6-7	90.9	144	10.6	8916	" "			6-7	89.9	136	13.7	8544	" "
		7-8	90.6	148	12.3	8712	" "			7-8	89.7	124	13.7	8544	" "
		8-8.5	91.0	141	30.2	6565	Muck			8-8.9	88.6	165	15.2	8364	" "
		Marl Substrate								Marl Substrate					
PB	29.4932	0-1	85.2	214	18.4	7980	Sap Pt	PB	29.4980	0-1	66.6	458	23.4	7380	Sap Pt
	05.6387	1-2	88.1	162	38.6	5557	Muck		05.4892	1-2	81.9	211	18.7	7944	Hem Pt
		2-3	89.1	143	15.2	8364	Fib Pt			2-3	81.5	245	18.3	7992	" "
		3-4	91.7	109	8.7	9143	" "			3-4	86.3	180	18.2	8004	" "
		4-5	58.4	736	88.3		Sand			4-5	86.8	203	24.2	7284	Sap Pt
		Limestone Substrate													
PB	29.4936	0-1	44.3	722	53.9	3722	Muck	PB	29.4990	0-1	74.4	301	13.1	8616	Sap Pt
	05.1942	1-2	79.3	260	19.9	7800	Sap Pt		05.5835	1-2	87.4	161	7.6	9275	Hem Pt
		2-3	80.5	269	26.3	7032	Muck			2-3	79.1	256	12.2	8724	Sap Pt
		3-4	58.0	747	75.0	1191	"			3-4	87.1	182	9.0	9108	" "
										4-5	84.5	229	32.1	6337	Muck
PB	29.4936	0-1	44.3	734	78.2	1413	Muck	PB	29.4995	0-1	84.1	195	14.0	8508	Hem Pt
	05.2265	1-2	78.7	271	22.1	7535	Sap Pt		05.6421	1-2	86.9	170	14.5	8548	" "
		2-3	80.1	248	20.3	7740	" "			2-3	88.7	155	8.8	9131	" "
PB	29.4938	0-1	34.9	823	65.6	2318	Sap Pt			3-4	88.1	158	12.1	8736	" "
	05.2583	1-2	32.1	673	73.9	1323	" "			4-5	87.6	169	25.0	7188	" "
		2-3	74.4	310	28.1	6816	" "			Sand Substrate					
		3-4	67.2	435	48.4	4381	Hem Pt	PB	29.4997	0-1	61.4	472	47.3	4513	Muck
		4-4.4	77.8	279	41.5	5209	" "		05.6111	1-2	85.8	163	11.7	8784	Sap Pt
		Limestone Substrate								2-3	75.0	335	27.2	6924	Muck
PB	29.4945	0-1	63.9	388	29.8	6612	Muck			3-4	85.6	193	15.5	8328	Sap Pt
	05.1454	1-2	78.3	231	16.5	8208	Sap Pt			4-5	87.6	177	12.3	8712	Fib Pt
		2-3	73.5	373	50.0	4190	Muck			5-6	89.3	146	11.2	8844	" "
		3-3.4	49.4	853	80.5	531	Sand			6-6.5	89.5	140	10.7	8904	Hem Pt
PB	29.4947	0-1	40.0	634	56.2	3446	Muck	PB	29.5036	0-1	71.2	374	34.9	6001	Muck
	05.2745	1-2	65.4	403	45.6	4717	"		05.6351	1-2	81.8	257	27.0	6948	"
		2-3	83.1	204	15.3	8352	Sap Pt			2-3	81.8	238	25.1	7176	"
		Limestone Substrate								3-4	83.2	234	26.2	7044	"
PB	29.4950	0-1	41.1	710	59.6	3040	Muck			4-5	68.3	502	74.0	1311	"
	05.2100	1-2	79.0	264	21.1	7652	Sap Pt			5-5.5	81.3	243	44.7	4835	"
		2-2.7	78.1	294	31.5	6409	Muck			5.5-6	33.1	1526	93.1		Sand
										Sand Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.5055	0-1	65.9	423	25.1	7176	Muck	PB	29.5138	0-1	77.0	361	13.3	8592	Sap Pt
	05.6019	1-2	86.1	177	8.5	9167	Hem Pt		05.6190	1-2	87.7	203	5.1	9575	Hem Pt
		2-3	86.1	192	12.8	8652	" "			2-3	90.4	162	8.1	9215	Fib Pt
		3-4	86.5	178	14.5	8448	" "			3-4	88.2	198	11.2	8844	Hem Pt
		4-5	83.7	235	39.9	5401	Muck			4-5	87.6	215	13.4	8580	" "
										5-5.8	79.1	342	34.7	6025	Muck
										Limestone Substrate					
PB	29.5057	0-1	59.1	496	52.1	3938	Muck								
	05.1810	1-2	84.7	189	15.1	8376	Sap Pt	PB	29.5156	0-1	54.7	539	53.5	3770	Muck
		2-3	83.9	224	21.2	7644	" "		05.1875	1-2	79.8	241	21.4	7620	Sap Pt
		3-4	85.7	197	22.8	7452	Hem Pt			2-3	85.2	176	16.1	8256	Hem Pt
		4-4.5	83.5	245	25.0	7188	" "			3-4	83.3	230	23.0	7428	" "
										4-5	86.2	184	17.0	8148	" "
										5-6	84.4	208	21.5	7608	" "
										Limestone Substrate					
PB	29.5060	0-1	84.3	209	41.6	5197	Muck								
	05.6180	1-2	89.7	154	10.8	8892	Fib Pt	PB	29.5156	0-1	54.9	717	63.1	2018	Muck
		2-3	90.4	140	9.3	9071	" "		05.6334	1-2	39.4	1176	88.2		Sand
		3-4	91.6	131	8.1	9215	" "								
		4-5	91.8	117	7.2	9323	" "								
		5-6	92.1	119	9.5	9047	" "								
		6-7	91.3	132	11.4	8820	Hem Pt	PB	29.5172	0-1	49.2	779	79.6	639	Muck
		7-8	90.5	149	12.1	8736	" "		05.6192	1-2	86.8	186	14.6	8436	Hem Pt
		8-8.4	85.5	244	40.2	5365	Muck			2-3	83.6	243	19.0	7908	" "
		Marl over Limestone Substrate								3-4	85.0	233	32.8	6253	Muck
										4-5	55.1	811	81.0	471	Marl
										Marl Substrate					
PB	29.5071	0-1	60.4	450	32.6	6277	Muck								
	05.4350	1-2	81.5	222	13.5	8568	Sap Pt	PB	29.5200	0-1	72.2	354	20.8	7692	Sap Pt
		2-3	82.7	196	12.5	8688	" "		05.5916	1-2	83.1	232	10.4	8939	" "
		3-4	80.9	249	16.9	8160	" "			2-3	86.0	216	11.8	8772	" "
		4-5	78.6	293	10.4	7900	" "			3-4	87.7	189	11.0	8868	Hem Pt
		5-5.9	73.8	389	24.8	7212	" "			4-4.7	87.3	199	13.8	8532	Fib Pt
										Limestone Substrate					
PB	29.5080	0-1	70.5	378	16.4	8220	Hem Pt								
	05.5916	1-2	85.5	229	8.5	9167	" "	PB	29.5200	0-1	75.1	273	17.4	8099	Hem Pt
		2-3	87.1	199	11.0	8868	Sap Pt		05.6221	1-2	81.2	218	21.9	7562	" "
		3-4	88.2	179	11.7	8784	" "			2-2.1	7.2	1678	95.9		
		4-5	87.7	189	20.1	7776	Hem Pt			Limestone Substrate					
		Marl over Limestone Substrate													
PB	29.5097	0-1	85.6	203	45.6	4717	Muck								
	05.6209	1-2	90.1	131	18.7	7944	Hem Pt	PB	29.5218	0-1	34.8	921	64.4	2462	Muck
		2-3	89.7	162	22.6	7476	" "		05.2100	1-2	49.3	563	51.5	4010	" "
		3-4	81.7	260	53.9	3722	Muck			2-3	72.0	400	40.8	5293	" "
		Marl Substrate								3-4	70.1	354	38.1	5617	" "
										4-5	83.8	224	19.4	7860	Hem Pt
PB	29.5100	0-1	50.4	607	37.7	5655	Muck			5-6	84.7	205	19.9	7800	" "
	05.1620	1-2	81.3	245	17.2	8124	Sap Pt			6-6.5	80.7	268	28.9	6720	Muck
		2-3	83.8	218	18.8	7932	" "								
		3-4	83.8	209	21.4	7620	Hem Pt	PB	29.5224	0-1	44.3	687	56.7	3386	Muck
									05.2250	1-2	72.1	345	26.8	6972	" "
PB	29.5100	0-1	29.2	834	65.7	2306	Muck			2-3	66.9	411	44.0	4909	" "
	05.1942	1-2	72.2	326	30.4	6541	" "			3-4	79.4	284	26.3	7032	" "
		2-3	79.1	267	29.1	6697	" "			4-5	70.6	423	45.7	4705	" "
		3-4	55.5	846	82.3	315	" "			5-6	82.3	235	23.7	7344	Hem Pt
		4-4.3	59.2	737	81.6	399	Marl								
PB	29.5107	0-1	46.0	722	48.0	4429	Muck								
	05.3460	1-2	74.3	117	22.1	7536	Sap Pt	PB	29.5230	0-1	37.5	711	55.6	3518	Muck
		2-3	74.2	339	25.7	7104	Muck		05.1946	1-2	72.2	379	34.4	6061	" "
		3-4	81.6	254	23.0	7428	Hem Pt			2-3	80.8	250	20.1	7776	Sap Pt
		Limestone Substrate								3-4	84.4	211	14.1	8496	Hem Pt
										4-5	80.3	273	26.8	6972	Muck
										Marl Substrate					
PB	29.5110	0-1	46.8	667	67.4	2702	Muck								
	05.2938	1-2	70.8	426	48.2	4405	" "	PB	29.5232	0-1	32.6	845	65.0	2390	Muck
		Marl over Limestone Substrate							05.1782	1-2	71.2	405	36.5	5809	" "
										2-3	73.1	337	19.3	7872	Sap Pt
PB	29.5110	0-1	52.0	698	52.6	3878	Muck			3-4	82.5	234	33.7	6145	Muck
	05.3870	1-2	74.8	347	35.7	5905	" "			4-5	82.5	237	33.9	6121	" "
		2-3	81.1	249	19.7	7824	Sap Pt			5-5.3	76.4	321	42.3	5113	" "
		3-4	73.7	354	43.9	4921	Muck								
		4-4.1	80.9	264	25.1	7284	" "	PB	29.5258	0-1	61.8	449	52.1	3938	Muck
									05.1454	1-2	83.6	197	17.9	8040	Sap Pt
PB	29.5138	0-1	78.3	238	17.7	8064	Hem Pt			2-3	84.1	214	21.0	7669	" "
	05.6170	1-2	85.3	182	14.9	8400	Fib Pt			3-4	84.5	201	26.3	7032	Muck
		2-3	88.1	162	14.3	8472	" "			4-5	60.5	688	73.3	1395	" "
		3-4	89.4	143	15.2	8364	Hem Pt			Marl Substrate					
		4-5	87.9	177	17.7	8064	Sap Pt								
		5-6	83.3	227	40.7	5305	Muck								

