

EVALUATING CARBON SEQUESTRATION IN CRP AND RESTORED
GRASSLANDS IN THE NORTH CENTRAL U.S.

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in the North Central U.S.

By

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ABSTRACT

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Evaluating Carbon Sequestration in CRP and Restored Grasslands in the North Central U.S. Major Professor: Dr. Larry J. Cihacek.

The issue of global climate change raises a need for information on the management and mitigation of atmospheric carbon dioxide (CO₂). The knowledge of carbon (C) characteristics within land resources can be useful for resource managers and policy makers to make informed management decisions. Depending on land use and management, prairie soils can be considered either a source or a sink for atmospheric CO₂. Soil sample cores were taken from seven different regions in the north central U.S. Over 1300 samples were analyzed to determine relationships between grassland age and soil organic carbon (SOC) levels.

Sample matrices were built to compare restored grassland age classes to adjacent native grasslands and cultivated croplands in the different study regions. The samples were taken at 0-15 cm and 15-30 cm increments and were analyzed for organic carbon, inorganic carbon, and total carbon. Each region was analyzed using regression analysis to calculate SOC sequestration rates for restored grasslands over time. Restored grassland SOC sequestration rates were found to be highly variable throughout the region ranging from annual losses to annual gains of $0.59 \pm 1.81 \text{ kg m}^{-2} \text{ 30 cm}^{-1}$ with an overall sequestration rate of $0.09 \pm 1.92 \text{ kg m}^{-2} \text{ 30 cm}^{-1}$. Overall, as average annual temperature and precipitation increased, SOC levels also increased. Under proper management restored grasslands in the north central Great Plains can be managed and used to store atmospheric CO₂.

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TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	iii
ACKNOWLEDGMENTS.....	iv
LIST OF TABLES	viii
LIST OF FIGURES.....	x
LIST OF APPENDIX TABLES.....	xii
LIST OF APPENDIX FIGURES	xv
INTRODUCTION.....	1
Carbon Cycles	2
Grassland Relationships to Carbon, Age, and Landscape	3
Research Methods	4
Factors Affecting Soil Organic Carbon Sequestration	5
Cultivation Effects on Soil Organic Carbon.....	6
Previous Studies on Soil Organic Carbon and Grassland Age.....	6
MATERIALS AND METHODS	9
Site Locations	9
Northeastern Montana	9
Sheridan County, North Dakota	10
Northeastern North Dakota.....	10
North Central South Dakota	11
Central South Dakota	11
Western Minnesota.....	12

North Central Iowa and Southern Minnesota	12
Site Selection Procedures	12
Sampling Methods.....	14
Sample Processing.....	15
Data Analysis.....	16
RESULTS AND DISCUSSION.....	17
Carbon Sequestration and Grassland Age Relationships	17
Northeastern Montana	17
Sheridan County, North Dakota	20
Northeastern North Dakota.....	22
North Central South Dakota	26
Central South Dakota	29
Western Minnesota.....	33
North Central Iowa and Southern Minnesota.....	35
Combined Locations.....	38
SUMMARY	43
REFERENCES CITED	48
APPENDIX A. SAMPLING MATRIX	54
APPENDIX B. SITE ID SYSTEM	55
APPENDIX C. GLOSSARY OF SOIL MAP UNITS	56
APPENDIX D. DATA TABLES	65
APPENDIX E. DATA FIGURES	69
APPENDIX F. SAMPLE COORDINATES AND LANDSCAPE POSITION.....	73

APPENDIX G. SAMPLE CARBON DATA.....188

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Estimation of soil organic carbon sequestration in restored grasslands as reported in the literature	8
2. Comparison of Major Land Resource Area climatic conditions at study locations	10
3. Descriptive statistics for soil organic carbon values in the surface 0-30 cm depth by land management category for 15 fields in northeastern Montana	18
4. Average soil organic carbon values for landscape positions in northeastern Montana under three land management practices	19
5. Descriptive statistics for soil organic carbon values in the surface 0-30 cm depth by land management category for 15 fields in Sheridan County, North Dakota	21
6. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 13 fields in northeastern North Dakota	23
7. Average soil organic carbon values for landscape positions sampled in northeastern North Dakota under three management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation	26
8. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 15 fields in north central South Dakota	27
9. North central South Dakota average soil organic carbon for landscape positions (0-30 cm). The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.....	30
10. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 17 fields in central South Dakota.....	30

11. Average soil organic carbon values for landscape positions sampled in central South Dakota under three land management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation	32
12. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for twenty-three fields in western Minnesota.....	34
13. Average soil organic carbon values for landscape positions sampled in western Minnesota under three land management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation	36
14. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 19 fields in north central Iowa	36
15. Average soil organic carbon values for landscape positions sampled in north central Iowa under three land management practices in north central Iowa and southern Minnesota. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation	39
16. Annual calculated SOC sequestration rate \pm standard deviations for all locations in restored grasslands and all management including native and cultivated lands	47

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. A comparison of average soil organic carbon levels in cultivated, restored, and native grasslands in Sheridan County, Montana.....	18
2. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in northeastern Montana. Each restored grassland soil organic carbon value is denoted by a single dot.....	19
3. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands in Sheridan County, North Dakota	21
4. A comparison of the distribution of soil organic carbon in restored grasslands with average native, grasslands and cultivated cropland in Sheridan County, North Dakota. Each grassland soil organic carbon values is denoted by a single dot	22
5. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in northeastern North Dakota.....	24
6. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in northeastern North Dakota. Each grassland soil organic carbon value is denoted by a single dot.....	24
7. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in north central South Dakota.....	27
8. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in north central South Dakota. Each grassland soil organic carbon value is denoted by a single dot.....	28
9. A graphic comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in central South Dakota	31
10. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland	

in central South Dakota. Each grassland soil organic carbon value is denoted by a single dot	31
11. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in western Minnesota.....	34
12. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland in western Minnesota. Each grassland soil organic carbon vale is denoted by a single dot	35
13. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands in north central Iowa and southern Minnesota.....	37
14. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland in north central Iowa and southern Minnesota. Each grassland soil organic carbon value is denoted by a single dot.....	39
15. Average soil organic carbon sequestered in the soil, median mean average annual temp (C°), and mean annual precipitation (dm) for all land management types across all study locations	41
16. Average soil organic carbon levels and median average annual temp (C°) and median average annual precipitation (dm) across all native grasslands locations	41
17. Average soil organic carbon levels in restored grasslands and median average annual temp (C°) and median average annual precipitation (dm) across all study locations	42
18. Average soil organic carbon levels in cultivated grasslands and median average annual temp (C°) and median average annual precipitation (dm) across all study locations	42

LIST OF APPENDIX TABLES

<u>Table</u>	<u>Page</u>
17. Northeastern Montana description of map unit symbols.....	56
18. Sheridan County, North Dakota description of map unit symbols.....	57
19. Northeastern North Dakota description of map unit symbols.....	58
20. North central South Dakota description of map unit symbols.....	59
21. Central South Dakota description of map unit symbols.....	60
22. Western Minnesota description of map unit symbols.....	61
23. North central Iowa and southern Minnesota description of map unit symbols.....	63
24. Northeastern Montana restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	65
25. Central North Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	65
26. Northeastern North Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	66
27. North central South Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	66
28. Central South Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	67
29. Western Minnesota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.....	67

30. North central Iowa and southern Minnesota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class	68
31. Average loss of SOC from cultivating native grasslands for each study location.....	68
32. Eastern Montana sample identification, coordinates, soil map unit sampled, land management, and landscape position	73
33. Sheridan County North Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position	87
34. Northeastern North Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position	103
35. North central South Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position	114
36. Central South Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position.....	130
37. Western Minnesota sample identification, coordinates, soil map unit sampled, land management, and landscape position.....	151
38. North central Iowa and southern Minnesota sample identification, coordinates, soil map unit sampled, land management, and landscape position	169
39. Northeastern Montana sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F	188
40. Sheridan County, North Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.....	203

41. Northeastern North Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.....	220
42. North central South Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.....	232
43. Central South Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F	249
44. Western Minnesota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F	271
45. North central Iowa and southern Minnesota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.....	290

LIST OF APPENDIX FIGURES

<u>Table</u>	<u>Page</u>
19. Diagram describing the labeling system using: state, county, township, section, and sample number (Augustin, 2009)	55
20. Northeastern Montana average SOC levels for landscape positions.....	69
21. Northeastern North Dakota average SOC levels for landscape positions.....	69
22. North central South Dakota average SOC levels for landscape positions.....	70
23. Central South Dakota average SOC levels for landscape positions	70
24. Western Minnesota average SOC levels for landscape positions	71
25. North central Iowa and southern Minnesota average SOC levels for landscape positions	71
26. A comparison of average soil organic carbon levels in cultivated cropland that was not recently in CRP, cultivated cropland, and restored and native grasslands in Sheridan County, North Dakota.	72

INTRODUCTION

The temperate grassland biome is an important region of North America that stretches from Canada to Mexico. Ecosystems within the prairie, like the tallgrass prairie, have seen declines of up to 99% from historic extents (Sampson and Knopf, 1994). The introduction of the Conservation Reserve Program (CRP) in 1985 as part of the Farm Bill encouraged farmers to replace highly erodible cultivated land with permanent cover with the intention of reducing soil erosion and taking cropland out of production, to reduce grain surpluses, and raise grain prices. Beside erosion control, CRP had other un-intentional, but important, ecological effects such as wildlife habitat improvement and carbon sequestration. Carbon sequestration in CRP and other grasslands throughout North America is highly variable. Delineation of regions by climatic and edaphic characteristics may be one approach to improve estimates and knowledge of carbon in different systems (Liebig et al., 2005). Kern (1994) indicates numerous studies in the U.S. on soil organic carbon (SOC) at local levels with few regional assessments. This study examines SOC relationships in restored grasslands on local and regional scales in the north central Great Plains and the Prairie Pothole Region (PPR) of the U.S.

Through natural processes over time, organic and inorganic carbon increases within soil profiles. Under natural conditions, organic carbon can be stored within the soil for indefinite of time. Disturbances to the soil can cause a loss of organic carbon from the soil (Davidson and Ackerman, 1993) by allowing an influx of oxygen into the system which is combined with carbon through microbial mediation and forms CO₂. These interactions spur microbial activities and decomposition which, in turn, causes losses of SOC and release of CO₂ into the atmosphere.

Carbon Cycles

A natural function in many ecosystems is to take atmospheric CO₂ and store it in the form of energy rich organic material within plant biomass. Prairie ecosystems are dominated by grass species as the primary producers. Plants are autotrophs, organisms that can form organic material from inorganic substances like carbon dioxide and water (Muller, 1974) through photosynthesis. When living organisms die, the carbon contained within plant tissue decomposes and can be incorporated into the soil humus or it can be released through microbial respiration back into the atmosphere. The carbon pool within the soil includes decomposing plant, animal and microbial residues (Post and Kwon, 2000). Brady and Weil (2004) provide a simplified representation of the global carbon cycle emphasizing the pools that interact with the atmosphere. The pools include carbonate rocks, sediment, oceans and lakes, fossil fuels, the atmosphere, vegetation, and the soil.

Photosynthesis is the process by which plants derive energy from sunlight. It is the process of manufacturing carbohydrates from CO₂ and H₂O in the presence of chlorophyll while utilizing light energy and releasing oxygen gas (Muller, 1974). In a description of agricultural settings, which can also be used for grasslands, Janzen et al. (1998), described how carbon enters the (plant) system through photosynthesis. Of carbon assimilated by the crops (grasslands), part is removed by harvesting (grazing by herbivores), and the remaining carbon enters the soil as plant litter, which, in turn through microbial and faunal respiration is converted back to CO₂ or remains in the soil as organic carbon compounds (humus). The process of photosynthesis can account for up to 16% of the atmospheric CO₂ being moved from the atmosphere into the biosphere annually (Malhi, 2002).

Grassland Relationships to Carbon, Age, and Landscape

Recently, much focus has been put on grasslands in an attempt to understand grassland relationships and their potential for C mitigation in reaction to the hypothesis of global climate change induced by atmospheric CO₂ increases. Grasslands are a type of ecosystem with highly varying characteristics and occur across wide ranges of temperature, precipitation, age, and geographic location. Some studies reveal precipitation acts as the greatest influence on carbon through primary production in the Great Plains (Paustian et al., 2001), while other studies indicate that precipitation and temperature within the north central U.S. do not influence definite trends in SOC (Franzmeier et al., 1985).

Soil organic carbon levels are related to parent material, organisms, and topography (Franzmeier et al., 1985), as well as the other two of the five soil forming factors, climate and time. Undisturbed grasslands, which can build up and store SOC, are a sink for storing atmospheric carbon. Disturbed grasslands, which can lose large amounts of SOC, can be considered sources of atmospheric carbon. When disturbed grasslands that have been cultivated are planted back into perennial cover, the SOC levels within the soil can shift towards the original SOC levels of the native grassland, turning a source of CO₂ into a CO₂ sink.

Throughout North America, there are large scale precipitation and temperature gradients. Precipitation increases from west to east starting at the Rocky Mountains and also increases from north to south. The temperature gradient follows a similar pattern where higher average temperatures increase in easterly and southerly directions. These patterns are important for differences in SOC levels because of the biological implications resulting from temperature and moisture gradients.

Research Methods

To analyze SOC accumulation rates in restored grasslands, scientists have used regression analysis and multiple stepwise regressions to correlate SOC to other properties besides time (Burke et al., 1989; McLauchlan et al., 2006; Gleason et al., 2008). Multiple studies have used SOC levels in native grasslands and/or cultivated croplands to compare against SOC levels in restored grasslands (Gebhart et al., 1995, Knops and Tilman 2000, Follett et al., 2001, Mensah et al., 2003). The use of the native grasslands assumes that native grassland SOC levels indicate the potential carbon storage capacity that cultivated lands can attain under optimal conditions. Another method used for estimating SOC sequestration rates is to subtract SOC levels in cropland from CRP sites (Follett et al., 2001).

Researchers have looked at different depths or soil horizons (Reeder et al., 1998) to quantify SOC storage levels. In some of the studies, soil organic matter (SOM) and SOC are used interchangeably. Multiplying SOC levels by a factor of 1.9 can give an approximate value for SOM, although the factor varies for different soil types (Nelson and Sommers, 1996). Researchers claim that a majority of the SOM is located in the top five cm of the soil profile (Ganjugunte et al., 2005), while others claim that shallow sampling is not sufficient to test for SOM levels because of different plant types and other factors that can result in high SOC levels in deeper soil horizons (Davidson and Ackerman; 1993, Baker et al., 2007). A study by Reeder et al. (1998) indicated SOC in the top two horizons was important because these zones appear to contain the majority of the C and N in the soil profile.

Factors Affecting Soil Organic Carbon Sequestration

Soil organic carbon levels can vary greatly among different areas in the north central Great Plains. Soil organic carbon accumulation rates may be dependent on different factors such as nitrogen accumulation (Knops and Tilman, 2000), landscape slope (Franzmeier et al., 1985), landscape position (Yonker et al., 1988), parent material (Franzmeier et al., 1985), and vegetation (Franzmeier et al., 1985). Other factors that can have influences on SOC sequestration and levels within the soil are grazing and haying (Franzluebbers et al., 2000; Liebig et al., 2005), burning (Fynn et al., 2003), and plant type (Knops and Tilman, 2000; Fornara and Tilman, 2008).

Several studies have examined SOC relationships with plant species and species mix or composition. Plant population dynamics may be important in ecosystem recovery from disturbances (Burke et al., 1995a). Net changes of SOC are dependent on carbon input rates compared to losses from soil respiration (Janzen et al., 1998). Knops and Tilman (2000) indicated that carbon accumulations are controlled by nitrogen accumulation in the soil and are positively affected by the presence of legumes and C₄ grass species and negatively affected by forbs and C₃ grass species. Raven et al. (2005) indicates that C₄ plants are better suited to higher temperatures than C₃ plants, use carbon dioxide more efficiently, use less water, and use nitrogen more efficiently. Other studies show that re-establishment of perennial grasses may determine SOM recovery speeds (Burke et al., 1995b). Studies in management practice changes have shown that when SOM levels change, nutrient availability affects SOM accumulation in the short term (Burke et al., 1995a; 1995b), which can influence the rate of SOC accumulation in restored grasslands.

Cultivation Effects on Soil Organic Carbon

When grasslands are disturbed by tillage, SOC is lost from the soil (Davidson and Ackerman 1993; Robles and Burke, 1997; Reeder et al., 1998; Knops and Tilman, 2000; Lal, 2004; Liebig et al., 2005; Jelinski and Kucharik, 2009) with soil organic carbon losses ranging from 18-89% of native levels reported. In general, studies on cultivation and SOC losses indicate: (i) SOC losses may increase with increased precipitation (Burke et al., 1989); (ii) losses are most evident in the plow layer (Davidson and Ackerman, 1993); (iii) bulk densities may increase with cultivation resulting in lowered carbon concentrations, although the lower concentrations of carbon can be offset by higher soil density values (Davidson and Ackerman, 1993; Cihacek and Ulmer 1995); (iv) losses can be partially caused by biomass loss from agricultural production (Tiessen et al., 1982; Tivy, 1987; Burke et al., 1995b); (v) leaching of soluble organic carbon (Gregorich et al., 1998); and (vi) tillage can reduce the spatial variation from individual plants due to annual soil mixing in the upper portions of the soil (Burke et al., 1995b). Studies have also indicated a connection between soil texture and land use by showing higher silt and lower sand contents in native prairie when compared to cultivated or abandoned fields (Burke et al., 1995b). Besides SOC losses, erosion from cultivation can have negative effects on soil chemical properties and productivity (Cihacek and Swan, 1994).

Previous Studies on Soil Organic Carbon and Grassland Age

Research has shown that carbon levels within the soil increase as a function of time from grassland restoration (Baer et al. 2002), the increases were reported in the form of total carbon, SOC, or SOM (Knops and Tilman, 2000; Burke et al. 1995b; Mensah et al., 2003; Liebig et al., 2005; McLauchlan et al., 2006). As grasslands recover from cultivation,

research indicates a delay in nutrient availability which can cause a potential lag in plant productivity within the system (Burke et al., 1995a). Predictions based on modeling SOC changes in soils show that SOC levels recover on a century timescale (Matamala et al., 2008), and sequestration rates peak within 40 years after grass seeding (Conant et al., 2001). Numerous studies have predicted a wide range of annual SOC sequestration rates in restored grasslands (Table 1) ranging from annual losses (Follett et al., 2001) to gains on a global scale of 3.04 Mg C ha⁻¹ yr⁻¹ (Conant et al., 2001). Other studies have predicted SOC recoveries ranging from 50-230 years (Baer et al., 2002; Knops and Tilman, 2000; McLauchlan et al., 2006; Matamala et al., 2008). In a review of published data from the northern Great Plains Liebig et al. (2005) reported SOC accumulations rates of 1.80 Mg C ha⁻¹ yr⁻¹.

Some studies and reviews have included SOC and grassland age relationships across wide geographic areas (Conant et al., 2001; Paustian et al., 2001; Liebig et al., 2005), while other studies examined relationships in smaller geographic regions (Knops and Tilman, 2000; McLauchlan et al., 2003; Matamala et al., 2008; Jelinski and Kucharik, 2009). To evaluate sequestration rates and potential SOC threshold levels, studies have compared cultivated and restored grasslands to nearby native grasslands for comparison values (Burke et al., 1995a; 1995b; Gebhart et al., 1995; Cihacek and Ulmer, 1995; Knops and Tilman 2000; Follett et al., 2001; Mensah et al., 2003).

The objective of this study was to determine if there is a relationship between grassland age and soil organic carbon in restored grasslands of the north central Great Plains and in the PPR of the U.S. and to establish benchmark soil organic carbon levels at numerous locations throughout the north central Great Plains and the PPR of the U.S. The hypothesis

Table 1. Estimation of soil organic carbon sequestration in restored grasslands as reported in the literature.

Reference	Estimation Method	Study Area	Mean Sequestration Rate --Mg C ha ⁻¹ yr ⁻¹ --
Liebig et al. (2005)	Review	USA and Canada	0.94 ± 0.86
Contant et al. (2001)	Review	world wide	0.11-3.04
McLauchlan et al. (2006)	Sampled	Minnesota	0.62
Mensah et al., 2003	Sampled	Saskatchewan, Canada	0.60-0.80
Reeder et al. (1999)	Sampled	Wyoming	0.4-1.16
Follett et al. (2001)	Sampled	13 state region	0.91
Knops and Tilman. (2000)	Sampled	Minnesota Texas, Kansas, Nebraska	0.20
Gebhart et al. (1995)	Sampled	Nebraska	0.73
Paustian et al. (2001)	Modeled	16 state region	0.10-0.40

is that SOC levels under restored perennial grasslands will increase in direct relationship to grassland age.

MATERIALS AND METHODS

Site Locations

The sampling regions for the project were in northeastern Montana, central North Dakota, northeastern North Dakota, north central South Dakota, central South Dakota, western Minnesota, and a combination of north central Iowa and southern Minnesota. These areas were selected in conjunction with areas of long-term wetland studies conducted by the U.S. Geological Survey. The sites give a good representation of the Prairie Pothole Region (PPR) in the northern Great Plains of the United States. The research locations in the study cover an expansive geographic area with differences in precipitation and temperature. The precipitation gradient gradually increases from west to east, and the temperature gradient gradually increases from north to south (Table 2). Comparisons of geographic locations and climate at sample locations will be compared by the Major Land Resource Areas (MLRA's).

Northeastern Montana

The Montana study sites were sampled in June 2008 and are located within 35 km north and north-west of Plentywood, Montana (48°46' N, 104°34' W). All of the samples were taken within Sheridan County, Montana. The study locations are located within MLRA 53A (USDA, 1981). Major Land Resource Area unit 53A is referred to as the Northern Dark Brown Glaciated Plains. This MLRA has an average annual precipitation of 300-350 mm, an average annual temperature of 3-5°C, and an average freeze free period of 110-125 days (USDA, 1981).

Table 2. Comparison of Major Land Resource Area climatic conditions at study locations.

Site	MLRA Unit [†]	Average Annual Precipitation cm	Average Annual Temperature C°
Northeast Montana	53A	300-350	3-5
Sheridan County, North Dakota	55B and 53B	350-500	1-7
Northeastern North Dakota	55A and 55B	375-500	3-7
North Central South Dakota	53B	350-425	1-7
Central South Dakota	53C and 55C	425-525	7-9
Western Minnesota	57	525-675	3-6
North Central Iowa and Southern Minnesota	103	625-850	6-9

[†]Sites with two MLRA units have combined climactic data.