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.5259	0-1	70.7	377	19.9	7805	Sap Pt	PB	29.5405	0-1	64.5	355	44.4	4861	Muck
	05.5231	1-2	83.3	224	12.7	8660	" "		05.6100	1-2	59.6	475	43.8	4933	"
		2-3	75.5	394	60.3	2949	Muck			2-3	81.0	246	17.7	8064	Sap Pt
		Marl Substrate								3-4	68.4	472	54.2	3686	Muck
PB	29.5262	0-1	53.2	521	34.2	6085	Muck			4-4.4	44.3	1057	81.3	435	Marl
	05.1288	1-2	83.0	218	12.4	8700	Sap Pt			Marl Substrate					
		2-3	83.0	212	12.8	8652	" "	PB	29.5420	0-1	74.0	381	6.4	9419	Sap Pt
		3-4	84.5	215	16.4	8220	Hem Pt		05.5931	1-2	86.7	223	7.2	9323	" "
		4-5	73.5	384	43.9	4921	Muck			2-3	87.1	216	9.9	8999	" "
		5-6	53.7	884	84.7		Marl			3-4	87.0	222	12.1	8736	Hem Pt
		Marl Substrate								4-5	87.0	222	18.1	8016	Sap Pt
PB	29.5268	0-1	54.0	523	29.4	6660	Muck			5-5.6	60.4	783	76.7	987	
	05.4110	1-2	71.8	400	24.7	7224	Sap Pt	PB	29.5422	0-1	81.7	219	14.9	8399	Sap Pt
		2-3	72.6	471	59.6	3038	Muck		05.5233	1-2	81.8	277	21.6	7600	" "
		3-4	76.3	382	35.4	5941	"			2-3	79.9	306	31.1	6457	Muck
		4-5	79.3	327	28.4	6780	"			Marl over Limestone Substrate					
		5-5.7	50.9	1003	87.8	345	Marl	PB	29.5422	0-1	79.2	230	17.1	8136	Hem Pt
PB	29.5268	0-1	61.6	484	23.3	7392	Sap Pt		05.5397	1-2	83.7	205	13.9	8520	" "
	05.4267	1-2	67.9	379	18.6	7956	" "			2-3	85.0	182	16.4	8220	" "
		2-3	75.0	310	18.4	7980	Hem Pt			3-4	85.7	180	15.9	8280	" "
		3-4	85.5	186	13.9	8520	" "			4-4.2	60.6	593	84.4	632	
		4-5	82.9	207	15.8	8292	" "			Limestone Substrate					
PB	29.5268	0-1	66.4	536	20.6	7716	Sap Pt	PB	29.5425	0-1	41.2	737	47.7	4465	Muck
	05.4910	1-2	75.7	267	17.3	8112	" "		05.1288	1-2	81.6	233	15.7	8304	Sap Pt
		2-3	84.4	209	13.0	8628	Hem Pt			2-3	79.1	295	26.2	7044	Muck
		3-4	85.3	203	14.1	8496	" "			3-4	83.8	216	29.5	6648	"
		4-5	86.5	197	14.8	8412	" "			4-5	89.7	140	13.5	8568	Hem Pt
		Marl Substrate								5-5.4	84.5	209	22.0	7548	Sap Pt
PB	29.5270	0-1	58.6	491	21.6	7596	Sap Pt	PB	29.5425	0-1	60.1	453	38.1	5612	Muck
	05.4988	1-2	58.7	483	25.5	7128	" "		05.4988	1-2	80.5	212	16.0	8264	Sap Pt
		2-3	83.3	199	13.0	8628	" "			2-3	79.6	283	19.7	7823	" "
		3-4	83.5	219	13.6	8556	" "	PB	29.5428	0-1	36.0	808	59.9	3002	Muck
		4-4.9	85.9	207	15.1	8376	" "		05.1608	1-2	76.7	283	18.3	7992	Sap Pt
PB	29.5273	0-1	85.1	158	8.5	9167	Sap Pt			2-3	83.0	227	19.2	7884	" "
	05.5968	1-2	81.3	209	15.5	8328	" "			3-4	84.2	196	18.1	8016	Hem Pt
		2-3	85.7	162	10.0	8988	Hem Pt			4-5	86.1	185	24.3	7272	" "
		3-4	47.1	185	11.7	8784	" "			5-6	39.9	1289	92.2		Marl
		4-5	87.3	170	11.2	8844	" "	PB	29.5432	0-1	37.8	834	83.6	159	
		5-5.3	83.3	226	18.0	8028	" "		05.2974	1-2	73.8	359	43.1	5017	Muck
		Marl over Limestone Substrate								2-3	78.3	322	26.1	7056	"
PB	29.5279	0-1	76.4	224	11.5	8808	Sap Pt			3-4	84.9	212	16.0	8268	Hem Pt
	05.5397	1-2	84.9	186	11.6	8796	Hem Pt			4-4.7	80.7	272	38.2	5605	Muck
		2-3	87.5	143	11.4	8820	" "			4.7-5	46.6	1030	85.1		Marl
		3-4	28.2	199	16.4	8220	" "			Limestone Substrate					
		Marl over Limestone Substrate						PB	29.5432	0-1	57.6	494	47.9	4441	Muck
PB	29.5279	0-1	67.5	409	15.6	8315	Sap Pt		05.3465	1-2	78.1	275	22.8	7452	Sap Pt
	05.5712	1-2	79.0	258	14.2	8483	Hem Pt			2-3	77.4	303	22.0	7548	" "
		2-3	85.2	204	19.3	7868	" "			3-4	81.6	253	20.4	7740	"
		3-3.4	82.7	238	16.9	8165	" "			4-4.8	62.2	650	33.1	6217	Muck
		Marl over Limestone Substrate								Limestone Substrate					
PB	29.5287	0-1	51.4	544	76.2	1047		PB	29.5432	0-1	63.2	434	38.6	5557	Muck
	05.3130	1-2	61.2	566	78.5	771			05.3616	1-2	74.2	362	35.3	5953	"
		2-3	76.1	337	26.0	7068	Muck			2-3	70.2	179	50.9	4082	"
		3-4	77.8	343	32.3	6313	"	PB	29.5432	0-1	55.4	465	40.6	5317	Muck
		4-4.7	76.4	368	42.7	5065	"		05.3870	1-2	73.1	310	21.9	7560	Sap Pt
PB	29.5385	0-1	56.1	537	29.6	6637	Muck			2-3	68.3	492	72.7	1467	Muck
	05.3870	1-2	72.6	331	20.2	7764	Sap Pt			3-4	69.5	506	61.8	2774	"
		2-3	79.0	240	14.8	8412	Hem Pt			4-4.5	62.3	699	71.4	1623	"
		3-4	74.6	299	32.3	6313	Muck			Marl Substrate					
		4-5	76.9	288	22.2	7524	Sap Pt	PB	29.5432	0-1	48.1	707	57.5	3290	Muck
		5-5.8	78.6	269	18.7	7944	" "		05.4110	1-2	37.6	918	81.5	411	
		Limestone Substrate						PB	29.5432	0-1	60.5	413	30.3	6554	Muck
									05.4585	1-2	78.4	250	18.5	7970	Sap Pt
										2-3	75.6	358	22.1	7542	" "
										Marl Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.5432	0-1	62.1	465	17.5	8088	Sap Pt	PB	29.5589	0-1	79.2	229	15.7	8304	Sap Pt
	05.4747	1-2	81.5	220	14.2	8484	" "		05.4910	1-2	83.7	184	16.2	8244	Hem Pt
		2-3	84.3	220	13.0	8628	" "			2-3	81.9	223	16.4	8220	" "
		3-4	82.5	254	13.9	8520	Hem Pt			3-4	85.7	192	16.9	8160	" "
		4-5	86.4	190	19.3	7872	" "			4-5	67.5	440	65.1	2378	Muck
															Marl Substrate
PB	29.5435	0-1	53.7	680	56.5	3410	Muck	PB	29.5589	0-1	74.5	222	13.8	8532	Hem Pt
	05.2800	1-2	53.9	651	55.0	3590	" "		05.5075	1-2	78.4	263	20.9	7680	Sap Pt
		2-3	68.3	428	57.6	3278	" "			2-3	80.8	214	14.9	8400	" "
		3-4	85.0	187	22.4	7500	Hem Pt			3-3.7	82.3	191	22.7	7464	Hem Pt
		4-5	88.2	145	16.3	8232	" "								Marl over Limestone Substrate
		5-6	80.4	263	37.2	5725	Muck								
PB	29.5448	0-1	74.9	148	11.9	8760	Sap Pt	PB	29.5590	0-1	59.6	364	36.3	5833	Muck
	05.5860	1-2	85.3	170	4.8	9611	Hem Pt		05.5397	1-2	82.6	169	14.8	8412	Hem Pt
		2-3	88.2	148	3.7	9743	" "			2-3	87.6	140	13.5	8568	" "
		3-4	88.0	165	5.8	9491	" "			3-4	87.4	162	13.5	8568	" "
		4-5	89.1	133	5.1	9575	" "			4-4.6	87.6	155	16.7	8184	" "
		5-6	89.6	154	6.2	9443	" "								Marl over Limestone Substrate
		6-7	88.4	167	7.3	9311	" "								
		7-7.6	71.0	461	70.8	1695	Muck	PB	29.5590	0-1	84.2	163	11.3	8832	Hem Pt
PB	29.5459	0-1	71.6	344	21.3	7627	Sap Pt		05.5718	1-2	88.9	126	9.1	9095	" "
	05.3882	1-2	74.2	366	35.7	5906	Muck			2-3	89.1	120	13.7	8544	" "
		2-2.6	71.9	413	40.5	5334	" "			3-4	90.6	126	10.8	8892	" "
										4-5	89.6	135	16.6	8196	" "
															Marl over Limestone Substrate
PB	29.5459	0-1	62.0	460	20.7	7703	Sap Pt	PB	29.5590	0-1	60.7	348	25.4	7140	Muck
	05.3892	1-2	65.1	540	62.2	2725	Muck		05.5808	1-2	79.0	186	8.7	9143	Hem Pt
		2-3	65.9	556	59.9	3002	" "			2-3	83.5	198	10.5	8928	" "
		3-3.6	66.3	518	48.8	4331	" "			3-4	85.8	161	10.5	8928	" "
										4-5	86.3	162	9.2	9084	" "
										5-6	85.9	171	12.7	8664	" "
										6-7	87.6	148	11.5	8808	" "
															Marl over Limestone Substrate
PB	29.5485	0-1	73.3	258	13.2	8604	Sap Pt	PB	29.5590	0-1	68.9	356	24.8	7211	Sap Pt
	05.6014	1-2	96.6	178	6.9	9359	Hem Pt		05.5964	2-3	85.3	175	10.1	8978	Hem Pt
		2-3	83.4	204	8.0	9227	" "			3-4	81.5	260	30.9	6482	Muck
		3-4	86.7	174	10.2	8964	" "			4-5	84.2	199	10.3	8955	Hem Pt
		4-5	56.1	842	78.7	747	" "			5-6	50.4	894	80.2	566	Sand
		5-6	54.8	774	80.3	555	" "			6-7	26.7	1612	95.5	"	"
PB	29.5500	0-1	73.6	336	13.8	8532	Fib Pt								
	05.5770	1-2	84.7	261	8.7	9143	Hem Pt	PB	29.5590	0-1	40.0	415	45.6	4717	Muck
		2-3	86.7	229	7.9	9239	" "		05.6114						Sand Substrate
		3-4	86.4	239	7.4	9299	" "								
		4-5	85.8	247	8.3	9191	Fib Pt	PB	29.5592	0-1	42.5	664	67.0	2150	Muck
		5-6	85.7	253	10.3	8952	Hem Pt		05.2974	1-2	69.1	40.1	54.2	3686	" "
		6-6.9	85.4	270	21.0	7668	" "			2-3	62.2	495	55.0	3590	" "
										3-4	83.9	183	18.1	8016	Hem Pt
PB	29.5517	0-1	61.1	525	66.3	2234	Muck			4-4.8	82.1	218	23.7	7344	Sap Pt
	05.6192														Marl over Limestone Substrate
PB	29.5559	0-1	80.2	218	10.0	8988	Sap Pt	PB	29.5592	0-1	42.6	798	56.2	3446	Muck
	05.5397	1-2	79.7	192	17.0	8148	Hem Pt		05.3465	1-2	79.4	223	19.5	7848	Sap Pt
		2-3	83.2	197	10.3	8952	" "			2-3	81.3	264	19.6	7836	Hem Pt
		3-4	83.3	223	15.8	8292	" "			3-4	80.5	282	24.2	7284	" "
										4-4.3	60.2	622	69.2	1887	Muck
															Marl over Limestone Substrate
PB	29.5576	0-1	52.1	631	47.4	4501	Muck	PB	29.5592	0-1	60.0	585	57.2	3326	Muck
	05.2800	1-2	57.8	507	45.8	4693	" "		05.3616	1-2	73.0	294	29.1	6697	" "
		2-3	81.4	234	25.6	7116	" "			2-3	76.3	314	45.6	4717	" "
		3-4	85.2	195	18.2	8004	Sap Pt			3-4.1	78.7	269	26.4	7020	" "
		4-5	88.4	132	13.2	8364	" "								Limestone Substrate
		5-6	86.2	192	15.6	8316	" "								
		6-6.5	50.2	766	77.1	939	" "								
PB	29.5584	0-1	41.4	751	50.2	4168	Muck	PB	29.5592	0-1	64.5	401	18.6	7956	Sap Pt
	05.1288	1-2	80.1	245	17.2	8121	Sap Pt		05.4265	1-2	77.9	258	17.6	8076	" "
		2-3	76.7	336	42.1	5136	Muck			2-3	71.8	398	60.0	2990	Muck
										3-4	78.4	284	36.4	5821	" "
										4-5	76.4	293	26.9	6960	" "
															Limestone Substrate
PB	29.5584	0-1	47.0	604	62.8	2654	Muck	PB	29.5595	0-1	72.5	341	19.1	7894	Sap Pt
	05.1448	1-2	71.7	363	37.8	5653	" "		05.4110	1-2	79.4	257	16.9	8156	" "
		2-3	82.8	239	20.4	7740	Sap Pt								
		3-4	85.0	209	14.2	8484	" "								
		4-5	86.4	190	15.7	8304	" "								
		5-6	81.6	254	30.4	6541	Muck								
		6-7	77.4	332	42.6	5077	" "								
		7-7.3	33.5	1482	92.6		Marl								

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.5595	0-1	66.5	397	18.7	7944	Sap Pt	PB	29.5750	0-1	65.5	435	27.5	6888	Muck
	05.4595	1-2	84.3	164	9.9	9000	" "		05.4422	1-2	72.6	420	52.7	3866	"
		2-3	86.3	155	12.7	8664	" "			2-3	79.0	294	32.8	6253	"
		3-4	86.2	170	18.2	8004	Hem Pt			3-4	81.1	239	25.0	7188	Sap Pt
PB	29.5595	0-1	73.5	314	16.0	8268	Sap Pt	PB	29.5750	0-1	72.5	314	22.9	7440	Sap Pt
	05.4747	1-2	72.6	303	15.3	8352	" "		05.4595	1-2	82.4	190	13.5	8568	Hem Pt
		2-3	80.8	248	14.3	8472	Hem Pt			2-3	80.1	265	25.0	3074	Sap Pt
		3-4	83.4	235	15.0	8388	" "			3-4	79.7	294	22.6	7476	" "
		4-5	85.1	222	17.8	8052	" "			4-5	84.7	214	17.8	8052	" "
		5-6	86.4	197	20.7	7704	" "	PB	29.5750	0-1	47.1	596	54.1	3698	Muck
PB	29.5595	0-1	71.8	349	18.3	7992	Sap Pt		05.4747	1-2	72.4	335	26.8	6972	"
	05.4917	1-2	79.2	301	19.5	7848	" "			2-3	81.9	220	16.6	8196	Sap Pt
		2-3	83.0	242	15.2	8364	Hem Pt			3-4	84.1	214	18.4	7975	" "
		3-4	86.4	184	15.6	8316	" "			4-5	58.7	733	73.8	1335	Muck
		4-5	85.9	211	15.5	8328	" "	PB	29.5750	0-1	59.9	462	30.6	6518	Muck
PB	29.5596	0-1	34.0	36.7	31.1	6457	Muck		05.4900	1-2	80.8	238	17.1	8131	Sap Pt
	05.3143	1-2	77.7	239	20.4	7740	Sap Pt			2-3	75.6	318	23.5	7368	Hem Pt
		2-3	74.3	292	25.0	7068	" "	PB	29.5750	0-1	69.8	397	20.6	7716	Sap Pt
		3-4	78.9	243	14.1	8496	" "		05.5405	1-2	87.2	190	8.3	9191	" "
		Limestone Substrate								2-3	87.5	197	9.9	8999	" "
PB	29.5596	0-1	45.0	603	49.6	4238	Muck			3-4	89.1	172	8.8	9131	Fib Pt
	05.3295	1-2	79.0	207	18.8	7932	Sap Pt			4-4.7	87.8	196	25.7	7104	Muck
		2-3	80.3	193	16.5	8208	" "			Marl over Limestone Substrate					
		3-4	83.9	203	23.1	7416	" "	PB	29.5753	0-1	67.1	347	35.2	5965	Muck
		Limestone Substrate							05.3143	1-2	80.7	238	17.1	8136	Sap Pt
Pb	29.5598	0-1	63.2	423	32.8	6253	Muck			2-3	84.4	189	15.8	8292	" "
	05.3870	1-2	71.6	365	31.3	6433	"			3-4	80.5	269	24.7	7224	Hem Pt
		2-3	75.3	336	39.3	5473	"			4-4.8	66.1	558	70.4	1743	Muck
		Limestone Substrate								Limestone Substrate					
PB	29.5738	0-1	73.2	260	28.2	6804	Muck	PB	29.5753	0-1	36.6	879	71.9	1563	Muck
	05.5808	1-2	84.9	162	10.9	8880	Sap Pt		05.3295	1-2	41.3	736	70.6	1719	"
		2-3	80.8	234	34.3	6073	Muck			2-3	58.3	537	59.7	3026	"
		3-4	80.7	252	23.2	7404	Hem Pt			3-4	70.3	347	36.0	5869	"
		4-5	33.5	1470	90.6		Marl			4-5	70.7	447	44.3	4873	"
		Limestone Substrate								5-5.2	45.6	772	72.2	1527	"
PB	29.5738	0-1	44.9	843	72.4	1503	Muck			Limestone Substrate					
	05.5964	Sand Substrate						PB	29.5753	0-1	49.8	630	50.9	4082	Muck
PB	29.5745	0-1	62.8	507	43.7	4945	Muck		05.3465	1-2	73.8	282	21.7	7584	Sap Pt
	05.3787	1-2	77.5	254	27.2	6925	"			2-3	79.5	245	17.7	8064	" "
		2-3	81.1	237	18.3	7992	Hem Pt			3-4	74.0	350	30.3	6553	Muck
		3-4	84.6	204	20.0	7788	" "			4-4.8	76.8	313	29.1	6696	"
		4-5	76.2	330	50.2	4166	Muck	PB	29.5753	0-1	49.7	656	45.0	4789	Muck
PB	29.5746	0-1	54.1	486	37.5	5689	Muck		05.3616	1-2	70.1	345	34.2	6085	"
	05.4265	1-2	73.0	298	23.7	7344	Sap Pt			2-3	79.8	218	13.1	8616	Sap Pt
		2-3	78.4	239	17.1	8148	" "			3-4	81.1	249	19.6	7836	" "
		3-4	70.9	373	48.1	4417	Muck			4-5	77.0	332	26.6	6996	Muck
		4-4.3	67.4	397	42.1	5137	"			Marl over Limestone Substrate					
PB	29.5748	0-1	58.9	544	39.2	5485	Muck	PB	29.5753	0-1	47.1	684	52.4	3902	Muck
	05.4585	1-2	80.6	260	19.9	7800	Sap Pt		05.3870	1-2	58.7	589	76.9	963	"
		2-3	82.2	220	17.9	8040	" "			2-3	62.5	510	73.6	1359	Muck
		3-4	84.8	207	17.1	8136	Hem Pt			3-4	72.5	388	52.2	3926	"
		4-5	86.7	192	17.0	8148	" "			4-5	73.3	392	51.7	3986	"
		5-5.2	73.7	394	62.0	2750	Muck			Marl Substrate					
PB	29.5748	0-1	54.6	469	31.8	6373	Muck	PB	29.5756	0-1	56.7	530	28.4	6780	Muck
	05.5075	1-2	62.6	454	39.5	5449	"		05.3949	1-2	73.3	423	51.0	3830	"
		2-3	81.1	242	16.2	8244	Hem Pt			2-3	80.4	260	24.7	7224	Hem Pt
		3-4	84.7	205	13.2	8604	" "			3-4	76.9	329	26.0	7068	Muck
		4-5	30.3	162	10.9	8880	" "	PB	29.5834	0-1	82.6	253	36.0	5869	Muck
		Limestone Substrate							05.2750	1-2	82.7	257	35.5	5929	"
PB	29.5750	0-1	73.0	302	20.7	7704	Sap Pt			2-3	81.9	256	35.6	5917	"
	05.4100	1-2	79.5	253	17.2	8124	Hem Pt			3-4	81.8	277	40.2	5365	"
		2-3	80.1	269	31.3	6433	Muck			4-5	87.9	167	13.0	8628	Sap Pt
		3-4	67.1	562	66.3	2234	"			5-6	88.6	147	12.9	8640	Hem Pt
PB	29.5750	0-1	61.0	494	35.2	5965	Muck			Limestone Substrate					
	05.4275	1-2	75.7	291	24.7	7224	Sap Pt								
		2-3	77.9	292	34.8	6013	Muck								
		3-4	78.8	298	36.9	5761	"								

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.5864 05.5405	0-1	65.0	472	25.8	7092	Muck	PB	29.5917 05.3700	0-1	46.7	559	41.1	5257	Muck
		1-2	83.8	262	13.9	8520	Sap Pt			1-2	80.4	220	17.2	8124	Sap Pt
		2-3	86.1	217	13.1	8616	Hem Pt			2-3	78.4	257	24.3	7272	Hem Pt
		3-4	85.1	236	17.0	8148	Fib Pt			3-4	79.9	265	20.0	7788	Sap Pt
		4-4.5	87.2	192	10.4	8940	" "			Limestone Substrate					
		Marl over Limestone Substrate						PB	29.6068 05.5400	0-1	72.8	357	15.6	8316	Hem Pt
PB	29.5887 05.2596	0-1	81.7	242	29.2	6684	Muck			1-2	85.9	216	7.7	9263	Fib Pt
		1-2	82.7	231	25.2	7164	"			2-3	87.7	192	9.5	9047	Hem Pt
		3-4	85.8	201	14.1	8496	Hem Pt			3-4	85.9	221	11.6	8796	" "
		5-6	88.9	148	14.6	8436	" "			4-4.7	87.1	203	13.6	8557	" "
		6-6.4	72.3	422	62.9	2642	Muck			Marl over Limestone Substrate					
		Limestone Substrate						PB	29.6071 05.5783	0-1	41.0	819	79.4	663	Sand
PB	29.5896 05.3242	0-1	61.0	422	21.6	7595	Sap Pt			1-2	50.9	749	80.0	591	"
		1-2	73.5	297	15.6	8316	" "			Sand Substrate					
		2-3	79.4	271	27.1	6936	Muck	PB	29.6073 05.3845	0-1	47.1	710	55.9	3482	Muck
PB	29.5910 05.4597	0-1	52.9	656	48.3	4393	Muck			1-2	56.6	554	52.8	3854	"
		1-2	78.1	250	17.9	8040	Sap Pt			2-3	70.3	465	65.8	2294	"
		2-3	78.6	287	23.7	7344	Hem Pt			3-4	75.5	335	50.4	4142	"
		3-4	70.2	484	62.0	2750	Muck			4-5	78.9	310	32.5	6289	"
		4-5	83.1	245	31.1	6457	"			Marl Substrate					
PB	29.5910 05.4755	0-1	57.7	477	40.4	5341	Muck	PB	29.6073 05.4014	0-1	48.0	764	53.4	3787	Muck
		1-2	77.2	249	28.9	6720	"			1-2	60.4	597	69.2	1887	"
		2-3	83.4	209	18.8	7932	Hem Pt			2-3	64.3	577	68.6	1958	"
		3-4	78.8	298	32.0	6253	Muck			3-4	67.2	581	84.2	2486	"
		4-4.7	85.8	182	17.9	8040	Hem Pt			4-5	72.3	404	58.9	3122	"
PB	29.5910 05.4915	0-1	67.3	375	34.0	6109	Muck			5-6	81.1	254	28.9	6721	"
		1-2	83.8	209	20.7	7704	Sap Pt			6-7	68.9	502	67.5	2090	"
		2-3	82.9	211	19.3	7872	" "	PB	29.6073 05.4175	0-1	59.9	520	24.1	7296	Sap Pt
		3-4	85.0	199	21.2	7644	Hem Pt			1-2	80.2	245	13.9	8520	Hem Pt
PB	29.5912 05.3860	0-1	61.1	602	53.9	3722	Muck			2-3	85.4	184	14.1	8496	" "
		1-2	66.7	427	48.7	4345	"			3-4	82.9	242	17.4	8100	Sap Pt
		2-3	66.1	528	69.8	1802	"			4-5	82.8	254	26.7	6884	Muck
		3-4	70.8	454	52.9	3842	"	PB	29.6073 05.4493	0-1	67.9	392	20.5	7728	Sap Pt
PB	29.5912 05.4025	0-1	67.3	370	28.6	6756	Muck			1-2	81.6	237	11.5	8808	Hem Pt
		1-2	76.8	299	32.7	6265	"			2-3	85.3	216	20.1	7776	" "
		2-3	73.4	343	41.6	5197	"			3-4	56.9	796	82.6	279	"
		3-4	83.4	228	25.6	7116	"	PB	29.6073 05.4652	0-1	76.2	344	27.7	6864	Muck
		4-5	70.5	469	56.8	3374	"			1-2	83.4	216	87.6		
PB	29.5912 05.4330	0-1	61.8	481	25.7	7104	Muck			2-3	84.8	212	15.4	8340	Sap Pt
		1-2	80.1	207	17.7	8064	Hem Pt			3-4	87.8	166	16.4	8220	Hem Pt
		2-3	81.3	230	13.9	8280	" "	PB	29.6073 05.4810	0-1	61.5	484	23.8	7116	Muck
		3-4	72.1	445	65.4	2342	Muck			1-2	84.2	200	12.9	8640	Sap Pt
PB	29.5913 05.5808	0-1	72.7	301	22.6	7474	Sap Pt			2-3	86.2	199	15.1	8376	Hem Pt
		1-2	58.1	681	74.3	1275	Muck			3-4	86.4	211	14.8	8412	" "
		2-2.4	28.3	1191	87.9		Sand			4-5	50.5	978	86.2		
		Limestone Substrate						PB	29.6074 05.3406	0-1	51.7	553	61.2	2846	Muck
PB	29.5913 05.5964	0-1	40.0	688	58.9	3122	Muck			1-2	53.9	624	62.7	2666	"
		1-2	6.2	2103	98.3		Sand			2-3	53.5	724	70.7	1707	"
		Sand over Limestone Substrate								3-3.8	46.1	662	66.3	2234	"
										3.0-4	50.6	665	65.0	2390	"
										Limestone Substrate					
PB	29.5917 05.3406	0-1	31.3	809	75.1	1179		PB	29.6074 05.3540	0-1	64.2	453	54.7	3626	Muck
		1-2	75.0	297	26.6	6996	Muck			1-2	78.6	260	19.8	7812	Sap Pt
		2-3	79.6	246	19.8	7812	Sap Pt			2-3	81.5	252	15.7	8304	Hem Pt
		3-4	76.3	280	34.0	6109	Muck			3-4	83.6	230	16.0	8268	" "
		4-5	80.6	263	27.1	6936	"			4-5	85.5	188	17.4	8100	" "
		5-6	82.7	237	25.9	7080	"			5-5.2	76.4	347	52.5	3890	Muck
		6-7	76.1	393	52.2	3926	"			Limestone Substrate					
		Marl over Limestone Substrate						PB	29.6075 05.5142	0-1	54.9	567	35.9	5881	Muck
PB	29.5917 05.3545	0-1	29.3	857	67.7	2066	Muck			1-2	84.3	175	10.9	8879	Sap Pt
		1-2	71.4	313	23.0	7428	Sap Pt			2-3	85.9	171	13.5	8568	Hem Pt
		3-4	81.4	223	15.2	8364	Hem Pt			3-4	84.5	216	20.1	7776	" "
		4-5	74.0	366	37.1	5737	Muck			Limestone Substrate					
		5-6	83.9	214	14.6	8436	Hem Pt								
		Marl over Limestone Substrate													