Sheridan County, North Dakota

The Sheridan County, North Dakota sites were sampled in June 2006 and are located within 45 km of McClusky, North Dakota (47°29' N, 100°26' W). All of the samples were taken within Sheridan County, North Dakota. The study locations are mostly within MLRA 55B with some sites in 53B (USDA, 1981). Major Land Resource Area 55B is referred to as the Central Black Glaciated Plains with an average annual precipitation of 400-500 mm, average annual temperature of 4-7°C, and an average freeze free period of 120-140 days (USDA, 1981). Major Land Resource Area map unit 53B is referred to as the Central Dark Brown Glaciated Plains with an average annual precipitation of 350-425 mm, an average annual temperature of 1-7°C, and an average freeze free period of 110-130 days (USDA, 1981).

Northeastern North Dakota

The northeastern North Dakota sites were sampled in July 2008 and are located within 65 km of Devils Lake, North Dakota (48°06' N, 98°50' W) in Eddy, Towner, Cavalier, Nelson, Ramsey, and Benson counties. The study locations are mostly within

MLRA 55A with some sites in 55B (USDA, 1981). Major Land Resource Area 55A is referred to as the Northern Black Glaciated Plains with an average annual precipitation of 375-450 mm, an average annual temperature of 3-4°C, and average freeze free period of 100-120 days (USDA, 1981). The description of MLRA 55B has been reported for the Sheridan County, North Dakota sampling area above.

North Central South Dakota

The north central South Dakota sites were sampled in July 2007 and are located within 100 km west and northwest of Aberdeen, South Dakota (45°27' N, 98°27' W) in McPherson and Edmunds counties. The study locations are within MLRA 53B (USDA, 1981). Major Land Resource Area 53B is referred to as the Central Dark Brown Glaciated Plains with an average annual precipitation of 350-425 mm, an average annual temperature of 1-7°C, and an average freeze free period of 110-130 days (USDA, 1981).

Central South Dakota

The central South Dakota sites were sampled in July and August of 2007 and are located within 100 km west of Huron (44°20' N, 98°12' W) in Beadle, Hand, and Jerauld Counties. The study locations are mostly within MLRA 55C with some also being in MLRA 53C (USDA, 1981). Major Land Resource Area unit 55C is referred to as the Southern Black Glaciated Plains with an average annual precipitation of 450-525 mm, an average annual temperature of 7-9°C, and an average freeze free period of 130-155 days. Major Land Resource Area 53C is referred to as the Southern Dark Brown Glaciated Plains with an average annual precipitation of 425-475 mm, an average annual temperature of 7-9°C, and average freeze free period of 130-150 days (USDA, 1981).

Western Minnesota

The western Minnesota sites were sampled in July-October of 2007 and are located within 65 km west and southwest of Detroit Lakes (46°48' N, 95°50' W) in Becker, Clay, and Ottertail counties. The study locations are within MLRA map unit 57 (USDA, 1981). Major Land Resource Area 57 is referred to as the Northern Minnesota Gray Drift with an average annual precipitation of 525-675 mm, an average annual temperature of 3-6°C, and average freeze free period of 100-120 days (USDA, 1981).

North Central Iowa and Southern Minnesota

The north central Iowa and southern Minnesota sites were sampled in July and August of 2008 and are located within 65 km north, east, and south of Estherville, Iowa (43°24' N, 94°49' W) within the Iowa counties of Clay, Emmet, Kossuth, and Palo Alto; and within the Minnesota counties of Jackson and Cottonwood. The study locations are within MLRA map unit 103 (USDA, 1981). Major Land Resource Area 103 is referred to as Central Iowa and Minnesota Till Prairies with an average annual precipitation of 625-850 mm, and average annual temperature of 6-9°C, and average freeze free period of 130-160 days (USDA, 1981).

Site Selection Procedures

The site selection process started with township maps and USDA Farm Service Agency aerial photographs of potential sampling locations of appropriate field types with the land manager's permission to sample. The maps and permission to sample the fields were acquired by Ducks Unlimited, Inc. The maps included fields containing native grasslands, assorted year classes of CRP and restored grasslands, and cultivated croplands. Grassland ages were determined from records provided by landowners or land managers.

A sampling matrix was designed that included categories for native grassland, 5 year old CRP, 10 year old CRP, 15 Year old CRP, 20 year old CRP, cultivated cropland, and other land management of potential interest (see Appendix A). Grassland ages that did not exactly fit into each category were placed into the nearest appropriate age category. The matrix had three columns for up to three replications within each category. The sampling matrix was used to organize sample locations that were identified from the maps. The sampling matrix was filled out as completely as possible. Some of the study regions did not have certain grassland ages so it was not always possible to fill out the entire sampling matrix.

Once a site was selected and placed in the sampling matrix, the site was located on the USDA NRCS Web Soil Survey site and an aerial photograph map showing the soil series delineations for the field of interest was printed (<http://websoilsurvey.nrcs.usda.gov/app>). The map was used at the field to determine where to position soil sampling points on the ground. After a site had been selected, the data for the county in which the site were located was downloaded from the USDA Geospatial Data Gateway web site (<http://datagateway.nrcs.usda.gov/>). In the field, observations were made using the maps to determine how many hectares were present in a field to sample. A sampling point was located for every ten acres present in the field. The sample point was selected on a representative basis from the soil types and landscapes present in the field, and the soils and landscapes were represented as proportionately as possible. Wetlands and potential wet areas were not sampled.

Multiple Personal Digital Assistants (PDA), Dell Axim X50 equipped with a Global Positioning Satellite (GPS) Farm Works GPS receiver (model number D157N) or the

GlobalSat GPS Compact Flash (model number BC-337), were used to record and save GPS coordinates and assist with site navigation. A Garmin 76 hand held GPS unit was used as a backup unit for sites at which the PDA was not available.

Sampling Methods

Once the sampling points were plotted on the field map, the field would be sampled in an orderly manner. First, the sampling team would navigate to the sample area. Upon arriving at the sample area, samplers would locate a representative area on the landscape and mark the point using GPS coordinates and a temporary flag to denote the GPS location.

The next step was to take five samples in a circle within approximately five meters from the flag. The samples were taken uniformly throughout all the field sampling locations by taking the first sample directly to the north of the flag and the next four samples were sampled in a clockwise circle around the flag at equal distances, approximately five m from the center flag. Samples were taken with a hand probe 19 mm in diameter and 30.48 cm (12 inches) in length marked at the 15.2 cm (6 inch) and 30.4 cm (12 inch) depths. After a sample was taken, the top 15.2 cm (6 inch) was placed in a pre-weighed plastic bag and the bottom 15.2 cm (6 inch) was placed in a separate bag. The subsequent samples were then composited with the corresponding bag for the correct depth. After the five samples were collected at a location, the bags would be sealed with a rubber band and placed in a backpack for transport back to the vehicle. If it was not possible to take all five samples at a given location due to unfavorable sampling conditions, the number of samples taken for each depth increment would be denoted on the sample bag and in the field book. Sample records were kept by placing a unique set of letters and

numbers for each sample. Samples were identified by state, county, township, section, and sample number within each section (see Appendix B).

After soil samples were taken at each location, notes were taken to record the dominant vegetation present within 10 meters of the center flag, landscape position, slope, aspect, slope shape, GPS coordinates, and any other special notes or unique characteristics about a sampling location. The landscape positions designated were undulating upland, summit, shoulder, back slope, foot slope, toe slope, and undulating lowland. The undulating upland and lowland are described as being high or low in the landscape without any distinct landscape position on it.

Sample Processing

After being collected in the field, samples were placed in a cooler or large plastic tubs for transport to the laboratory. In the laboratory, the samples were assigned a laboratory number according to the order that they were sampled. The sample's total weight was taken and then the samples were sub-sampled to test moisture content and bulk density. Bulk density was calculated as described by Blake and Hartge (2006). Soil moisture was calculated as described by Gardner (1986) and the weight of the original bagged sample was adjusted to reflect weight on an oven-dry basis. After soil moisture had been measured the remaining sample was air dried for a minimum of three days on plastic drying trays in a fan-cooled drying room. After the samples were dry, they were ground to pass through a 2 mm mesh screen and stored in plastic lined soil sample bags. A 10 to 15 gram sub sample was taken and ball-milled to pass through a 60 mesh (0.25 mm) screen. The milled sample was then sent to the NDSU Soil and Water Environmental Laboratory to be analyzed using a high temperature combustion method in a Skalar Primacs™ carbon

analyzer to determine total carbon levels as described by Nelson and Sommers (1996). Inorganic carbon was determined by acid addition to dissolve soil carbonates and the CO₂ evolved was measured by the same instrument used for total carbon detection. Organic carbon levels were determined by subtracting inorganic carbon from the total carbon. The SOC data were reported on a percent basis from the laboratory. The SOC mass was calculated in kg m⁻² 30cm yr⁻¹ by adjusting for bulk density.

Data Analysis

The data were organized by field location, and the data for each field were summarized. The average SOC sequestration rates of restored grasslands were calculated by linear regression analysis using Proc GLM and REG in SAS 9.1 (SAS Institute, 2006). The different landscape positions and management practices were compared through an LSD to determine significance levels (p-value 0.05). It was determined that too much data were missing to use LSD as a reliable means testing differences. However the LSD's were still computed for the data and some apparent significant differences were found. The equation obtained from the regression analysis gives the estimated annual SOC sequestration rate. Many publications report SOC levels in Mg C ha⁻¹ yr⁻¹, values received from the regression equations are converted from kg C m⁻² yr⁻¹ to Mg C ha⁻¹ yr⁻¹ by multiplying by a factor of 10. This manuscript reports SOC as kg C m⁻² yr⁻¹ and Mg C ha⁻¹ yr⁻¹ for comparison purposes. Average SOC loss levels due to cultivation were calculated by subtracting the average SOC levels in cultivated croplands from average SOC levels in native grasslands. For the purpose of this manuscript only the organic carbon data will be discussed. However, all the collected data are shown in the Appendix F and G.

RESULTS AND DISCUSSION

Carbon Sequestration and Grassland Age Relationships

Northeastern Montana

Fifteen fields were sampled at the Montana location. The fields consisted of three cultivated croplands, three native grasslands, and nine restored grasslands which, when combined, totaled 174 sample points (Table 3). The age classes of restored grasslands were nine, nineteen, twenty-three, thirty-five, and forty-five years of age (Table 24, Appendix D).

The average SOC levels across all the sample points was 3.76, 5.17, and 6.25 kg C m⁻² yr⁻¹ 30 cm⁻¹ for cultivated cropland, restored grasslands, and native grasslands, respectively (Figure 1 and Table 3). Based on the data presented, the average loss of SOC from native grasslands due to long-term cultivation in this region was 2.49 kg C m⁻² yr⁻¹ 30 cm⁻¹ (Table 31, Appendix D). As expected, the highest SOC values were found in native grasslands while the lowest SOC values were found in the cultivated land (Table 3). Restored grasslands show the greatest range in SOC values with the highest standard deviation indicating the highest variability within all three treatments. The variability is likely due to the differences in time since restoration as well as the opportunity to include more soil differences because the total overall size for the restored grasslands is approximately double that of the other land management categories.