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.6075 05.5292	0-1	79.5	199	16.4	8220	Hem Pt	PB	29.6230	0-1	64.0	461	33.3	6193	Muck
		1-2	84.1	182	11.9	8760	" "		05.4175	1-2	66.0	418	36.8	5773	"
		2-3	82.5	220	11.9	8784	" "			2-3	78.3	282	28.0	6828	"
		3-4	85.3	196	13.2	8604	" "			3-4	61.2	658	75.4	1143	"
		4-5	83.3	190	14.3	8472	" "			Marl Substrate					
		5-5.2	81.0	238	14.9	8400	" "	PB	29.6230	0-1	56.7	532	46.5	4609	Muck
		Limestone Substrate							05.4340	1-2	74.8	356	42.4	5101	"
PB	29.6076 05.3257	0-1	64.2	505	60.1	2978	Muck			2-3	77.4	294	24.1	7296	Hem Pt
		1-2	81.3	241	22.6	7476	Hem Pt			3-4	79.1	267	20.9	7680	"
		2-3	73.8	382	38.4	5581	Muck	PB	29.6230	0-1	68.8	393	39.4	5461	Muck
		3-4	77.6	343	14.7	8424	Sap Pt		05.4493	1-2	79.2	272	24.5	7248	Sap Pt
		Limestone Substrate								2-3	79.0	268	17.8	8052	Hem Pt
PB	29.6078 05.3688	0-1	55.8	525	55.4	3542	Muck			3-4	72.7	422	66.4	2222	Muck
		1-2	77.0	277	22.1	7536	Sap Pt			4-5	55.7	800	84.9		
		2-3	80.9	239	27.8	6852	Muck	PB	29.6231	0-1	34.1	887	65.6	2318	Muck
		3-4	77.5	329	37.2	5725	"		05.3529	1-2	68.5	360	37.4	5701	"
		4-5	85.1	216	18.2	8004	Hem Pt			2-3	74.1	290	30.1	6576	"
		5-6	84.0	223	20.7	7704	" "			3-4	77.8	301	20.8	7692	Hem Pt
		6-7	51.8	899	86.5		Marl			4-5	81.3	280	19.9	7800	"
		Limestone Substrate								5-6	74.4	394	59.7	3026	Muck
PB	29.6078 05.5621	0-1	75.6	313	34.8	6013	Muck			6-6.4	82.2	241	25.1	7200	"
		2-3	84.1	205	21.2	7644	Hem Pt			Limestone Substrate					
		3-4	78.7	303	48.0	4429	Muck	PB	29.6231	0-1	33.8	884	57.2	3326	Muck
		4-5	31.2	1768	95.2		Marl		05.3688	1-2	74.7	331	23.5	7368	Sap Pt
		Marl Substrate								2-3	76.9	307	21.2	7644	Hem Pt
PB	29.6079 05.3115	0-1	47.8	921	81.1	459	"			3-4	75.0	399	47.4	4501	Muck
		1-2	36.7	1253	94.8		Marl			4-5	73.1	392	40.3	5353	"
		2-3	31.5	1455	96.4		"			5-6	64.4	536	48.2	4405	"
		Limestone Substrate								Limestone Substrate					
PB	29.6080 05.5455	0-1	66.5	393	12.5	8688	Hem Pt	PB	29.6232	0-1	57.4	535	45.0	4789	Muck
		1-2	83.6	226	10.2	8964	" "		05.4656	1-2	77.5	295	23.0	7428	Sap Pt
		2-3	39.4	238	13.7	8544	" "			2-3	79.9	288	36.3	5833	Muck
		3-4	45.9	223	20.1	7776	Fib Pt			3-4	63.6	608	72.5	1491	"
		4-5	87.2	180	15.9	8280	" "	PB	29.6232	0-1	65.9	396	19.6	7837	Sap Pt
		5-6	73.2	431	59.6	3038	Muck		05.5133	1-2	73.6	282	17.9	8044	Hem Pt
		Marl Substrate								2-3	85.1	184	20.0	7788	"
PB	29.6111 05.4949	0-1	44.3	713	57.6	3278	Muck			3-3.7	75.0	366	58.7	3141	Muck
		1-2	53.0	581	53.9	3722	"			Marl over Limestone Substrate					
		2-3	83.1	184	14.1	8496	Hem Pt	PB	29.6234	0-1	53.8	593	59.9	3002	Muck
		3-4	81.6	245	28.3	6792	Muck		05.3363	1-2	75.1	313	36.9	5761	"
		4-4.5	86.5	174	32.8	6253	"			2-3	80.1	279	59.0	3110	"
		Marl Substrate								3-4	82.4	222	13.5	8568	Sap Pt
PB	29.6225 05.5311	0-1	78.9	233	17.5	8088	Hem Pt			4-5	82.5	242	19.1	7896	Hem Pt
		1-2	83.1	184	14.1	8496	" "			Marl over Limestone Substrate					
		2-3	84.6	185	12.5	8688	" "	PB	29.6237	0-1	46.5	642	41.1	5257	Muck
		3-4	71.3	423	62.7	2666	Muck		05.3190	1-2	78.4	271	18.1	8016	Sap Pt
		Marl Substrate								2-3	82.9	224	17.0	8148	"
PB	29.6225 05.5455	0-1	46.7	786	63.3	2594	Muck			3-3.6	84.2	209	20.1	7776	"
		1-2	79.3	230	21.3	7632	Hem Pt			3.6-4.6	51.2	846	87.1		Marl
		2-3	73.4	335	31.7	6385	Muck			Limestone Substrate					
		3-4	81.0	271	22.1	7536	Hem Pt	PB	29.6238	0-1	50.0	662	54.0	3710	Muck
		4-5	84.0	224	24.2	7284	" "		05.4949	1-2	79.8	227	24.0	7308	Sap Pt
		5-6	27.7	158	95.4		Marl			2-3	84.9	203	23.5	7368	"
		Limestone Substrate								3-4	84.5	205	37.7	5665	Muck
PB	29.6228 05.4014	0-1	57.1	728	69.7	1826	Muck			Marl over Limestone Substrate					
		1-2	71.8	355	50.7	4082	"	PB	29.6240	0-1	60.0	484	27.8	6852	Muck
		2-3	75.5	276	21.7	7584	Sap Pt		05.4810	1-2	63.1	433	21.7	7584	Sap Pt
		3-4	83.4	224	18.2	8004	" "			2-3	77.8	306	18.2	8004	"
		4-5	78.6	295	44.2	4885	Muck			3-4	86.8	181	19.5	7848	Hem Pt
PB	29.6230 05.3845	0-1	50.8	770	69.3	1874	Muck			4-5	55.5	762	82.0	351	Marl
		1-2	70.5	449	66.7	2186	"	PB	29.6280	0-1	61.5	634	43.4	4981	Muck
		2-3	71.9	426	59.4	3062	"		05.3380	1-2	74.5	411	63.0	5749	"
		3-4	74.3	393	46.7	4585	"			2-3	80.9	272	79.7	627	"
		4-5	80.7	248	31.2	6445	"			3-4	78.1	340	55.2	3566	Muck
										4-5	77.8	352	57.5	3290	"
										5-6	82.2	264	74.2	1287	"
										Limestone Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.6320	0-1	47.2	660	56.3	4945	Muck	PB	29.6395	0-1	61.4	496	28.2	6804	Muck
	05.3400	1-2	73.5	348	32.5	6289	"		05.4800	1-2	80.7	227	19.2	7889	Hem Pt
		2-3	73.2	445	40.8	5293	"			2-3	86.5	184	20.7	7699	" "
		3-4	72.1	432	49.5	4249	"			Limestone Substrate					
		4-5	76.4	372	51.3	4034	"	PB	29.6396	0-1	52.6	494	45.7	4705	Muck
		5-5.7	79.1	346	40.5	5329	"		05.4667	1-2	81.9	227	19.2	7884	Sap Pt
PB	29.6325	0-1	53.5	606	53.9	3722	Muck			2-3	84.6	192	15.6	8316	Hem Pt
	05.3438	1-2	77.4	358	32.5	3898	"			3-4	87.3	165	15.7	8304	" "
		2-3	75.2	419	45.3	4753	"			4-4.4	87.7	170	17.6	8076	" "
		3-4	82.4	271	16.4	8220	Sap Pt			Limestone Substrate					
		4-4.8	84.8	226	18.8	7932	" "	PB	29.6397	0-1	35.2	509	77.8	855	
		Limestone Substrate							05.3041	1-2	40.2	548	71.0	1671	Muck
PB	29.6330	0-1	55.3	530	34.0	6109	Muck			2-3	48.2	652	76.6	999	
	05.5455	1-2	81.4	294	14.4	8460	Sap Pt			3-4	71.7	436	55.3	3554	Muck
		2-3	83.5	261	17.3	8112	Hem Pt			4-5	68.5	434	52.1	3938	"
		3-3.7	58.9	799	72.1	1539	Muck			5-6	78.5	291	40.0	5389	"
		Marl over Limestone Substrate								6-7	82.5	243	31.2	6445	"
PB	29.6390	0-1	39.0	714	56.6	3398	Muck			7-8	84.5	194	15.6	8316	Hem Pt
	05.3686	1-2	62.3	487	56.4	3422	"			8-9	85.5	173	15.4	8340	" "
		2-3	76.5	286	26.7	6984	"			9-10	84.8	190	23.8	7336	" "
		3-4	76.1	307	37.2	5725	"			10-11	85.4	105	28.7	6741	Muck
		4-5	77.4	301	29.4	6661	"			11-12	59.0	687	87.4		Marl
		5-5.7	68.4	454	44.0	4909	"			Limestone Substrate					
		5.7-6	59.1	669	73.0	1431	"	PB	29.6398	0-1	34.7	695	67.9	2042	Muck
PB	29.6390	0-1	34.2	1034	78.0	831			05.3210	1-2	55.4	438	54.6	3638	"
	05.3848	1-2	51.2	786	82.2	327				2-3	64.8	394	37.5	5689	"
		2-3	54.8	709	82.8	327				3-4	69.1	397	42.8	5053	"
		3-4	54.4	622	78.8	735				4-5	70.0	422	45.8	4693	"
		4-5	61.0	570	78.0	831				5-6	63.7	543	50.3	4154	"
		5-6	70.3	354	47.3	4513	Muck			6-7	69.5	413	47.6	4477	"
		6-7	75.6	545	40.2	5365	"	PB	29.6398	0-1	34.0	903	70.6	1719	Muck
PB	29.6390	0-1	40.0	804	69.7	1827	Muck		05.3364	1-2	67.2	434	49.5	4250	"
	05.4014	1-2	69.5	389	45.5	4729	"			2-3	77.3	276	27.6	7116	"
		2-3	78.0	322	28.7	6744	"			3-4	73.9	360	39.2	5485	"
		3-4	82.1	248	24.2	7284	Sap Pt			4-5	74.0	382	41.3	5233	"
		4-5	84.6	207	17.1	8136	Hem Pt			5-6	81.3	261	26.0	7068	"
		5-6	84.0	216	21.4	7620	" "			6-7	83.0	246	19.9	7800	Hem Pt
		Marl Substrate						PB	29.6490	0-1	68.2	329	20.3	7752	Sap Pt
PB	29.6390	0-1	44.0	816	65.7	2306	Muck		05.4949	1-2	82.3	193	11.9	8760	" "
	05.4175	1-2	81.8	207	1.3	10031	Sap Pt			2-3	85.6	209	13.0	8628	Hem Pt
		2-3	76.2	305	25.0	7188	Hem Pt			3-4	78.2	329	50.4	4142	Muck
		3-4	81.0	283	26.9	6960	Muck			Marl over Limestone Substrate					
		4-5	59.2	781	77.9	843		PB	29.6545	0-1	44.4	717	59.8	3014	Muck
PB	29.6390	0-1	48.2	760	59.2	3086	Muck		05.5311	1-2	80.1	218	14.4	8460	Hem Pt
	05.4340	1-2	77.6	283	18.3	7992	Sap Pt			2-3	72.0	310	44.7	4825	Muck
		2-3	81.4	239	15.3	8352	" "			3-4	53.0	734	78.2	807	
PB	29.6390	0-1	57.8	567	32.6	6277	Muck	PB	29.6546	0-1	32.7	761	64.2	2486	Muck
	05.4493	1-2	66.2	417	21.2	7644	Sap Pt		05.3531	1-2	59.4	628	73.2	1407	"
		2-3	70.7	348	19.9	7800	" "			2-3	68.1	436	55.7	3406	"
		3-4	68.1	434	21.3	7632	" "			3-4	77.9	257	23.3	7392	Sap Pt
PB	29.6390	0-1	54.2	581	53.4	3782	Muck			4-5	83.2	192	14.5	6708	Hem Pt
	05.5311	1-2	83.7	195	22.4	7500	Hem Pt			5-6	83.8	194	18.8	7932	" "
		2-3	84.5	201	21.6	7596	" "			6-7	85.3	186	17.6	8076	" "
		3-4	81.4	260	30.9	6481	Muck			7-8	80.9	263	26.8	6972	Muck
		4-5	80.4	282	37.7	2714	"	PB	29.6546	0-1	42.5	691	62.0	2750	Muck
		Marl over Limestone Substrate							05.3682	1-2	68.3	333	29.8	6613	"
PB	29.6394	0-1	63.7	409	37.2	5725	Muck			2-3	70.4	422	30.6	5317	"
	05.5129	1-2	81.1	220	16.0	8268	Hem Pt			3-4	72.0	434	58.0	3230	"
		2-3	84.7	192	14.9	8400	" "			4-5	75.2	340	39.2	5485	"
		3-4	85.1	175	17.8	8052	" "			5-6	82.3	234	24.4	7260	Sap Pt
		Limestone Substrate								6-7	75.3	363	42.3	5113	Muck
										Marl Substrate					

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.6548 05.3814	0-1	45.4	879	66.6	2198	Muck	PB	29.6719 05.5129	0-1	84.5	143	10.0	8988	Sap Pt
		1-2	51.0	951	80.5	531				1-2	83.3	160	20.3	7752	Hem Pt
		2-3	57.1	791	79.3	675				2-3	79.2	103	36.4	5821	Muck
		3-4	63.2	655	71.5	1611	Muck			3-3.4	36.3	1260	89.6		Sand
		4-5	68.4	527	63.8	2534	"			Sand Substrate					
		5-6	75.8	360	46.4	4621	"	PB	29.6719 05.5311	0-1	8.5	1255	96.6	1400	Sand
		6-7	77.6	343	27.9	6840	"								
		7-7.3	78.9	313	44.7	4825	"								
		Marl over Limestone Substrate						PB	29.6719 05.5455	0-0.8	14.8	1077	90.4		Sand
PB	29.6548 05.3844	0-1	53.5	771	76.6	999				Sand Substrate					
		1-2	54.5	721	80.1	579		PB	29.6720 05.3525	0-1	62.5	413	35.2	5965	Muck
		2-3	55.0	656	76.5	1011				1-2	71.6	407	41.1	5257	"
		3-4	60.1	628	75.6	1119				2-3	74.7	369	31.7	6385	"
		4-5	63.9	541	72.7	1467	Muck			3-4	82.8	234	23.3	7392	Sap Pt
		5-6	70.1	445	52.0	3950	"			4-4.6	71.3	404	36.4	5821	Muck
		6-7	74.2	346	45.6	4717	"			4.6-5.5	50.9	949	79.7	627	Marl
		7-8	81.5	224	33.4	6181	"								
PB	29.6548 05.4010	0-1	54.8	623	56.9	3362	Muck	PB	29.6720 05.3838	0-1	54.2	698	73.7	1347	Muck
		1-2	63.1	545	36.9	5761	"			1-2	60.5	639	79.0	711	
		2-3	63.0	592	58.3	3194	"			2-3	67.1	534	72.6	1479	Muck
		3-4	81.2	254	20.9	7680	Hem Pt			3-4	73.8	403	61.2	2846	"
		4-5	75.4	369	48.4	4381	Muck			4-5	78.4	334	38.1	5617	"
PB	29.6548 05.4168	0-1	43.6	831	60.6	2918	Muck			5-6	81.2	226	26.3	7032	"
		1-2	66.4	424	51.6	3998	"			6-7	83.3	218	25.6	7116	"
		2-3	69.3	481	65.8	2294	"			7-8	62.0	656	78.3	7949	
		3-4	78.2	291	34.1	6097	"			Marl Substrate					
		4-5	80.5	261	22.4	7500	Sap Pt	PB	29.6720 05.4010	0-1	57.1	525	25.7	7104	Muck
PB	29.6548 05.4335	0-1	54.9	577	36.8	5713	Muck			1-2	72.5	347	18.4	7980	Sap Pt
		1-2	77.5	263	20.7	7704	Sap Pt			2-3	81.0	233	12.9	8640	"
		2-3	81.3	205	15.9	8280	Hem Pt			3-4	84.3	195	12.6	8676	Hem Pt
		3-4	82.8	227	17.9	8040	"			4-5	86.5	180	13.6	8556	Sap Pt
PB	29.6548 05.5129	0-1	66.3	375	25.0	7188	Hem Pt			5-6	80.9	261	18.8	7932	"
		1-2	72.9	314	16.5	8208	"			6-7	87.1	181	27.8	6852	Muck
		2-3	72.5	401	15.9	8280	"	PB	29.6735 05.4335	0-1	63.2	419	23.7	7344	Sap Pt
		3-4	66.4	431	14.8	8412	"			1-2	81.8	230	11.8	8772	Hem Pt
		4-5	76.8	305	18.7	7944	"			2-3	82.4	186	12.5	8688	"
		5-6	68.5	475	44.7	4825	Muck			3-4	85.8	192	12.0	8748	"
		Sand Substrate								4-5	78.5	305	40.7	5305	Muck
PB	29.6555 05.4485	0-1	58.9	573	52.0	3950	Muck			Marl over Limestone Substrate					
		1-2	82.0	212	18.6	7956	Sap Pt	PB	29.6735 05.4492	0-1	32.3	855	64.5	2450	Muck
		2-3	87.4	354	19.9	7800	Hem Pt			1-2	80.5	206	15.5	8328	Sap Pt
		3-4	86.2	184	18.5	7968	"			2-3	83.4	197	13.5	8568	"
		4-4.3	53.6	785	82.1	339	Marl			3-4	87.1	160	13.8	8532	Hem Pt
		Marl over Limestone Substrate								4-5	88.2	142	12.0	8748	"
PB	29.6555 05.4679	0-1	74.9	277	27.9	6840	Muck			5-6	76.6	311	58.2	3206	Muck
		1-2	73.2	311	32.8	6253	"			Limestone Substrate					
		2-2.5	76.9	313	36.5	5809	"	PB	29.6735 05.4667	0-1	63.5	422	29.6	6637	Muck
		Limestone Substrate								1-2	82.8	201	17.5	8688	Hem Pt
PB	29.6555 05.4802	0-1	55.2	581	47.1	4537	Muck			2-3	86.1	163	9.3	9072	"
		1-2	64.8	472	29.7	6624	"			3-4	86.3	175	14.8	8412	"
		2-3	86.5	180	13.6	8556	Sap Pt			4-5	87.8	150	15.4	8340	"
		3-4	80.5	273	24.9	7200	"			5-5.4	43.6	1059	90.4		
		4-5	88.1	152	14.3	8472	"			Marl over Limestone Substrate					
		5-5.1	85.3	178	15.3	8352	Hem Pt	PB	29.6735 05.4802	0-1	58.9	394	48.3	4393	Muck
		Limestone Substrate								1-2	69.4	298	47.9	4441	"
PB	29.6560 05.3210	0-1	35.0	865	72.6	1479	Muck			Limestone Substrate					
		1-2	49.9	704	76.3	1035		PB	29.6735 05.4949	0-1	75.8	252	11.0	8772	Sap Pt
		2-3	53.1	699	78.8	735				1-2	83.0	186	11.3	8832	Hem Pt
		3-4	68.4	502	66.9	2162	Muck			2-3	85.7	184	14.0	8508	"
		4-5	76.9	258	27.4	6900	"			3-4	86.2	181	19.6	7836	"
		5-6	80.6	260	21.9	7560	Hem Pt			4-5	51.8	845	86.7		
		6-7	72.8	447	48.3	4393	Muck			5-5.9	44.6	1008	90.6		
		7-7.5	55.6	774	65.6	2318	"			Sand Substrate					
PB	29.6713 05.3680	0-1	46.3	694	48.4	4381	Muck								
		1-2	72.7	345	31.9	6361	"								
		2-3	80.0	283	23.6	7356	Sap Pt								
		3-4	83.8	233	23.4	7380	"								
		4-5	81.6	269	27.8	6852	Muck								
		5-5.2	67.2	503	70.3	1755	"								
		Marl Substrate													

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.												
PB	29.6845 05.3531	0-1	38.5	784	71.9	1563	Muck	PB	29.6882 05.3686	0-1	65.1	408	45.0	4789	Muck												
		1-2	60.9	583	71.3	1635	"			1-2	69.9	425	47.9	4441	"												
		2-3	79.2	253	29.6	6636	"			2-3	76.0	333	45.8	4693	"												
		3-4	83.9	199	25.7	7164	"			3-4	82.6	227	24.2	7284	Sap Pt												
		4-5	79.3	311	33.0	6229	"			4-5	79.0	257	24.9	7200	Hem Pt												
		5-6	82.8	255	16.8	8172	Hem Pt			5-6	87.8	141	10.4	8940	" "												
		6-7	88.0	147	16.1	8256	" "			6-6.2	78.8	275	46.0	4669	Muck												
		7-8	81.9	270	30.5	6529	Muck			Marl Substrate																	
		8-8.9	83.2	216	21.1	7656	Fib Pt			PB	29.6898 05.4487	0-1	68.9	354	17.3	8112	Sap Pt										
		Marl Substrate										1-7	83.3	220	16.0	8268	Hem Pt										
PB	29.6868 05.4015	0-1	59.5	498	42.4	5101	Muck	2-3	74.0			392	58.3	3194	Muck												
		1-2	78.4	264	20.6	7716	Hem Pt	3-3.3	35.6			1243	91.0														
		2-3	74.1	326	32.5	6289	Muck	3.3-4	29.3			1691	94.5														
		3-4	81.3	248	18.1	8016	Hem Pt	Marl Substrate																			
		4-5	84.5	204	26.0	7068	Muck	PB	29.6990 05.3530			0-1	49.7	846	76.4	1023											
		5-6	84.0	230	29.6	6637	"					1-2	53.6	731	74.2	1287	Muck										
		6-6.5	73.7	396	62.9	2642	"					2-3	61.8	589	70.6	1719	"										
		6.5-7	47.2	1002	84.0	111	Marl					3-4	74.0	423	56.8	3374	"										
		Marl Substrate								4-5	74.5	369	44.3	4873	"												
		PB	29.6870 05.4172	0-1	70.3	326	21.9			7560	Sap Pt	5-6	77.3	319	34.7	8029	"										
1-2	79.9			206	20.8	7692	Hem Pt			6-7	81.7	370	32.8	7452	Sap Pt												
2-3	83.0			194	16.0	8268	" "			7-8	79.3	292	30.4	6541	Muck												
3-4	82.5			223	23.1	7416	" "			8-9	87.7	189	10.3	8952	Fib Pt												
4-5	83.7			199	15.8	8292	" "			9-10	84.6	238	21.3	7632	" "												
5-5.7	82.3			231	27.4	6900	Muck	Limestone Substrate																			
Marl Substrate						PB	29.7021 05.3686	0-1	36.7	736	69.7	1826	Muck														
PB	29.6870 05.4645			0-1	70.5			392	57.0	3350	Muck	1-2	48.3	785	76.8	975											
				1-2	82.9			208	21.2	7644	Sap Pt	2-3	52.0	693	77.5	891											
				2-3	84.5			195	27.3	6912	Muck	3-4	58.1	658	76.7	987											
		3-4	68.3	473	60.1			2978	"	4-5	58.1	666	76.2	1047													
		Limestone Substrate						5-6	68.6	476	66.7	2186	Muck														
		PB	29.6872 05.5129	0-1	64.4			384	27.7	6869	Muck	6-7	74.5	389	53.8	3734	"										
				1-2	78.6			280	30.1	6577	"	7-8	82.3	228	28.9	6720	"										
				Sand Substrate						8-8.4	72.3	415	57.9	3242	"												
				PB	29.6873 05.4325			0-1	70.3	338	13.7	8544	Sap Pt	PB	29.7025 05.3947	0-1	65.3	433	34.6	6037	Muck						
						1-2	82.9	201	13.7	8544	Hem Pt	1-2	79.9			261	18.2	8004	Sap Pt								
2-3	82.6					188	12.1	8736	" "	2-3	79.0	314	17.4			8100	" "										
3-4	79.5					176	13.2	8604	" "	3-4	80.0	288	21.2			7644	Hem Pt										
4-5	87.5					150	12.0	8748	" "	4-5	85.7	188	15.2			8364	" "										
5-6	85.5					151	12.3	8712	" "	5-5.5	88.1	156	11.3			8832	Fib Pt										
6-7	68.8					450	62.8	2654	Muck	Limestone Substrate																	
7-7.5	57.5	668	70.9			603		PB	29.7030 05.4012	0-1	51.8	601	61.5			2810	Muck										
Limestone Substrate						1-2	39.0			997	78.6	759															
PB	29.6873 05.4802	0-1	81.1			204	14.0			8508	Sap Pt	Limestone Substrate															
		1-2	83.7	196	9.4	9059	" "			PB	29.7030 05.4172	0-1	65.2	384	25.5	7128	Muck										
		2-3	86.2	153	10.7	8904	Hem Pt					1-2	76.4	292	20.5	7728	Sap Pt										
		3-4	85.5	403	14.2	8484	" "					2-3	82.3	226	15.0	8388	Hem Pt										
		4-5	82.8	232	20.8	7692	" "					3-4	80.7	224	15.2	8364	" "										
		5-6	84.6	216	22.3	7512	" "					4-5	76.7	325	20.9	7680	" "										
		6-7	42.5	1219	90.1							5-6	80.9	745	21.0	7668	" "										
																Marl over Limestone Substrate											
		PB	29.6875 05.3833	0-1	64.5	400	39.3	5473	Muck			PB	29.7030 05.4316	0-1	77.9	259	16.0	8268	Sap Pt								
				1-2	70.0	360	46.3	4633	"					1-2	82.3	217	17.2	8124	Hem Pt								
2-3	75.3			298	43.4	4981	"	2-3	82.7					233	15.5	8328	" "										
3-4	79.9			230	26.9	6960	"	3-4	86.2	191	13.2			8604	" "												
4-5	82.0			220	24.7	7224	Sap Pt	4-5	85.4	182	14.6			8436	" "												
5-6	73.2			365	55.0	3590	Muck	5-6	88.0	160	16.1			8256	" "												
PB	29.6880 05.4949			0-1	42.0	717	64.3	2474	Muck	6-6.8	87.8			166	20.8	7692	" "										
				1-2	80.4	222	23.9	7320	Sap Pt	Limestone Substrate																	
				2-3	84.1	204	16.0	8268	" "	PB	29.7035 05.4487			0-1	89.9	199	17.1	8136	Sap Pt								
				3-4	80.7	280	36.9	5761	Muck					1-2	82.3	211	18.7	7944	Hem Pt								
		4-4.3	30.4	1443	92.4			2-3	83.1			231	18.2	8004	" "												
																				3-4	85.0	170	19.2	7884	" "		
																				4-5	79.6	276	47.3	4513	Muck		
																				5-6	49.3	847	86.4				