The average SOC sequestration rate as estimated by linear regression analysis of the data for northeast Montana restored grasslands is 0.21 ± 1.66 Mg C ha⁻¹ yr⁻¹ 30 cm⁻¹ (Table 16). Figure 2 shows the SOC data for restored grasslands (individual dots) in Montana in relation to the average native, restored, and cultivated management SOC levels (horizontal

Table 3. Descriptive statistics for soil organic carbon values in the surface 0-30 cm depth by land management category for 15 fields in northeastern Montana.

Land Management	Mean	Maximum	Minimum	Sample size
-----kg C m ⁻² 30 cm ⁻¹ -----				
Native Grassland	6.25 (1.98 [†])	11.57	3.41	48
Restored Grassland	5.17 (2.05 [†])	10.86	1.34	81
Cultivated Cropland	3.76 (1.52 [†])	6.48	0.9	45

[†]Standard Deviation

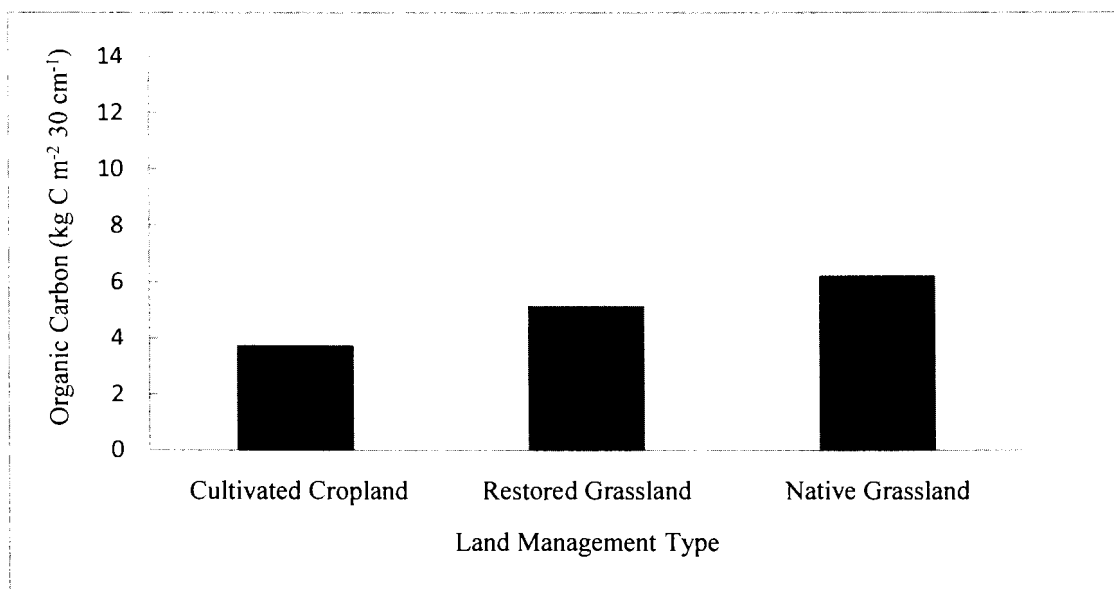


Figure 1. A comparison of average soil organic carbon levels in cultivated, restored, and native grasslands in Sheridan County, Montana.

lines). Figure 2 also illustrates the high variability of SOC levels in the restored grasslands. Many of the sample points for restored grasslands are below the average SOC levels in cultivated fields and a few sample points are above the average SOC levels for native grasslands.

The values for average SOC levels in relation to landscape position are reported in Table 4. The SOC values were not found to be significantly different when comparing landscape positions in each management practice or across each landscape position in the

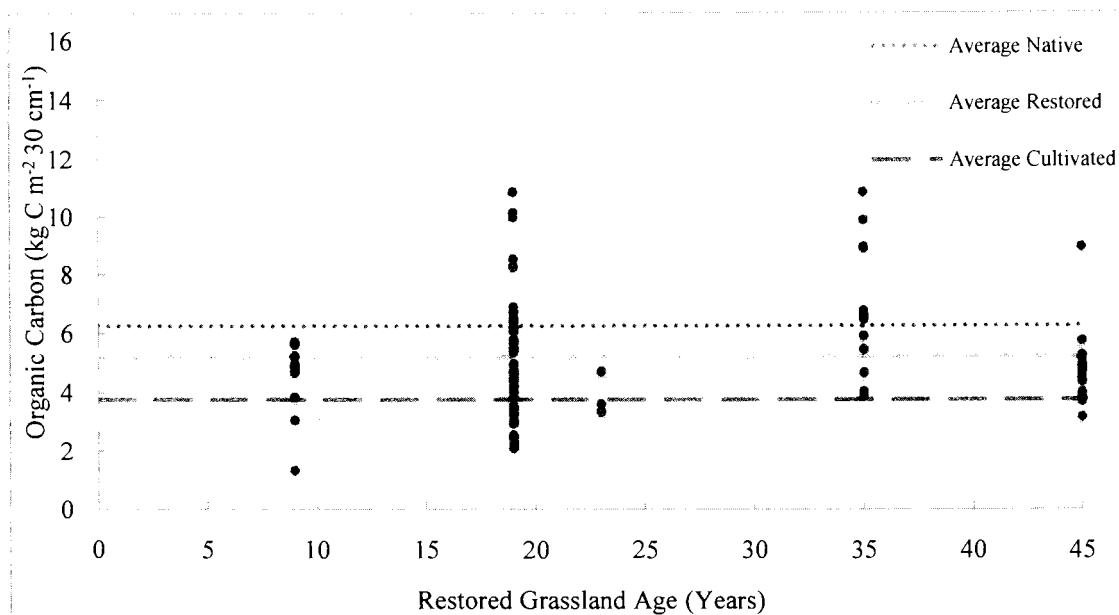


Figure 2. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in northeastern Montana. Each restored grassland soil organic carbon value is denoted by a single dot.

Table 4. Average soil organic carbon values for landscape positions in northeastern Montana under three land management practices.

Landscape Position	Land Management Type		
	Cultivated	Restored Grasslands	Native Grasslands
	-----kg C m ⁻² yr ⁻¹ 30 cm ⁻¹ -----		
Undulating Upland	5.49 [§]	2.22 (1.02 [‡])	5.68 (0.77 [‡])
Summit	4.29 [§]	5.06 (1.63 [‡])	6.11 (3.71 [‡])
Shoulder	4.35 (0.90 [‡])	4.81 (1.99 [‡])	5.73 (0.98 [‡])
Back Slope	4.03 (1.58 [‡])	5.00 (1.78 [‡])	6.21 (1.88 [‡])
Foot Slope	2.96 (1.12 [‡])	7.20 (2.67 [‡])	6.69 (3.03 [‡])
Toe Slope	5.04 (1.82 [‡])	8.26 [§]	7.22 [§]
Undulating Lowland	4.17 [§]	NA [†]	NA [†]

[†] NA – Data not available.

[‡] Standard deviation for landscape position values.

[§]Not enough data to calculate standard deviation.

different management practices as determined by LSD analysis at $p < 0.05$.

The data for Montana's restored grasslands shows a relatively high variability with a few outliers for the SOC levels. Most of the outliers in the restored grasslands lie above

the average SOC levels for native grasslands. The highly variable relationship between grassland age and SOC levels is likely due to a combination of factors including the status of soil carbon when the land was restored to grassland, distribution of soil types within a sampled field and natural variability of soil within a given soil map unit.

The numbers of soil types (map units) in the sampling area are quite low indicating a level 3 soil survey of the area. A level 3 soil survey would have a greater inclusion of different soil types that are not large enough to map separately thus increasing the soil variability within the map unit.

Sheridan County, North Dakota

Sheridan County, North Dakota, had sixteen fields sampled. Four of the fields were cultivated cropland, ten restored grasslands, and two native grasslands which when combined, totaled 184 sample points (Table 5). The age classes of restored grasslands range from five to twenty-one years (Table 25, Appendix D).

The average SOC levels across all of the sample points was 7.02, 6.88, and 8.90 kg C m⁻² 30 cm⁻¹ for cultivated croplands, restored grasslands, and native grasslands, respectively (Table 5 and Figure 3). The average loss of SOC from native grasslands due to long term cultivation in this region was 1.88 kg C m⁻² 30 cm⁻¹ (Table 31, Appendix D). The highest SOC values were in native grasslands while the lowest SOC levels were in restored grasslands (Figure 3). Restored grasslands show the greatest range in SOC levels and the cultivated lands have the greatest standard deviation. The variability is likely due to the differences in time since restoration as well as the opportunity to include more soil type differences because the total overall size for restored grasslands is approximately double that of the other land management categories. Two of the three cropland sites had prior

Table 5. Descriptive statistics for soil organic carbon values in the surface 0-30 cm depth by land management category for 15 fields in Sheridan County, North Dakota.

Land Management	Mean	Maximum	Minimum	Sample size
-----kg C m ⁻² 30 cm ⁻¹ -----				
Native Grassland	8.90 (1.52 [†])	12.57	6.83	24
Restored Grassland	6.88 (1.87 [†])	11.34	2.42	118
Cultivated Cropland	7.02 (1.96 [†])	11.98	3.48	42

[†]Standard Deviation

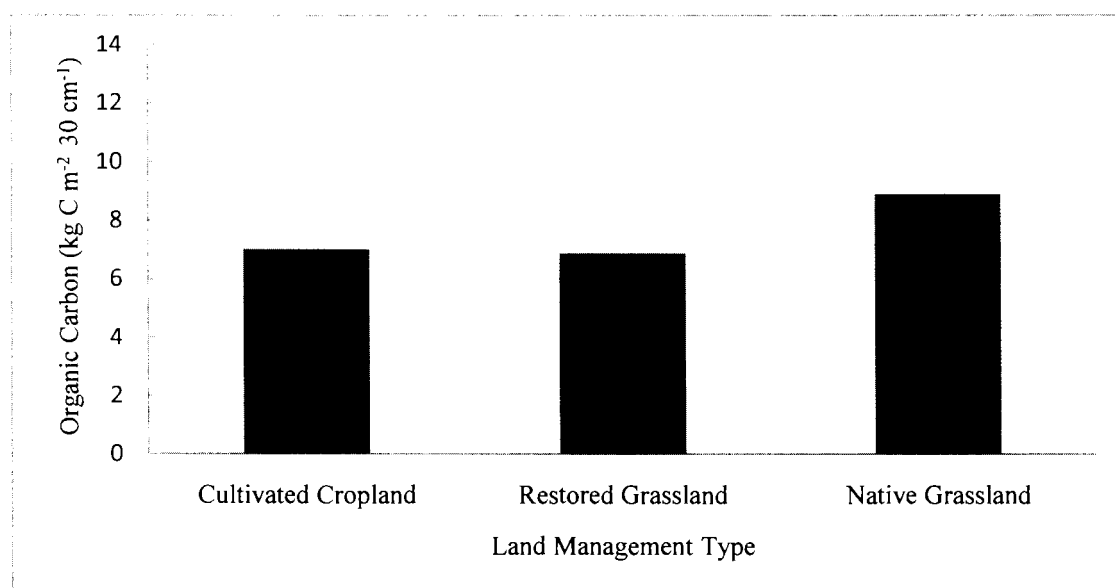


Figure 3. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands in Sheridan County, North Dakota.

been in CRP that had been converted back to cropland two to four years previous to sampling. The land use history is likely the reason for the narrow difference between the SOC levels in the cultivated cropland and restored grasslands and the relatively high SOC in the cropland (Figure 4).