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.7035 05.4632	0-1 1-2 2-3 3-4 4-5	65.9 82.2 83.7 71.1 63.6	413 209 180 439 604	27.9 18.2 15.2 62.5 74.0	6840 8004 8364 2690 1312	Muck Hem Pt " Muck "	PB	29.7190 05.4006	0-1 1-2 2-3 3-4 4-5 5-6 6-6.7	76.6 80.8 83.0 84.3 85.7 89.0 79.2	308 200 231 197 169 154 264	15.7 13.3 16.2 12.8 10.5 10.1 33.9	8304 8592 8244 8652 8928 8976 6121	Sap Pt " Hem Pt " Fib Pt " Muck
PB	29.7037 05.4802	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9	75.3 78.6 86.5 87.1 87.6 83.1 86.3 73.4 37.5	234 230 134 138 153 224 174 390 1424	20.1 15.5 7.1 11.8 9.7 18.8 7.9 53.5 91.9	7776 8528 9335 8772 9023 7932 9239 3770 Marl	Sap Pt Hem Pt " " " Sap Pt " Muck Marl	PB	29.7355 05.3855	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10 10-10.3	42.3 58.6 82.6 82.7 82.0 82.9 86.0 87.7 85.4 85.2 82.5	685 761 717 275 279 271 220 159 205 235 253	66.0 70.5 36.0 20.5 19.8 16.4 13.2 11.8 15.0 19.7 20.1	2270 1731 1451 7728 7812 8220 8604 8772 8388 7824 7776	Muck " " Sap Pt " Hem Pt Fib Pt " " Hem Pt "
PB	29.7047 05.4950	0-1 1-2 2-3 3-4 4-5 5-6	73.6 77.5 81.5 73.9 63.4 27.7	386 234 235 350 632 1658	62.0 21.5 11.0 53.7 72.3 94.6	2750 7608 8868 3746 1515 Sand over Marl Substrate	Muck Sap Pt Hem Pt Muck " "	PB	29.7355 05.3928	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	55.3 80.2 82.4 85.6 87.7 88.6 90.2 90.4	716 305 279 223 187 170 153 146	46.0 15.8 14.4 13.6 12.0 9.6 7.4 8.5	4669 8292 8460 8556 8748 9035 9299 9167	Muck Sap Pt " " Fib Pt " " "
PB	29.7150 05.3768	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-8.7	36.4 66.5 72.1 77.1 82.4 84.2 70.2 77.5 71.7	700 443 335 337 235 209 423 330 425	58.3 54.0 40.1 31.4 19.1 17.4 42.8 36.6 43.4	3194 3710 5377 6421 7896 8100 5053 5797 4981	Muck " " " Hem Pt " Muck "	PB	29.7355 05.4005	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	47.6 75.5 78.3 85.7 85.9 88.7 88.7 84.7	594 249 220 152 163 128 129 205	52.3 23.7 22.9 12.4 11.7 9.5 10.6 31.8	3914 7344 7440 8700 8784 9047 8916 6373	Muck Sap Pt " Hem Pt " " " Muck
PB	29.7187 05.4161	0-1	48.7	674	52.2	3926	Muck	PB	29.7355 05.4170	0-1 1-2 2-3 3-4 4-5 5-6 6-7	51.4 80.4 83.5 86.9 90.6 90.6 88.0	628 216 218 164 114 116 179	54.3 20.6 13.4 11.6 8.3 8.8 14.9	3674 7716 8580 8796 9191 9131 8400	Muck Sap Pt " Hem Pt Fib Pt " "
PB	29.7187 05.4487	0-1 1-2 2-3 3-4 4-5 5-6 6-6.7	61.3 82.1 85.3 85.4 86.6 81.3 84.4	403 206 177 194 187 267 224	14.4 12.2 12.7 13.6 14.5 40.8 21.4	8460 8724 8664 8556 8448 5293 7620	Sap Pt Hem Pt " " " Muck Sap Pt	PB	29.7355 05.4482	0-1 1-2 2-3 3-4 4-5 5-6 6-6.8	67.6 76.2 78.9 78.9 52.5 52.5	332 228 219 219 654 654	29.5 14.8 31.0 31.0 74.6 74.6	6648 8412 6469 6469 1239 1239	Muck Sap Pt Muck Muck Sand Substrate
PB	29.7187 05.4632	0-1 1-2 2-3 3-4 4-5 5-6 6-6.8	71.1 83.3 83.0 86.1 87.7 89.1 69.8	269 193 188 167 147 136 458	11.6 12.3 11.9 11.0 9.5 12.5 60.0	8796 8712 8760 8868 9047 8688 2990	Sap Pt " Hem Pt " " " Muck	PB	29.7355 05.4631	0-1 1-2 2-3 3-4 4-5 5-6	77.6 77.6 81.6 72.9 65.9 23.9	276 287 241 401 574 2122	14.3 19.9 16.4 60.7 73.0 96.5	8472 7800 8220 2906 1431 Sand	Sap Pt " " Muck " Sand
PB	29.7187 05.4802	0-1 1-2	63.9 40.0	371 1034	11.9 87.8	8760	Sap Pt	PB	29.7355 05.4790	0-1 1-1.3	32.0 21.6	898 813	67.9 70.1	2046 1783	Muck "
PB	29.7187 05.4949	0-1 1-1.5	61.8 65.0	416 438	31.1 29.3	6457 6672	Muck "	PB	29.7511 05.4014	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	59.0 81.7 84.2 84.9 89.3 90.6 86.8 88.2	469 186 188 188 117 93 165 150	40.6 14.7 13.8 13.6 10.4 8.8 9.6 13.6	5317 8424 8532 8556 8939 9131 9035 8556	Muck Sap Pt " Hem Pt " " Fib Pt Hem Pt
PB	29.7188 05.4321	0-1 1-2 2-3 3-4 4-5 5-5.3	60.0 78.6 82.0 83.1 64.1 56.6	494 232 199 204 547 734	48.1 20.8 14.7 15.5 66.4 85.3	4417 7694 8424 8328 2222 Marl Substrate	Muck Sap Pt Hem Pt " Muck Fib Pt	PB	29.7511 05.4014	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	59.0 81.7 84.2 84.9 89.3 90.6 86.8 88.2	469 186 188 188 117 93 165 150	40.6 14.7 13.8 13.6 10.4 8.8 9.6 13.6	5317 8424 8532 8556 8939 9131 9035 8556	Muck Sap Pt " Hem Pt " " Fib Pt Hem Pt
PB	29.7190 05.3948	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10	49.2 80.9 80.3 82.5 82.3 88.8 85.3 90.0 91.8 90.0	647 193 197 219 242 130 178 116 97 114	55.1 14.9 16.0 10.0 10.5 10.5 14.2 6.4 7.4 5.9	3578 8406 8272 8992 8544 8926 8487 9414 9295 9477	Muck Sap Pt Hem Pt " " Fib Pt " " " "	PB	29.7511 05.4014	0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8	59.0 81.7 84.2 84.9 89.3 90.6 86.8 88.2	469 186 188 188 117 93 165 150	40.6 14.7 13.8 13.6 10.4 8.8 9.6 13.6	5317 8424 8532 8556 8939 9131 9035 8556	Muck Sap Pt " Hem Pt " " Fib Pt Hem Pt

Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.	Co.	Location	Depth	Moist	Dens	Ash	BTU/lb	Litho.
PB	29.7511 05.4170	0-1	58.8	456	26.5	7008	Muck	PB	29.7668 05.4005	0-1	50.2	825	48.7	4345	Muck
		1-2	80.3	228	14.0	8508	Sap Pt			1-2	78.5	336	14.0	8508	Hem Pt
		2-3	85.0	189	12.6	8676	Hem Pt			2-3	81.9	284	13.2	8604	Sap Pt
		3-4	88.8	160	10.7	8904	" "			3-4	85.2	231	13.3	8592	" "
		4-5	90.8	113	7.2	9323	" "			4-5	85.2	229	12.5	8688	Fib Pt
		5-6	90.9	120	7.4	9299	" "			5-6	88.9	151	11.7	8784	" "
		6-7	91.3	118	8.1	9215	Fib Pt			6-7	89.3	165	8.4	9179	" "
		7-8	89.3	135	11.0	8868	" "			7-8	88.5	180	9.3	9071	" "
		8-8.4	86.8	156	24.8	7212	Muck			Limestone Substrate					
		Marl Substrate													
PB	29.7511 05.4326	0-1	26.5	1074	85.4			PB	29.7850 05.3998	0-1	55.6	618	29.4	6660	Muck
		1-2	56.3	467	40.9	5281	Muck			1-2	82.8	221	18.0	8028	Sap Pt
		Marl Substrate								2-3	81.7	233	17.2	8124	Hem Pt
										3-4	87.1	162	12.9	8640	" "
PB	29.7511 05.4482	0-1	51.3	566	43.5	4966	Muck	4-5	90.0	138	9.4	9059	" "		
		1-2	81.3	197	11.1	8859	Sap Pt	5-6	89.5	142	8.5	9167	Fib Pt		
		2-3	81.7	195	15.0	8385	Hem Pt	6-7	87.5	180	20.1	7776	" "		
		3-4	75.1	306	40.6	5312	Muck	7-7.7	86.7	136	23.3	7392	" "		
		4-4.5	47.5	938	79.5	633		Marl over Limestone Substrate							
Marl Substrate															
PB	29.7511 05.4631	0-1	32.8	963	76.4	1022		PB	29.8000 05.3009	0-1	42.9	717	57.0	3350	Muck
		Sand Substrate								1-2	77.0	382	34.5	6049	" "
										2-3	76.4	372	32.9	6241	" "
										3-4	83.5	251	18.8	7932	Sap Pt
PB	29.7667 05.4005	0-1	58.7	471	44.5	4847	Muck	4-5	83.9	251	21.0	7668	" "		
		1-2	78.7	214	17.8	8051	Sap Pt	5-6	86.2	212	14.8	8412	Fib Pt		
		2-3	81.1	205	14.6	8433	" "	6-7	87.4	162	13.6	8556	" "		
		3-4	85.5	182	10.9	8884	Hem Pt	7-8	86.5	206	15.7	8304	Hem Pt		
		4-5	88.0	133	10.6	8914	" "	8-9	87.9	187	11.9	8760	" "		
		5-6	87.4	144	9.4	9063	" "	Limestone Substrate							
		6-7	89.8	113	6.0	9473	Fib Pt	PB	29.8080 05.3930	0-1	37.5	812	64.6	2438	Muck
		7-8	88.5	129	12.2	8727	" "			1-2	74.8	367	34.9	6001	" "
		8-9	88.8	142	14.8	8408	" "			2-3	83.1	261	15.2	8364	Sap Pt
		9-10	88.0	140	24.3	7267	" "			3-4	85.7	218	16.2	8244	" "
Marl Substrate						4-4.3	78.8			330	48.7	4345	Muck		
						Sand Substrate									
PB	29.7667 05.4170	0-1	45.8	673	57.8	3250	Muck	PB	29.8081 05.3889	0-1	32.5	805	74.9	1203	Muck
		1-2	72.8	282	14.7	8428	Sap Pt			1-2	55.3	613	66.1	2258	" "
		2-3	83.5	199	13.4	8586	Hem Pt			2-3	51.6	476	71.4	1623	" "
		3-4	88.0	144	10.4	8946	" "			3-4	70.5	373	53.8	3734	" "
		4-5	88.9	122	8.4	9182	Fib Pt			4-5	78.3	261	37.3	5713	" "
		5-6	88.9	134	10.1	8973	" "			5-6	80.0	253	30.4	6541	" "
6-6.5 82.2 220 36.2 5850 Muck						6-7	77.5	309	39.8	5413	" "				
Limestone Substrate						7-8	87.7	146	9.8	9011	Hem Pt				
PB	29.7667 05.4326	0-1	49.9	562	46.9	4559	Muck	8-9	89.2	131	9.3	9071	Fib Pt		
		1-2	78.0	210	18.4	7978	Sap Pt	9-10	89.0	124	14.8	8412	" "		
		2-3	40.5	1075	84.8			10-10.8	64.2	560	69.1	1898	Muck		
		Sand Substrate						Marl over Limestone Substrate							
PB	29.7667 05.4478	0-0.5	18.7	1126	86.2		Sand								
		Limestone Substrate													

APPENDIX 3

Quadrangle Maps of Peat Thickness, Percent Ash, and Bulk Density

See Table 10 or List of Figures for key to maps. The index map, Figure 10, is repeated here for convenience.

Figure 3-19. Peat thickness(ft.) in Shawano Quad. Tick marks in margin are 1 km apart.

Figure 3-20. Peat thickness(ft.) in Dkeelanta Quad. Tick marks in margin are 1 km apart.

Figure 3-33. Peat thickness(ft.) in Greenacres City Quad. Tick marks in margin are 1 km apart.

Figure 3-36. Peat thickness(ft.) in West Dixie Bend Quad. Tick marks in margin are 1 km apart.

APPENDIX 4

Graphic Logs of Representative Cores (from Hood, 1982)

See List of Figures for index.

Core Number: 19
 Quadrangle: Port Mayaca
 Coordinates: 29.7355-05.4005
 Land Use: Muck Area
 Sugar cane production

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	60.0	590	32.6
1-2	77.8	349	19.4
2-3	78.1	360	23.5
3-4	86.5	205	10.9
4-5	87.7	187	12.2
5-6	89.3	161	7.5
6-7	86.3	215	17.9

Figure 4-1. Representative core of Port Mayaca Quadrangle.

Core Number: 23

Quadrangle: Port Mayaca

Coordinates: 29.7511-05.4170

Land Use: Muck Area
Sugar cane production

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	62.0	523	22.6
1-2	80.8	279	12.6
2-3	84.8	235	11.4
3-4	87.8	183	11.5
4-5	89.3	159	8.3
5-6	89.6	159	6.9
6-7	89.0	170	8.7
7-8	89.3	162	15.6

Figure 4-2. Representative core of Port Mayaca Quadrangle.

Core Number: 13
 Quadrangle: Six Mile Bend
 Coordinates: 29.5748-05.4585
 Land Use: Old Agriculture
 Sugar cane production

Depth (ft)	Moisture (wt%)	Density (tons/AF)	Ash (wt%)
0-1	46.9	816	62.7
1-2	81.0	259	15.2
2-3	73.6	406	30.0
3-4	78.9	341	22.4
4-5	83.4	262	15.0
5-6.4	84.2	246	16.9

Figure 4-3. Representative core of Six Mile Bend Quadrangle.

Core Number: 14
 Quadrangle: Six Mile Bend
 Coordinates: 29.5595-05.4747
 Land Use: Old Agriculture
 Sugar cane production

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	61.7	475	14.8
1-2	78.1	268	12.9
2-3	83.5	238	11.6
3-4	84.9	232	12.3
4-5	84.3	241	13.5
5-5.8	86.0	214	18.7

Figure 4-4. Representative core of Six Mile Bend Quadrangle.

Core Number: 42
 Quadrangle: Loxahatchee NW
 Coordinates: 29.5138-05.6190
 Land Use: New Agriculture
 Sugar cane production

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	77.0	361	13.3
1-2	87.7	203	5.1
2-3	90.4	162	8.1
3-4	88.2	198	11.2
4-5	87.6	215	13.4
5-5.8	79.1	343	34.7

Figure 4-5. Representative core of Loxahatchee NW Quadrangle.

Core Number: 46
 Quadrangle: Loxahatchee NW
 Coordinates: 29.5500-05.5770
 Land Use: New Agriculture
 Sugar cane production.

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	73.6	363	13.8
1-2	84.7	261	8.7
2-3	86.7	229	7.9
3-4	86.4	239	7.4
4-5	85.8	247	8.3
5-6	85.7	253	10.3
6-6.9	85.4	278	21.0

Figure 4-6. Representative core of Loxahatchee NW Quadrangle.

Core Number: 56
 Quadrangle: Ft. Lauderdale 2NW
 Coordinates: 29.2000-05.6090
 Land Use: Conservation Area
 Top of core 4.5' below water surface.

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	91.5	124	10.7
1-2	92.1	114	9.2
2-3	91.6	120	12.2
3-4	84.5	248	28.5
4-4.7	77.0	389	49.0

Figure 4-7. Representative core of Ft. Lauderdale 2NW Quadrangle.

Core Number: 58
 Quadrangle: Ft. Lauderdale 2NW
 Coordinates: 29.2869-05.5540
 Land Use: Conservation Area
 Top of core 2' below water
 surface.

Depth (ft)	Moisture (wt %)	Density (tons/AF)	Ash (wt %)
0-1	90.4	138	10.5
1-2	90.1	151	11.5
2-3	91.3	126	9.7
3-4	92.1	109	9.6
4-5	92.0	125	9.8
5-6	90.0	152	20.4

Figure 4-8. Representative core of Ft. Lauderdale 2NW Quadrangle.