The data for Sheridan County, North Dakota’s restored grasslands suggest that the average cultivated field has 0.14 kg C m⁻² 30⁻¹ more SOC than the average restored grassland. This could potentially be from highly productive cultivated fields and restored

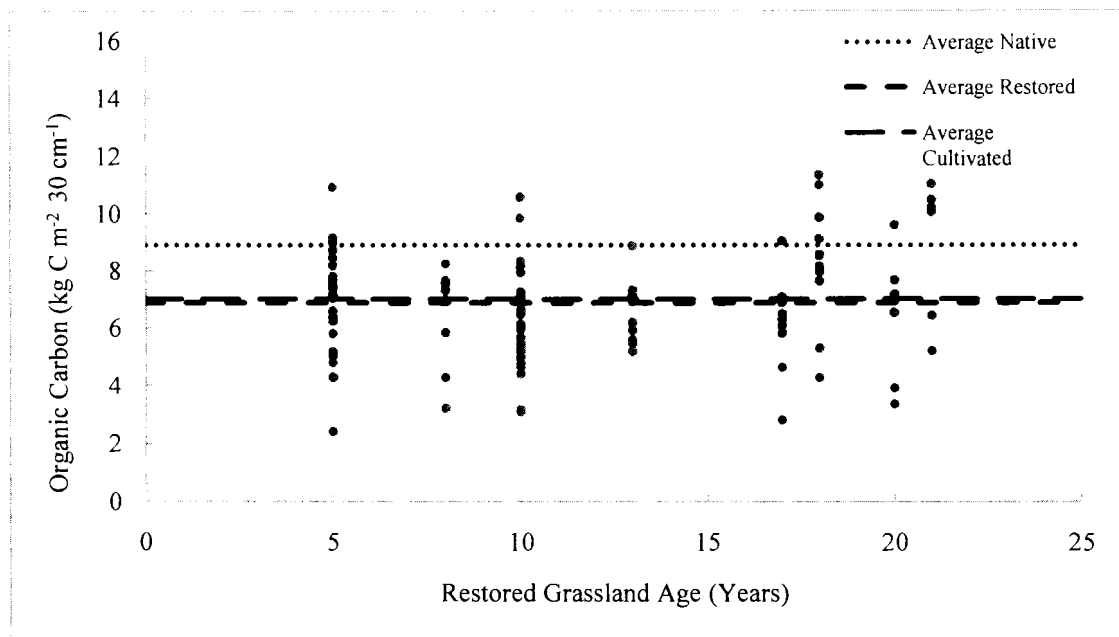


Figure 4. A comparison of the distribution of soil organic carbon in restored grasslands with average native, grasslands and cultivated cropland in Sheridan County, North Dakota. Each grassland soil organic carbon values is denoted by a single dot.

grasslands with average productivity. However, the high SOC in the cultivated fields is likely due to the previous CRP history of the fields. The highly variable SOC levels could likely be due to a combination of factors including the status of soil carbon when the land was restored to grassland, distribution of soil types within a sampled field, and natural variability of soil within a given soil map unit.

Northeastern North Dakota

The northeastern North Dakota location had thirteen fields sampled including three cultivated croplands, seven restored grasslands, and three native grasslands which when combined, totaled 139 sample locations (Table 6). The age classes of restored grasslands are nine, ten, fifteen, and eighteen years old (Table 26, Appendix D).

The average SOC levels for the eastern North Dakota sample points are 6.98, 5.86, and 8.19 kg C m⁻² 30 cm⁻¹ for cultivated croplands, restored grasslands, and native grasslands,

Table 6. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 13 fields in northeastern North Dakota.

Land Management	Mean	Maximum	Minimum	Sample size
	-----kg C m ⁻² 30 cm ⁻¹ -----			
Native Grassland	8.19 (2.05 [†])	11.29	4.17	20
Restored Grassland	5.86 (2.16 [†])	10.76	2.16	83
Cultivated Grassland	6.98 (1.42 [†])	9.03	2.83	36

[†]Standard Deviation

respectively (Table 6, Figure 5). The average loss of SOC from native grasslands due to long-term cultivation in this region was 1.21 kg C m⁻² 30 cm⁻¹ (Table 31, Appendix D). The highest SOC values were found in native grasslands while the lowest SOC values were found in restored grasslands. Restored grasslands had the highest range and standard deviation for SOC levels compared to native grasslands and cultivated cropland. The variability and range is likely due to the differences in time since restoration as well as the opportunity to include more soil differences because the total overall size for the restored grasslands is approximately double that of the other land management categories. The cultivated croplands were located on relatively level, highly productive land that may have once been part of the Devils Lake lake plain and may naturally have higher SOC levels resulting in SOC levels higher than those in restored grasslands.

The average SOC sequestration rate as estimated by linear regression analysis of the data for northeastern North Dakota restored grasslands is -1.98 ± 1.87 Mg C ha⁻¹ 30⁻¹ cm of carbon annually (Table 16). Figure 6 shows the SOC data for restored grasslands in eastern North Dakota in relation to the average native and restored grasslands and cultivated cropland management SOC levels. Figure 6 illustrates the high variability of SOC levels in restored grasslands (individual dots). The graph illustrates the low number of year

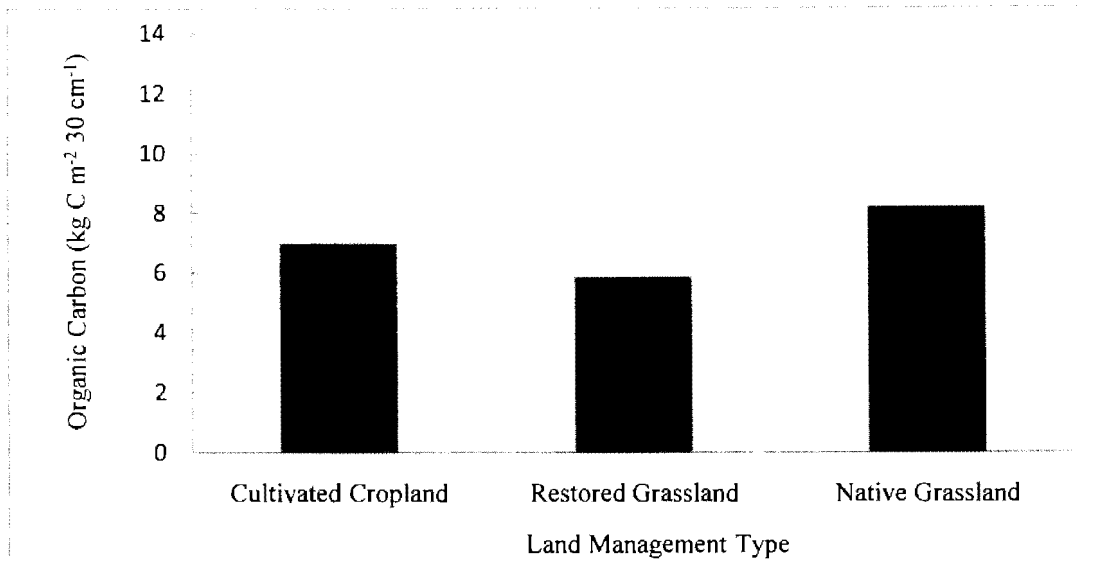


Figure 5. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in northeastern North Dakota.

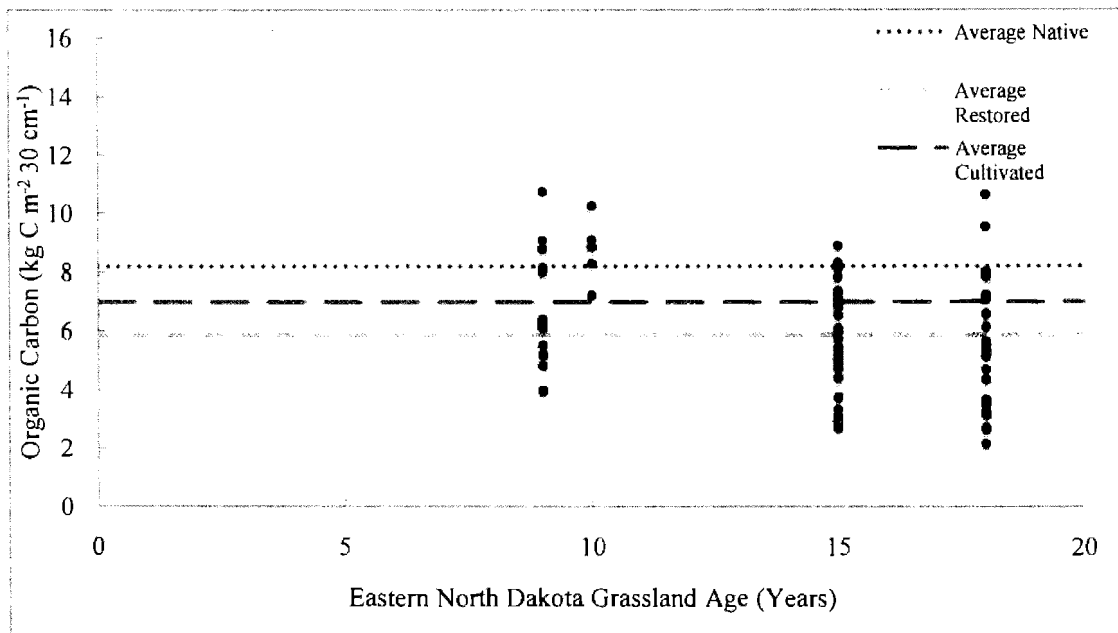


Figure 6. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in northeastern North Dakota. Each grassland soil organic carbon value is denoted by a single dot.

classes and the high levels of SOC in the nine and ten year age classes. Soil organic carbon levels at many of the nine and ten year restored grasslands are above the average SOC level

in native grasslands. The high SOC levels may be related to the original productivity and condition of the nine and ten year old lands when they were restored to grasslands.

The values for average SOC levels in relation to landscape position are reported in Table 7. Differences in significance levels between landscape positions are noted. The cultivated fields were located on relatively flat fields on an old lake plain. Therefore, there wasn't much variation in the cropland landscape positions sampled.

The data for northeastern North Dakota's restored grasslands show that the average SOC level in cultivated fields is higher than the average SOC level in restored grasslands. This is likely due to the location of the cultivated cropland. The data from northeastern North Dakota sampling area show a highly variable relationship between grassland age and SOC levels that is likely due to a combination of factors including the status of soil carbon when the land was restored to grasslands, distribution of soil types within a sampled field and natural variability of soil within a given soil map unit.

The results may also reflect the low number of age classes for restored grasslands at this location. The nine and ten year grasslands average higher than the fifteen and eighteen year grasslands this appears to support the possibility that the lands enrolled under more recent CRP contracts were in better condition relative to initial SOC levels than earlier enrolled lands. When the regression analysis for the fifteen and eighteen year grasslands is calculated separately, a C sequestration rate of $1.02 \pm 2.02 \text{ Mg C ha}^{-1} 30 \text{ cm}^{-1} \text{ yr}^{-1}$ is determined. This calculation may be a more accurate estimate of SOC sequestration values for northeastern North Dakota, but more research should be conducted at this location on restored grasslands and cultivated croplands.

Table 7. Average soil organic carbon values for landscape positions sampled in northeastern North Dakota under three management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.

Landscape Position	Land Management Type		
	Cultivated Cropland	Restored Grasslands [†]	Native Grasslands
	-----kg C m ⁻² 30 cm ⁻¹ -----		
Undulating Upland	6.75 (1.43)	5.01 (1.48)	8.17 (1.73)
Summit	NA [‡]	NA [‡]	NA [‡]
Shoulder	NA [‡]	4.75 (1.37)	10.24
Back Slope	7.96 (0.97)	6.07 (2.24)	8.04 (2.20)
Foot Slope	NA [‡]	6.87 (2.30)	8.67 (3.69)
Toe Slope	NA [‡]	4.62 (2.69)	NA [‡]
Undulating Lowland	NA [‡]	4.84 (1.77)	7.62 (1.12)

[†] LSD comparing the restored grasslands management type is significantly different than the other management types.

[‡] NA – Not Available

North Central South Dakota

The north central South Dakota location had fifteen fields sampled, of which three were cultivated croplands, nine were restored grasslands, and three were native grasslands which when combined, totaled 165 sample points (Table 8). The age classes of restored grasslands were one, seven, nine, seventeen, and twenty years old (Table 27, Appendix E).

The average SOC levels across all the sample points is 7.60, 7.15, and 8.94 kg C m⁻² 30 cm⁻¹ for cultivated cropland, restored grasslands, and native grasslands, respectively (Figure 7 and Table 8). The average loss of SOC from native grasslands due to long-term cultivation in this region was calculated to be 1.34 kg C m⁻² 30 cm⁻¹ (Table 31, Appendix D). Native grasslands had the highest average SOC level along with the greatest range and standard deviation in SOC levels.

Table 8. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 15 fields in north central South Dakota.

Land Management	Mean	Maximum	Minimum	Sample size
	-----kg C m ⁻² 30 cm ⁻¹ -----			
Native Grassland	8.94 (2.19 [†])	15.17	5.69	41
Restored Grassland	7.15 (1.09 [†])	9.97	3.47	98
Cultivated Cropland	7.60 (1.67 [†])	10.83	4.91	26

[†]Standard Deviation

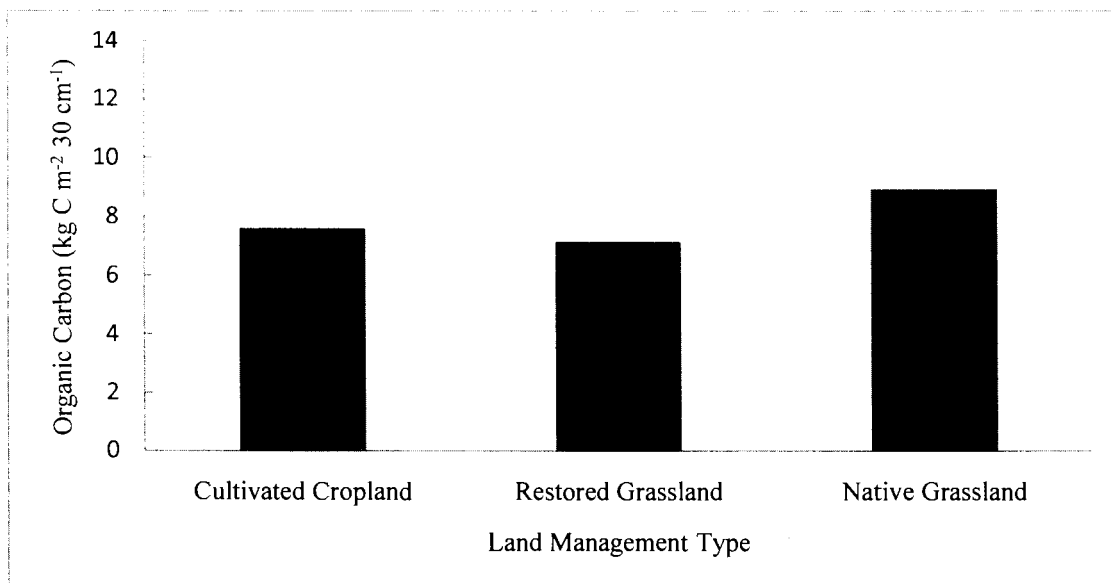


Figure 7. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in north central South Dakota.

The restored grasslands had the lowest average SOC level. The variability in native grasslands is likely due to the differences in soil series and management practices such as grazing cattle, haying, or burning grasslands.

The average SOC sequestration rate as estimated by linear regression analysis of the data for north central South Dakota restored grasslands was -0.05 ± 1.07 kg C m⁻² 30 cm⁻¹ of carbon per year (Table 16). Figure 8 shows the SOC data for restored grasslands in north

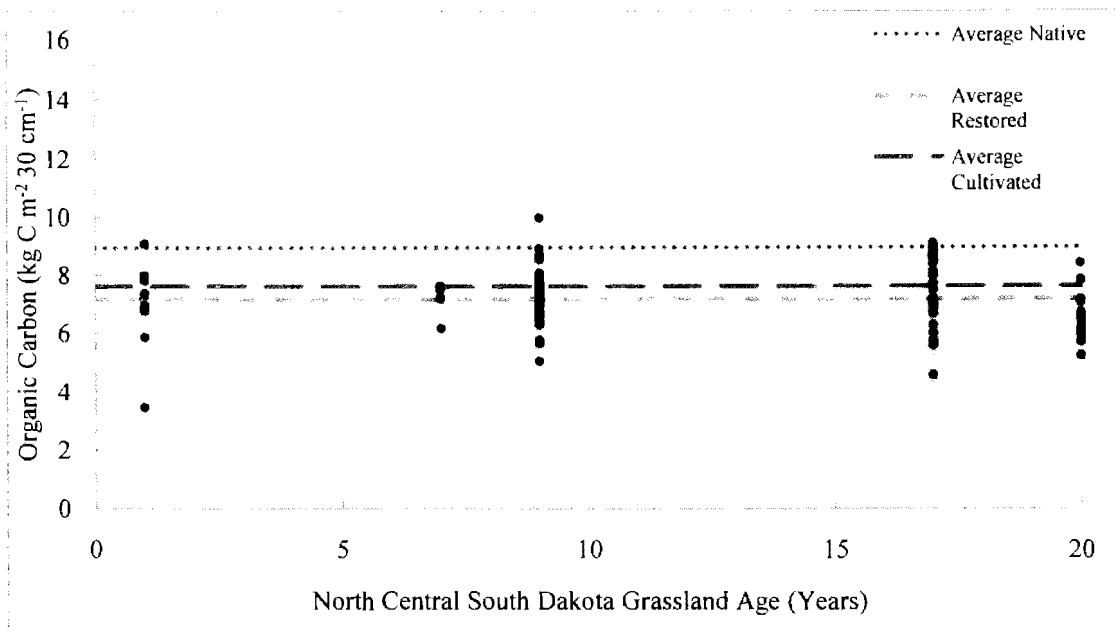


Figure 8. A comparison of the distribution of soil organic carbon in restored grasslands with average native and restored grasslands and cultivated cropland in north central South Dakota. Each grassland soil organic carbon value is denoted by a single dot.

central South Dakota in relation to the average native and restored grasslands and cultivated cropland management SOC levels. As denoted by the horizontal lines, Figure 8 also illustrates the relatively low variability of SOC levels in restored grasslands (individual dots), except for the one year old grassland which shows high variability. The graph also shows some restored grassland SOC sample levels were above the average native grasslands SOC.

The data for north central South Dakota suggest that the average cultivated field has $0.45 \text{ kg C m}^{-2} 30 \text{ cm}^{-1}$ more SOC than the average restored grassland. The difference may be due to apparent reduced tillage practices that have been applied to the cultivated croplands. The data from north central South Dakota sampling area show a highly variable relationship between grassland age and SOC levels that is likely due to a combination of factors including the status of soil carbon when the land was restored to grassland,

Table 9. North central South Dakota average soil organic carbon for landscape positions (0-30 cm). The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.

Landscape Position	Land Management Type		
	Cultivated Cropland	Restored Grasslands	Native Grasslands
	-----kg C m ⁻² 30 cm ⁻¹ -----		
Undulating Upland	NA [†]	7.27 (1.14)	8.87 (1.72)
Summit	NA [†]	6.70	NA [†]
Shoulder	5.92 (1.16)	6.75 (1.39)	7.99 (1.71)
Back	7.75 (1.62)	7.03 (0.87)	8.24 (1.52)
Foot	NA [†]	8.58 (1.97)	12.09 (2.60)
Toe	9.29	7.44 (0.55)	NA [†]
Undulating Lowland	NA [†]	NA [†]	NA [†]

[†] NA – Not Available

distribution of soil types within a sampled field, and natural variability of soil within a given soil map unit. The values for average SOC levels in relation to landscape position are reported in Table 9. Differences in significance between landscape positions and management type are noted.

Central South Dakota

The central South Dakota location had seventeen fields sampled with three cultivated, eleven restored grasslands, and three native grasslands which when combined, totaled 242 sample points (Table 10). The age classes of restored grasslands are eight, ten, twelve, fourteen, fifteen, seventeen, twenty, and approximately seventy years old (Table 28, Appendix D)

The average SOC levels across all the sample points are 6.74, 7.40, and 8.38 kg C m⁻² 30 cm⁻¹ for cultivated cropland, restored grasslands, and native grasslands, respectively (Figure 9). The average loss of SOC from native grasslands due to long-term cultivation in this region was calculated to be 2.29 kg C m⁻² 30 cm⁻¹ (Table 31, Appendix

Table 10. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 17 fields in central South Dakota.

Land Management	Mean	Maximum	Minimum	Sample size
	-----kg C m ⁻² 30 cm ⁻¹ -----			
Native Grassland	8.38 (0.95 [†])	10.56	6.53	42
Restored Grassland	7.40 (1.45 [†])	12.27	4	153
Cultivated Cropland	6.74 (1.73 [†])	10.05	2.04	47

[†]Standard Deviation

D). The highest SOC values were found in native grasslands while the lowest values were found in restored grasslands.

The variability is likely due to the differences in time since restoration as well as the opportunity to include more soil differences because the total overall size for the restored grasslands is approximately triple that of the other land management categories. Restored grasslands show the greatest range while cultivated cropland had the greatest standard deviation in SOC levels.

The average SOC sequestration rate as estimated by linear regression analysis of the data for central South Dakota restored grasslands was 0.54 ± 1.10 Mg C ha⁻¹ 30 cm⁻¹ of carbon per year (Table 16). Figure 10 shows the SOC data for restored grasslands in central South Dakota in relation to the average native grasslands and cultivated cropland management SOC levels. As denoted by the horizontal lines, Figure 10 also illustrates the high variability of SOC levels in the restored grasslands (individual dots). The average SOC levels are highest in native grasslands followed by restored grasslands with the average SOC levels for cultivated fields being the lowest among the three treatments. In the approximately seventy year old grasslands, average SOC levels are relatively high compared to the other restored grasslands as might be expected.