APPENDIX 5

Proximate, Ultimate, and Heating Value Analyses of Peat Samples from the Northern Everglades

Performed by the DOE Grand Forks Energy Technology Center, Grand
Forks, North Dakota, 1982.

N-S Coordinate	E-W Coordinate	Sample Depth (feet)	Proximate Analysis			Ultimate Analysis				Heating Value (BTU/LB)
			Moisture as Received (%)	Moisture Free		Moisture Free				
				Volatile Matter (%)	Ash (%)	C (%)	H (%)	N (%)	S (%)	
29.2173	05.6886	3-4	93.4	66.7	5.4	56.13	5.39	3.89	0.72	9960
"	"	6-7	87.0	43.3	37.3	38.36	3.31	2.24	0.79	6618
29.2285	05.6184	1-2	92.8	62.4	7.0	54.82	4.50	3.36	0.73	9319
"	"	5-6	92.3	63.0	9.3	54.39	5.02	3.37	0.78	9430
29.2410	05.5800	4-5	91.3	60.0	9.3	55.20	4.73	3.22	0.93	9268
29.2418	05.5265	1-2	85.4	55.6	7.6	55.45	3.99	2.47	0.35	8975
29.2610	05.5650	4-5	90.2	57.5	10.9	52.77	4.18	2.77	0.78	8690
29.2652	05.5518	2-3	90.9	58.2	9.3	55.52	4.43	2.82	0.86	9110
29.2708	05.6946	2-3	93.3	60.7	5.1	57.78	4.84	3.41	0.56	9735
"	"	6-7	94.2	61.7	5.3	57.67	5.19	3.30	0.65	9738
"	"	9-10	90.7	56.2	12.9	57.19	4.64	3.02	0.85	9160
29.2750	05.5547	6-7	89.9	59.3	8.3	56.17	4.58	3.08	0.64	9323
29.2797	05.6475	3-4	93.2	59.3	5.6	52.62	2.40	6.09	0.59	9609
"	"	6-7	92.2	60.5	13.6	54.04	4.30	2.83	0.69	9005
29.2830	05.5900	3-4	93.8	60.3	4.5	58.25	4.77	2.92	0.56	9709
"	"	6-7	93.9	60.7	4.2	58.75	4.54	2.51	0.45	9773
"	"	8-9	91.2	57.8	7.5	58.50	4.31	2.75	0.86	9643
29.3085	05.7120	4-5	94.6	67.7	4.5	56.77	5.65	3.88	0.69	10157
"	"	6-7	91.7	54.8	16.7	54.22	4.17	2.66	0.73	8563
29.3215	05.5491	2-3	89.4	60.6	6.6	56.53	4.78	3.18	0.42	9443
29.4237	05.5612	7-8	90.5	60.2	6.7	56.57	4.41	2.90	0.78	9559
29.4350	05.5437	1-2	80.9	58.1	10.2	51.36	4.02	2.90	0.43	8234
29.4350	05.5648	3-4	83.3	57.6	16.5	49.63	4.09	3.09	0.64	8084
29.4390	05.5718	2-3	90.4	60.3	7.9	54.82	4.64	3.06	0.78	9204
"	"	7-8	91.0	57.6	8.9	55.98	4.03	2.82	0.91	9207

			Proximate Analysis			Ultimate Analysis				Heating Value (BTU/LB)
N-S Coordinate	E-W Coordinate	Sample Depth (feet)	Moisture as Received (%)	Moisture Free		Moisture Free				
				Volatile Matter (%)	Ash (%)	C (%)	H (%)	N (%)	S (%)	
29.4421	05.5724	4-5	90.5	58.8	8.5	55.25	4.57	2.72	0.62	9190
29.4770	05.1454	1-2	32.7	57.3	11.3	52.27	4.05	2.95	0.64	8493
29.4790	05.2900	3-4	32.7	55.2	13.2	51.93	3.50	2.84	1.43	8505
29.4960	05.6110	2-3	90.0	60.6	8.5	55.09	4.60	3.18	0.87	9340
"	"	4-5	93.2	64.5	6.3	56.35	5.27	3.73	0.90	9925
"	"	7-8	89.7	56.7	11.5	53.93	4.15	2.79	1.10	8934
29.5589	05.4910	1-2	83.3	56.6	9.9	52.38	3.19	2.63	0.55	8447
29.5590	05.5397	2-3	87.0	60.7	7.5	55.78	4.17	3.39	0.81	9511
29.5590	05.5718	1-2	85.6	58.3	14.9	50.16	4.17	2.95	0.66	8537
29.5590	05.5808	1-2	78.2	62.5	6.3	54.11	4.44	3.31	0.54	8987
"	"	4-5	85.6	59.9	7.6	55.82	4.61	3.36	0.79	9594
29.5590	05.5964	2-3	78.8	52.6	19.0	47.62	3.89	2.86	0.51	8007
29.5887	05.2596	2-3	68.7	57.9	12.3	53.85	3.95	3.03	1.96	8786
"	"	4-5	87.2	56.5	9.9	55.49	3.88	3.02	1.45	9159
29.6719	05.5129	0-1	76.0	58.2	8.5	54.69	4.08	3.31	0.52	8909
29.6735	05.4335	1-2	82.5	56.8	8.4	55.19	3.98	3.16	0.65	8892
"	"	3-4	86.4	56.8	9.4	55.51	4.08	3.06	1.00	9128
29.6735	05.4492	4-5	87.5	56.4	10.4	55.24	4.19	2.95	0.90	9133
29.6735	05.4657	2-3	85.0	57.1	10.9	54.37	4.21	3.16	0.72	9016
29.6735	05.4949	0-1	77.6	50.2	23.3	50.47	4.03	2.83	0.40	7681
"	"	2-3	85.1	55.8	9.4	55.61	4.13	3.04	0.64	9092
29.6845	05.3531	5-6	83.9	58.2	10.6	53.94	4.19	3.25	1.87	8999
29.6870	05.4172	2-3	80.2	56.7	11.1	53.51	4.04	3.26	1.01	8663

N-S Coordinate	E-W Coordinate	Sample Depth (feet)	Proximate Analysis			Ultimate Analysis				Heating Value (BTU/Lb)
			Moisture as Received (%)	Moisture Free		C (%)	H (%)	N (%)	S (%)	
				Volatile Matter (%)	Ash (%)					
29.6873	05.4325	1-2	83.2	56.9	8.0	55.32	4.22	3.31	0.64	9021
"	"	4-5	88.0	58.2	8.6	55.38	4.10	2.88	1.03	9126
29.6873	05.4802	1-2	84.0	56.7	7.8	56.29	4.47	3.23	0.58	9408
"	"	4-5	83.3	43.4	28.6	47.90	3.25	2.35	0.68	7137
29.7030	05.4316	4-5	86.2	47.2	8.5	53.79	4.68	2.89	0.89	8971
29.7037	05.4802	1-2	77.9	54.1	16.9	49.51	3.71	3.07	0.52	7933
"	"	4-5	87.7	57.2	7.9	57.30	4.10	3.12	0.74	9439
29.7187	05.4487	1-2	82.0	56.7	12.7	50.98	3.45	3.24	0.52	8263
"	"	4-5	85.3	53.9	14.8	51.99	3.85	2.97	0.64	8224
29.7187	05.4632	0-1	66.4	59.4	14.4	50.15	4.57	3.60	0.39	8336
"	"	4-5	86.9	58.6	7.4	56.41	4.18	3.35	0.50	9540
29.7187	05.4802	0-1	62.4	60.7	9.6	52.72	4.37	3.66	0.42	8812
29.7188	05.4321	2-3	81.6	57.4	10.9	52.54	3.65	2.88	0.57	8493
29.7190	05.3948	7-8	90.7	60.7	7.4	54.83	4.65	3.08	1.25	9269
29.7190	05.4006	4-5	88.6	60.3	6.0	56.75	4.37	3.26	0.81	9642
29.7355	05.3855	9-10	88.9	59.5	9.3	53.91	4.28	3.13	1.36	9242
29.7355	05.4005	3-4	81.3	54.5	15.4	51.31	3.62	3.01	0.88	8217
29.7355	05.4170	4-5	89.5	61.6	6.5	56.27	4.66	3.77	0.63	9667
29.7511	05.4014	2-3	82.7	54.8	10.9	53.86	3.69	3.33	0.87	8735
29.7511	05.4170	6-7	89.7	60.1	6.1	56.90	4.52	3.03	0.72	9617
29.7511	05.4482	1-2	79.5	57.7	8.7	54.35	3.84	3.06	0.48	8801
29.7667	05.4005	2-3	78.5	53.9	16.2	50.41	3.43	3.26	0.79	8036
"	"	6-7	88.9	59.5	7.6	54.81	4.49	3.35	1.02	9383

			Proximate Analysis			Ultimate Analysis				Heating Value (BTU/LB)
N-S Coordinate	E-W Coordinate	Sample Depth (feet)	Moisture as Received (%)	Moisture Free		Moisture Free				
				Volatile Matter (%)	Ash (%)	C (%)	H (%)	N (%)	S (%)	
29.7667	05.4170	1-2	71.2	56.5	10.9	52.92	3.59	3.33	0.67	8552
"	"	3-4	34.9	56.3	9.3	55.18	4.01	3.09	0.68	9115
"	"	5-6	38.9	59.0	6.6	56.61	4.47	3.00	0.56	9626
29.7850	05.3598	3-4	38.5	60.7	7.6	55.94	4.74	3.52	0.95	9482

APPENDIX 6

Analyses of Ash from Northern Everglades Peat Samples

Performed by the DOE Grand Forks Energy Technology Center, Grand Forks, North Dakota.

N-S/E-W Coordinate	PERCENTAGE OF ASH AFTER 800°C (Normalized)										
	% Elemental and % as Oxides										
	Si SiO ₂	Al Al ₂ O ₃	Fe Fe ₂ O ₃	Ti TiO ₂	P P ₂ O ₅	Ca CaO	Mg MgO	Na Na ₂ O	K K ₂ O	S SO ₃	
29.2750/05.5547 (6-7ft. intrvl)	4.4 10.4	1.7 3.7	2.2 3.6	0.1 0.3	0.0 0.0	35.6 55.0	5.2 9.6	0.0 0.0	0.0 0.0	6.3 17.4	
29.4237/05.5612 (7-8ft. intrvl)	3.4 7.4	1.8 3.5	2.2 3.3	0.1 0.2	0.3 0.9	35.6 50.5	5.8 9.8	1.8 2.5	0.0 0.0	8.6 21.8	
29.5887/05.2596 (2-3ft. intrvl)	3.8 8.1	1.2 2.4	6.3 9.0	0.1 0.2	0.0 0.0	27.8 38.8	4.4 7.4	0.0 0.0	0.0 0.0	13.6 34.0	
29.5887/05.2596 (4-5ft. intrvl)	2.9 6.8	0.7 1.5	2.9 4.6	0.0 0.1	0.0 0.0	33.0 50.2	5.1 9.3	0.0 0.0	0.0 0.0	10.1 27.4	
29.6719/05.5129 (0-1ft. intrvl)	7.7 17.9	2.3 4.8	4.6 7.2	0.1 0.3	0.4 1.1	31.9 48.6	1.8 3.3	0.0 0.0	0.0 0.0	6.1 16.6	
29.6735/05.4335 (1-2ft. intrvl)	1.6 4.2	0.7 1.6	3.3 5.6	0.1 0.4	0.2 0.6	40.4 65.3	3.7 7.1	0.0 0.0	0.0 0.0	5.3 15.3	
29.6837/05.4802 (1-2ft. intrvl)	4.9 11.0	1.5 3.0	2.9 4.3	0.1 0.2	0.3 0.9	32.7 47.2	2.8 4.8	3.4 4.8	0.0 0.0	9.2 23.9	
29.7030/05.4316 (4-5ft. intrvl)	7.4 16.1	1.5 3.1	2.0 3.0	0.1 0.3	0.3 0.8	35.7 50.8	4.6 7.9	0.6 0.9	0.0 0.0	6.8 17.3	
29.7037/05.4802 (1-2ft. intrvl)	14.5 34.0	1.7 3.5	3.2 5.0	0.1 0.2	0.4 1.1	29.8 45.7	1.1 2.1	0.0 0.0	0.0 0.0	3.0 8.4	
29.7037/05.4802 (4-5ft. intrvl)	5.3 11.6	2.2 4.3	4.8 7.0	0.1 0.2	0.2 0.7	38.0 54.2	2.4 4.2	0.0 0.0	0.0 0.0	7.0 17.8	
29.7667/05.4005 (2-3ft. intrvl)	13.0 28.0	3.5 6.7	5.9 8.6	0.1 0.3	0.0 0.0	25.6 36.1	4.6 7.8	0.0 0.0	0.0 0.3	4.9 12.4	

APPENDIX 7

FIELD AND LABORATORY METHODS

Field Methods

From July to December 1981, the general resource assessment of the Northern Everglades was performed by two crews of two to three geologists each. Four-wheel drive Chevrolet Blazer trucks were used as transportation to core sites within the agricultural area. Generally, one core location was staked per square mile in the agricultural areas.

Work in the water conservation areas was done primarily by jon boats in perimeter canals and by airboats in the interior. Coring was considerably less frequent and arranged more irregularly than in the agricultural areas because of permitting and access problems.

Standard U.S. Geological Survey (USGS) 7½ minute quadrangle orthophoto topographic sheets were used to locate most core sites. In the agriculture areas, nearly all canals and dike roads were shown on the topo maps, and the locations were accurate to within 10 m. However, in the water conservation areas, distinctive landmarks are rare and navigation was much more of a problem. These locations were approximated on the basis of air photos, topographic maps, airboat trails, proximity to tree islands, Brunton-compass triangulation, and such other landmarks as could be seen.

Cores and samples were identified and labeled with their Universal Transverse Mercator (UTM) grid coordinates, as shown on the modern USGS 7½ minute topographic quadrangle maps of the area. Each core was

identified by two groups of six-digit numbers (e.g., 29.0001/05.0001). The first group (29. . . .) indicates the north-south "latitude," and the second groups (05. . . .) indicates the east-west "longitude." The prefixes 29 and 05 define the southwest corner of a box that is 2900 km north of the equator and 500 km east of a reference "meridian." The final four digits allow designation of points to within 10 meters. Thus, core 29.0001/05.0001 would be 10 m to the north and 10 m to the east of core 29.0000/05.0000.