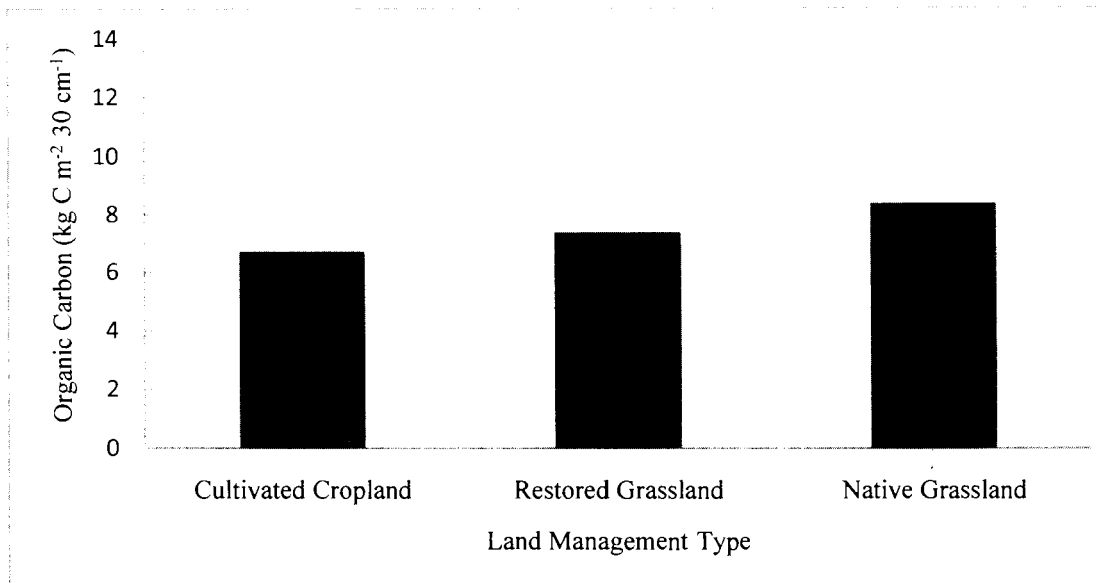


Figure 9. A graphic comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in central South Dakota.

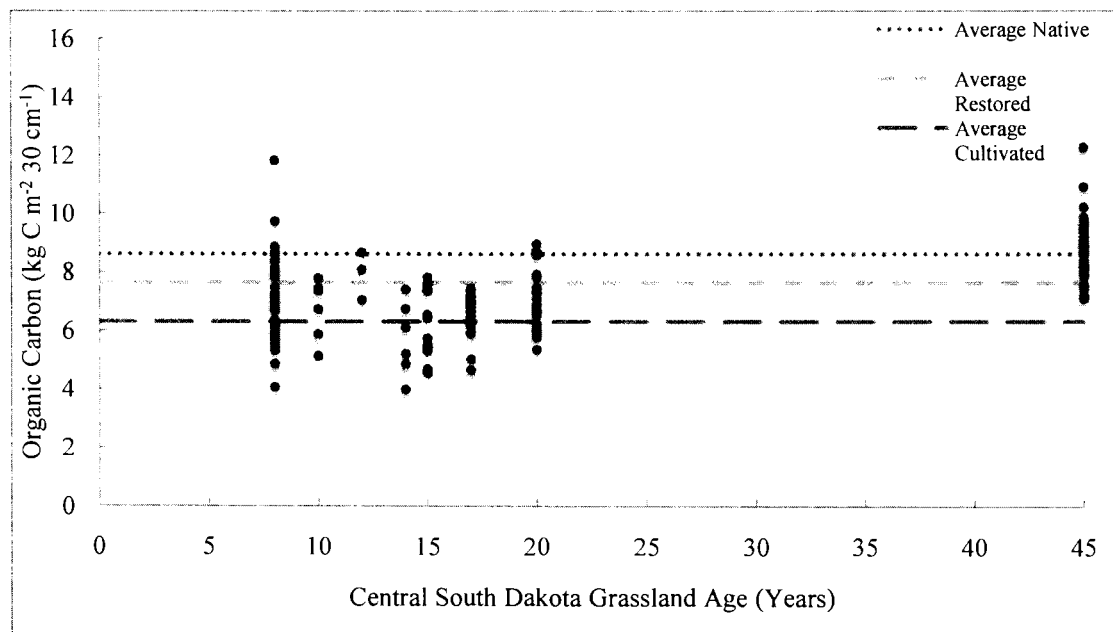


Figure 10. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland in central South Dakota. Each grassland soil organic carbon value is denoted by a single dot.

The values for average SOC levels in relation to landscape position are reported in Table 11. The SOC values were not found to be significantly different when comparing

Table 11. Average soil organic carbon values for landscape positions sampled in central South Dakota under three land management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.

Landscape Position	Land Management Type		
	Cultivated Cropland	Restored Grasslands	Native Grasslands
	-----kg C m ⁻² 30 cm ⁻¹ -----		
Undulating Upland	6.14 (1.52)	7.33 (1.53)	8.46 (1.05)
Summit	NA [†]	NA [†]	9.05 (0.99)
Shoulder	6.37 (1.98)	6.98 (1.45)	8.38 (1.18)
Back Slope	6.62 (1.03)	7.46 (1.41)	8.07 (0.67)
Foot Slope	9.8 (0.17)	7.87 (1.39)	9.19 (1.01)
Toe Slope	9.63 (0.36)	8.35 (0.74)	NA [†]
Undulating Lowland	NA [†]	NA [†]	NA [†]

[†] NA – Not Available

landscape positions in each management practice or across each landscape position in the different management practices.

The data for central South Dakota's restored grasslands shows that the average restored grassland field has higher average SOC levels than cultivated lands. The average SOC level of the approximately seventy year old grassland is 8.75 kg C m⁻² 30 cm⁻¹ while the average native grassland level is 8.38 kg C m⁻² 30 cm⁻¹. On average, for these data, the approximately seventy year old grassland has 0.37 kg C m⁻² 30 cm⁻¹ more carbon sequestered by the soil than native grasslands. This could be an indication that the timeline for this location and these data points to sequester SOC back to native levels is actually greater than the time frame that has been the main focus of this study. If the approximately seventy year old grasslands are taken out of the regression equation, the predicted sequestration drops down to -0.24 ± 1.09 Mg C ha⁻¹ 30 cm⁻¹ yr⁻¹ of SOC, a difference of 0.78 Mg C ha⁻¹ 30 cm⁻¹ yr⁻¹ of SOC sequestration from the earlier regression prediction.

This could be an indication that some restored grasslands may have higher SOC carrying capacities than some native grassland soils giving them a greater capacity for C storage.

The data from the central South Dakota sampling area show a highly variable relationship between grassland age and SOC levels. The variation is likely due to a combination of factors including the status of soil carbon when the land was restored to grassland, distribution of soil types within a sampled field and natural variability of soil within a given soil map unit.

Western Minnesota

The western Minnesota location had twenty-three fields sampled including three cultivated croplands, sixteen restored grasslands, and four native grasslands which when combined, total 218 sample points (Table 12). The age classes of restored grasslands were three, four, five, eight, twelve, sixteen, eighteen, nineteen, twenty, twenty-two, twenty-five, twenty-six, and twenty-eight years old (Table 29, Appendix D).

The average SOC levels over all the sample points was 8.88, 9.20, and 8.72 kg C m⁻² 30 cm⁻¹ for cultivated croplands, restored grasslands, and native grasslands, respectively (Figure 11). The average SOC level was higher in cultivated cropland than native grasslands by 0.16 kg C m⁻² 30⁻¹ (Table 31, Appendix D).

Restored grasslands have the highest range of SOC levels (Table 12) where cultivated grasslands have the highest standard deviation for SOC differences. The high levels of SOC in the cultivated croplands is likely due to high precipitation levels and lower mean annual temperatures. The high levels of C in cultivated cropland may also be due to the high productivity of these soils under this climate where high levels of crop biomass (especially wheat and corn) are produced and returned to the soils. It can be

Table 12. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for twenty-three fields in western Minnesota.

Land Management	Mean	Maximum	Minimum	Sample size
-----kg C m ⁻² 30 cm ⁻¹ -----				
Native Grassland	8.72 (1.79 [†])	11.33	4.42	32
Restored Grassland	9.20 (1.85 [†])	13.94	3.39	157
Cultivated Cropland	8.88 (2.69 [†])	14.3	3.82	29

[†]Standard Deviation

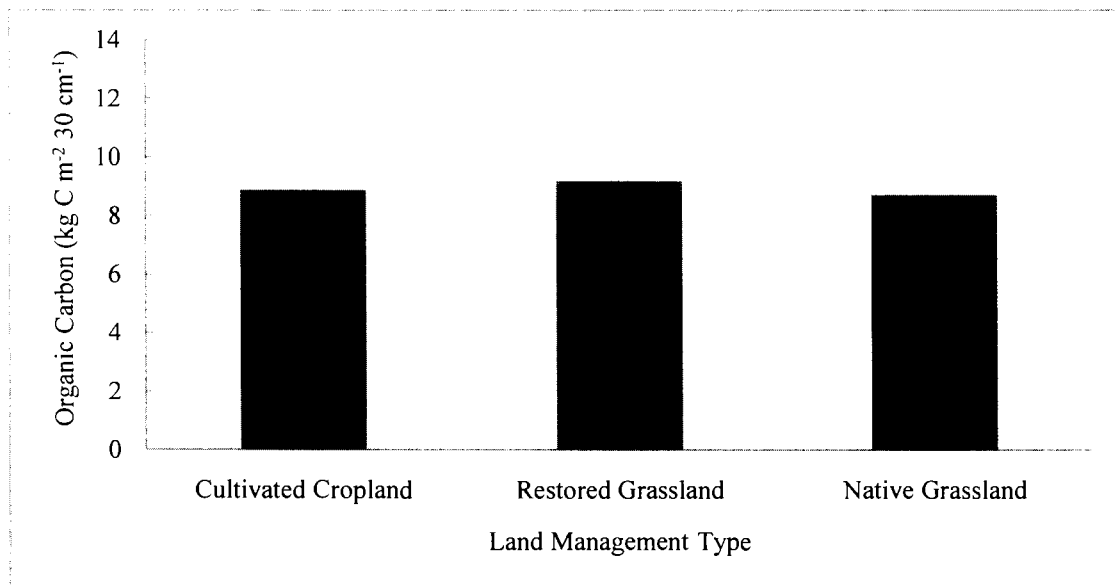


Figure 11. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands, in western Minnesota.

assumed that adding high levels of crop residue to these soils under reduced tillage management can result in increases of SOC levels in croplands.

The average SOC sequestration rate as estimated by linear regression analysis of the data for western Minnesota restored grasslands was $0.26 \pm 1.94 \text{ Mg C ha}^{-1} 30 \text{ cm}^{-1}$ (Table 16). Figure 12 shows the SOC data for restored grasslands in western Minnesota in relation to the average native and restored grasslands and cultivated cropland management SOC levels. As denoted by the horizontal lines, Figure 12 also illustrates the high variability of SOC levels in the restored grasslands (individual dots). The averages for all three



Figure 12. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland in western Minnesota. Each grassland soil organic carbon value is denoted by a single dot.

management types are relatively close to each other and the sample points vary widely, the absolute value of the SOC range is $0.48 \text{ kg C m}^{-2} 30 \text{ cm}^{-1}$ between land management types. The values for average SOC levels in relation to landscape position are reported in Table 13.