All locations were within UTM grid zone 17R and 100,000 meter square NV or NU. Therefore, those super-designations were omitted from the location-coordinates.

All cores were taken with manual Mini-Mized MacCauley peat corers, developed by the MacCauley Institute for Soil Research. The corers could be operated by one person in undrained areas but required two or three people in the sugar cane areas where the organic soils were quite dense. The MacCauleys were equipped with multiple four-foot extension rods and were capable of collection well below the maximum 12-foot depths encountered in the Northern Everglades.

The sampling procedures as presented in the Peat Testing Manual (Day et al., 1979) follows:

- 1) With an extension rod and the handle secured in position and the vane closed . . . push the sample into the soil until the upper end of the vane is even with the peat surface. Rotate the handle 180° in a clockwise direction. Retrieve the sampler, open the vane, and remove the sample.
- 2) Clean the sample residue from the tube and vane and close the vane. Re-insert the sampler in the same hole with the same north-south alignment and push the sampler down until the next one-foot increment mark on the rod is even with the peat surface. Gently rotate the handle clockwise, then retrieve the sampler.

- (3) Samples to a depth of 15 feet and possibly greater can be collected by repeating this procedure. At the greatest depths the extension rods should be removed during retrieval and added during insertion.

Using these procedures, general cores were extracted from the survey area at the 746 locations shown on Figure 10 and listed in Appendices 1 and 2. At each general core-site, samples were taken at one-foot vertical intervals from the surface to the underlying inorganic substrate. Where possible, the substrate was also penetrated and sampled. Each one-foot interval was briefly described in the field then immediately sealed in an air-tight, labeled plastic bag to prevent water-loss. All samples from a core hole were then groups into a larger plastic bag which was also sealed to provide further protection from water loss.

In addition to the general cores, 68 special cores were taken for measurements of bulk-density. These special cores were taken with the same apparatus as the general cores, but more attention was given to obtaining completely undisturbed samples of known volume as is described below (and more complete by Hood, 1982):

Using the general coring procedures, samples of largely undisturbed structure and reasonably accurate volume were rapidly collected; however, the boundary between successive samples was somewhat disturbed by the corer. To avoid that disturbance to these special samples, alternate samples were collected from three adjacent holes. Thus, the 0-1 foot interval was taken from hole A, the 1-2 foot interval from hole B, etc.

Following retrieval from the subsurface, each bulk density sample was trimmed to exactly twelve inches in length to provide a known volume for lab analysis, and the fiber content and other parameters were logged

on a standard form for input into the computer file. Bulk density samples were sealed in pre-weighed 16 ounce glass jars to guard against moisture loss prior to weighing.

Laboratory Methods

In all lab procedures, exposure to the air was kept to a minimum to prevent dehydration prior to weighing. Using a "mini-corer" constructed as shown in Figure 7-1, duplicate sub-samples of exactly 10 cc each were taken from every one foot interval of the general cores. These sub-samples were placed in pre-weighed ceramic crucibles with aluminum covers, weighed "as-received" from the field, and dried 16 hours at 110°C. After cooling, the samples were reweighed and the percent moisture was calculated using Equation (7-1).

Eq. 7-1

$$\% \text{ moisture} = \frac{\text{weight loss at } 110^{\circ}\text{C (g)}}{\text{weight "as received" (g)}} \times 100$$

The crucibles with the moisture-free, weighed peat were then heated in a muffle furnace at 550°C until all the organic material had combusted; this required from two to three hours. After cooling, the samples were reweighed and percent ash was calculated from Equation (7-2).

Eq. 7-2

$$\% \text{ ash} = \frac{\text{Weight of ash after } 550^{\circ}\text{C}}{\text{weight of sample after } 110^{\circ}\text{C}} \times 100$$

Table 7-1 is a portion of the laboratory data, showing representative calculations of moisture and ash percentages.

Scale: one-half actual size

Figure 7-1. Laboratory "Mini-Corer".

TABLE 7-1. LABORATORY DATA SHEET SHOWING DERIVATION OF
ASH AND MOISTURE PERCENTAGES

A	B	C	D	E	F	G	H	I	J	K	
SAMPLE NUMBER	Depth	Boat #	Boat & Lid Wgt.	Boat & Peat as	Wgt. 10cc Peat as	Wgt. Peat after 110°C	Wgt. Loss at 110°C	Wgt. of Ash after 550°C	Wgt. Loss at 550°C	% Moisture	% Ash in M.F. Peat
					(E-D)	(Wgt.-D)	(F-G)	(Wgt.-D)	(G-I)	(H/F x 100)	(I/G x 100)
29.6879 05.4172	1-2	9A	16.37	23.92	7.55	1.49	6.06	0.31	1.18	80.26	20.81
	1-2	9B	17.43	24.99	7.56	1.54	6.02	0.32	1.22	79.63	20.78

Bulk density in g/cc was calculated for the general cores by Equation (7-3) and converted to tons/acre foot by Equation (7-4).

Eq. 7-3

$$\text{bulk density} = \frac{\text{weight of moisture-free sample (g)}}{\text{volume of coring device (cc)}}$$

Eq. 7-4

$$\text{tons/AF} = \text{bulk density (g/cc)} \times 1360$$

The 68 special cores for bulk density determinations were handled slightly differently, with an emphasis on producing the most accurate bulk densities possible. Most of these cores were processed on the day of coring at the University of Florida, Belle Glade Agricultural Research and Education Center. The samples had previously been trimmed exactly to a known volume and stored in glass jars.

"As received" weights for each sample were taken on a digital balance accurate to one-hundredth of a gram. Samples were then transferred to pre-weighed drying tins and dried at 105°C for at least twelve hours. A second weighing yielded the weight of moisture-free peat. This figure allowed computation of percent moisture (Equation 7-1) and bulk density (Equation 7-3) of each interval. A secondary calculation produced the density in terms of moisture-free organic soil per acre foot (Equation 7-4).

Oven-dried samples were ground with a mortar and pestle and subdivided to produce approximately eight grams for combustion. Sub-samples for each interval were placed in pre-dried and weighed crucibles and reweighed prior to insertion into muffle ovens. After eight hours at 550°C, samples were cooled in dessicators and reweighed.

This weight, minus crucible weight, gave weight percent of ash after 550°C (Equation 7-2).

Wt. % Ash

Wt. % Ash = $\frac{\text{Weight of ash} - \text{Weight of crucible}}{\text{Weight of sample}} \times 100$

APPENDIX 8

Cross-Sections of Peat and Related Quaternary Sediments of the Northern Everglades as of 1981 (From Wieland, 1981, with modifications)

Figure 8-1. Symbols and index map of locations of cross-sections. (from Wieland 1981).

Figure 8-2. Cross-section 1A and 1B.

Figure 8-3. Cross-sections 1C and 2.

Figure 8-4. Cross-section 3.

Figure 8-5. Cross-section 4.

Figure 8-6. Cross-section 5.

Figure 8-7. Cross-section 6 (cont. on 3 pages).
Also includes a cross-section of ash percentages
in the organic sediment units.

Lithologic Units (based on field descriptions)

% Ash (based on lab analyses)

VIII. REFERENCES CITED

- Boyle, J.R., and C. W. Hendry, Jr., 1981, The mineral industry of Florida, 1977, 1978, 1979: Fla. Bureau of Geology, Information Circular 94: 10 p.: Tallahassee, FL.
- Brooks, H. K., 1974, Lake Okeechobee, in Gleason, P.J. (ed.), Environments of South Florida: present and past: Miami Geol. Soc. Mem. 2: p. 256-286: Miami, FL.
- Cohen, A. D., and W. Spackman, 1974, The petrology of peats from the Everglades and coastal swamps of southern Florida, in Gleason, P.J. (ed.), Environments of South Florida: present and past: Miami Geol. Soc. Mem. 2: p. 233-255: Miami, FL.
- Dachnowski, A. P., 1924, The stratigraphic study of peat deposits: Soil Science: 17:107-134.
- Dachnowski-Stokes, A. P., 1930, Peat profiles of the Everglades in Florida: The stratigraphic features of the "Upper" Everglades and correlation with environmental changes: J. Wash. Acad. Sci.: 20:89-107.
- Davis, J. H., 1946, The peat deposits of Florida: Florida Geol. Surv. Bull. 30: 247 p., Tallahassee, FL.
- DOE, 1982, Proceedings of the U.S. Dept. of Energy Fifth Technical Contractors Conference on Peat: April 1982, Bethesda, MD.
- Evans, C. B., and R. V. Allison, 1942, The soils of the Everglades in relation to reclamation and conservation operations: Soil Sci. Soc. of Fla., Proc. 4-A, p. 34-46.
- Fox, R., Malterer, T., and R. Zarth, 1977, Inventory of peat resources in Minnesota--Progress report: Minn. Dept. of Natural Resources, Div. of Minerals, January 1977, St. Paul, MN.
- Goode, R. W., III, 1982, Vertical distribution of sulfide in the organic soils of the Northern Everglades: Palm Beach County, Florida: Unpublished MS thesis in Geology, University of Florida: 89 p.: Gainesville, FL.
- Gleason, P. J., A. D. Cohen, W. G. Smith, H. K. Brooks, P. A. Stone, R. L. Goodrick, and W. Spackman, 1974, The environmental significance of the Holocene sediments of the Everglades and saline tidal plain, in P.J. Gleason (ed.) Environments of South Florida: present and past: Miami Geol. Soc. Mem. 2: p. 287-342: Miami, FL.

- Goodrick, R. L., 1974, The wet prairies of the northern Everglades, in P.J. Gleason (ed.), Environments of South Florida: present and past: Miami Geol. Soc. Mem. 2: p. 47-52: Miami, FL.
- Hammond, R. G., 1975, The origin, formation, and distribution of peatland resources: in D. W. Robinson and J. G. D. Lamb (ed.), Peat in Horticulture: Academic Press, London.
- Hood, L. Q., 1982, Fuel-grade peat resources of the Northern Everglades based on bulk density analysis: Unpubl. MS Thesis in Geology, Univ. of Florida: 160 p.: Gainesville, FL.
- Ingram, R. L., and L. J. Otte, 1981, Peat Deposits of Dismal Swamp Pocosins: Camden, Currituck, Gates, Pasquotank, and Perquimans Counties, North Carolina: Report to U.S. Dept. of Energy (Contract DE-AC01-79ET-14693; and N. C. Energy Institute, July, 1981.
- _____, and _____, 1982, Peat deposits of Pamlico Peninsula: Dare, Hyde, Tyrell, and Washington Counties, North Carolina: Report to U.S. Dept. of Energy (Contract DE-AC18-79FC14693; and N. C. Energy Institute, July, 1982.
- Kopstein, Melvyn, 1979, Peat Prospectus: U.S. Dept. of Energy, Div. of Fossil Fuel Processing: 79 p.
- Loveless, C. M., 1959, A study of the vegetation in the Florida Everglades: Ecology: 40:1-9.
- Minnesota Dept. of Natural Resources, 1978, Peat utilization and the Red Lake Indian Reservation: by the Walter Butler Co. for the Minn. Dept. of Nat. Resources, St. Paul, Minn.
- Moore, P. D., and D. J. Bellamy, 1974, Peatlands: Springer-Verlag Publ. Co., New York.
- Punwani, D. V., and A. M. Rader, Peat Gasification for SNG Production, by Science Applications, Inc., for the U.S. Dept. of Energy.
- Samson, R. J., 1975, Surface II graphics system: Kansas Geological Survey, Series on Spatial Analysis, No. 1: 240 p.: Lawrence, KA.
- Sawyer, R. K., 1982, Late Quaternary mineralogy and paleoenvironmental reconstruction of a freshwater peat-forming basin in the Florida Everglades: Unpubl. MS thesis in Geology, Univ. of Florida: 147 p.: Gainesville, FL.
- Severson, L. S., H. D. Mooers, and T. J. Malterer, 1980, Inventory of Peat Resources, Koochiching County, Minnesota: Minn. Dept. of Natural Resources, Hibbing, Minn., 95 p.
- Shih, S. F., J. W. Mishoe, J. W. Jones, and D. L. Myhre, 1978, Modeling the subsidence of Everglades organic soil: Trans. ASAE, 21:1156.

- Shih, S. F., J. W. Mishoe, J. W. Jones, and D. L. Myhre, 1979, Subsidence related to land use in the Everglades Agricultural Area: Trans. ASAE, 22:(3):560-568.
- Smith, Buckingham, 1847, in Everglades of Florida; acts, reports, and other papers, state and national, relating to the Everglades of the State of Florida and their reclamation: Senate Document 89, p. 208, 62nd Congress, 1911.
- Stephens, J. C., 1956, Subsidence of organic soils in the Florida Everglades: Soil Sci. Soc. Amer. Proc.: 20:(1):78-80.
- _____, 1974, Subsidence of organic soils in the Florida Everglades--A review and update, in P.J. Gleason (ed.), Environments of South Florida: present and past: Miami Geol. Soc. Mem. 2: p. 352-361: Miami, FL.
- _____, and L. Johnson, 1951, Subsidence of organic soils in the Upper Everglades region of Florida: Soil Sci. Soc. Fla. Proc.: 11:191-237.
- Stowasser, W. F., and W. R. Oglesby, 1974, The mineral industry of Florida, 1972: Fla. Bureau of Geology, Information Circular 88: 13 p.: Tallahassee, FL.
- Sweeney, J. W., and C. W. Hendry, Jr., 1979, The mineral industry of Florida, 1973-1974: Fla. Bureau of Geology, Information Circular 92: 14 p.: Tallahassee, FL.
- Volk, B. G., 1972, Everglades histosol subsidence: CO₂ evolution as affected by soil type, temperature, and moisture: Soil Sci. Soc. Fla. Proc.: 32:132-135.
- Wieland, C. C., 1981, The peat deposits of Palm Beach County, Florida: Unpubl. MS thesis in Geology, Univ. of Florida, 86 p., Gainesville, FL.