The data for western Minnesota restored grasslands show relatively high variability with many outliers for the SOC levels. The highly variable relationship between grassland age and SOC levels is likely due to a combination of factors including the status of soil carbon when the land was restored to grassland, distribution of soil types within a sampled field and natural variability of soil within a given soil map unit.

North Central Iowa and Southern Minnesota

The north central Iowa and southern Minnesota location had nineteen fields sampled of which three were cultivated, thirteen were restored grasslands, and three were native grasslands which when combined, totaled 241 sample points (Table 14). The age

Table 13. Average soil organic carbon values for landscape positions sampled in western Minnesota under three land management practices. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.

Landscape Position	Land Management Type		
	Cultivated Cropland	Restored Grasslands	Native Grasslands
	-----kg C m ⁻² 30 cm ⁻¹ -----		
Undulating Upland	10.35 (2.37)	9.37 (1.81)	8.62 (2.07)
Summit	NA [†]	9.31	8.50 (1.44)
Shoulder	NA [†]	9.17 (1.75)	7.91 (2.23)
Back Slope	7.85 (2.47)	8.96 (1.94)	8.99 (1.71)
Foot Slope	NA [†]	9.39 (2.07)	9.32 (1.08)
Toe Slope	NA [†]	NA [†]	NA [†]
Undulating Lowland	NA [†]	8.09	NA [†]

[†]NA – Not Available

Table 14. Descriptive statistics for soil organic carbon values in the 0-30 cm depth by land management category for 19 fields in north central Iowa.

Land Management	Mean	Maximum	Minimum	Sample Size
	-----kg C m ⁻² yr ⁻¹ 30 cm ⁻¹ -----			
Native Grassland	10.92(1.49 [†])	13.51	7.68	28
Restored Grassland	8.83(2.06 [†])	14.23	2.73	171
Cultivated Cropland	9.39(2.02 [†])	16.51	5.06	42

[†]Standard Deviation

classes of restored grasslands are two, three, six, ten, eleven, twelve, thirteen, fourteen, eighteen, twenty, twenty-five, and forty years (Table 30, Appendix D).

The average SOC levels across all the sample points is 9.39, 8.83, and 10.92 Mg C ha⁻¹ 30 cm⁻¹ for cultivated cropland and restored and native grasslands, respectively (Figure 13). The average change in SOC levels from native grasslands due to long-term cultivation in this region was calculated to be -0.16 kg C m⁻² 30 cm⁻¹ (Table 31, Appendix

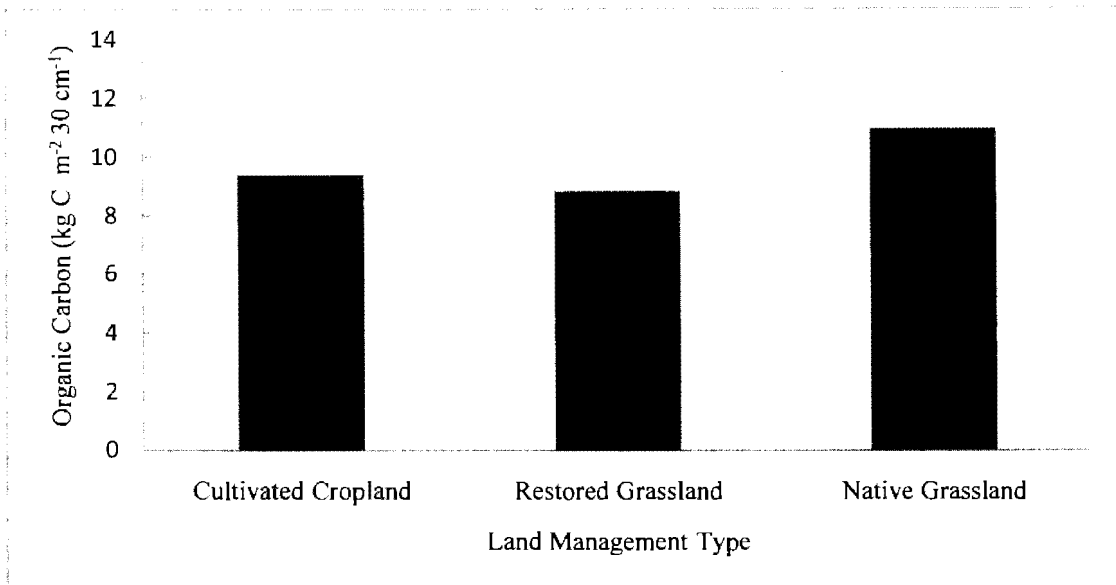


Figure 13. A comparison of average soil organic carbon levels in cultivated cropland and restored and native grasslands in north central Iowa and southern Minnesota.

D). The average cultivated SOC level was $0.56 \text{ kg C m}^{-2} 30 \text{ cm}^{-1}$ higher than the average restored grassland SOC and cultivated croplands had the highest SOC level. Restored grasslands had the lowest SOC level and the highest range and standard deviation in SOC levels (Table 14). The variability is likely due to the differences in restored grassland age as well as the opportunity to include more soil differences because the total overall size for the restored grasslands is approximately four times that of the other land management categories. The cultivated cropland SOC levels may also have high SOC levels due to cropland productivity. Corn-based crop rotations are typical for the region. Corn is a crop that tends to leave high plant residue behind after harvest which can influence SOC levels under intense cultivation conditions. In addition much of the cropland in this area is drained which allows for cultivation of lands that were originally wet prairies that had initially high SOC levels.

The average SOC sequestration rate as estimated by linear regression analysis of the data for north central Iowa and southern Minnesota restored grasslands was $0.16 \pm 1.95 \text{ Mg}$

C ha⁻¹ 30 cm⁻¹ of carbon per year (Table 16). Figure 14 shows the SOC data for restored grasslands in north central Iowa and southern Minnesota in relation to the average SOC levels for native grassland and cultivated cropland management. As denoted by the horizontal lines, Figure 14 illustrates the high variability of SOC levels in the restored grasslands (individual dots). The average SOC level of cultivated cropland is higher than the average SOC levels in restored grasslands. This high cultivated cropland SOC levels is likely due to the high productivity in the cultivated croplands.

The values for average SOC levels in relation to landscape position are reported in Table 15. The SOC values were found to be significantly different for the native grasslands when comparing both landscape positions and land management types.

The data for north central Iowa and southern Minnesota suggest that on the average native grasslands and cultivated croplands have higher SOC levels than the restored grasslands. The average SOC level increases from restored grasslands without the forty year old grasslands included in the regression analysis to the forty year old grassland and then to the native grassland. This indicates that for this sampling area and these data, forty years does not appear to be enough time for restored grasslands to sequester SOC to the levels of native grasslands.

Combined Locations

Combining the data from all the locations can give a general SOC sequestration rate for a large area. When all of the sites are combined, the predicted annual sequestration rate in restored grasslands is 0.09 ± 1.92 Mg C ha⁻¹ 30 cm⁻¹ (Table 16). The sequestration rate was calculated for native grasslands (set at 50 years), long-term restored grasslands (set at

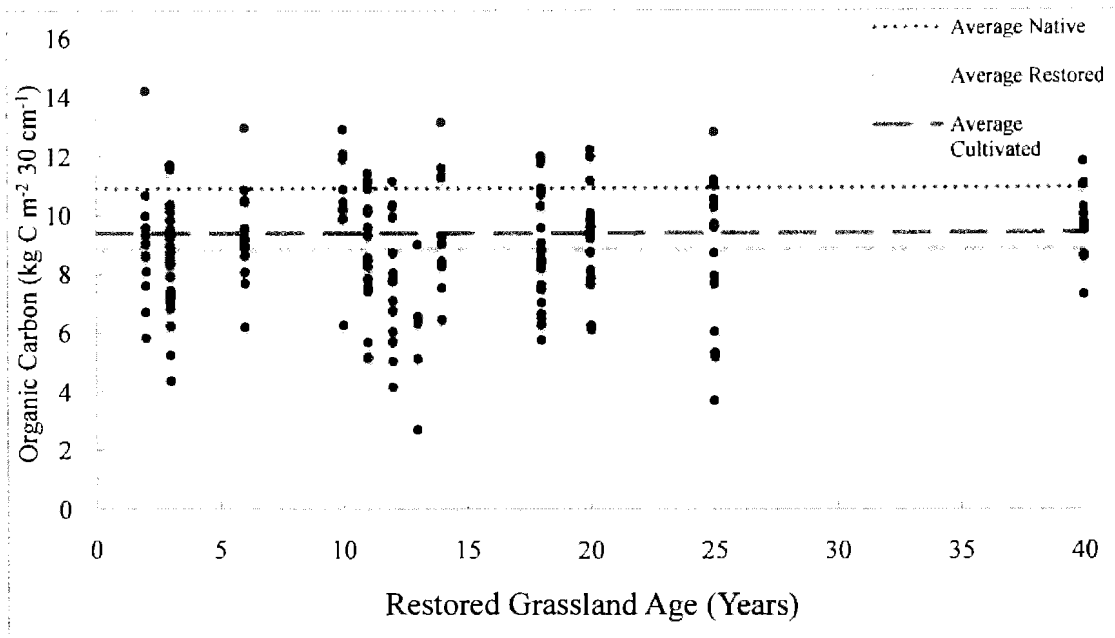


Figure 14. A comparison of the distribution of soil organic carbon in restored grasslands with average native grasslands and cultivated cropland in north central Iowa and southern Minnesota. Each grassland soil organic carbon value is denoted by a single dot.

Table 15. Average soil organic carbon values for landscape positions sampled in north central Iowa under three land management practices in north central Iowa and southern Minnesota. The numbers in parentheses are the standard deviation for the landscape position values. Values without standard deviations did not have enough data to calculate a standard deviation.

Landscape Position	Land Management Type		
	Cultivated Cropland	Restored Grasslands	Native Grasslands [‡]
	----- kg C m ⁻² 30 cm ⁻¹ -----		
Undulating Upland	10.41 (2.59)	10.33 (1.42)	12.38 (1.26)
Summit	NA [†]	NA [†]	NA [†]
Shoulder	8.16 (1.80)	8.01 (1.69)	9.86 (1.10)
Back Slope	9.12 (1.53)	8.35 (1.93)	10.48 (1.25)
Foot Slope	10.08 (1.84)	10.19 (1.74)	11.46 (0.68)
Toe Slope	NA [†]	11.22 (1.93)	NA [†]
Undulating Lowland	NA [†]	9.66 (1.78)	13.21 (0.31)

[†] NA – Not Available

[‡] Significantly different

45 years), and cultivated croplands (set at 0 years). Median average temperature and precipitation are plotted on figures allowing for comparisons of temperature and

precipitation to average amounts of SOC sequestered in the soil, average SOC levels in native grasslands, average SOC levels in restored grasslands, and average SOC levels in cultivated croplands. In all three management practices, SOC levels generally increase with increases in temperature and precipitation. In all the management practices, there is a lower level of SOC levels at the central South Dakota location. In central South Dakota, the average temperature is 0.5°C warmer and receives a median average annual precipitation of 270 mm less than north central Iowa study site even though they are at similar latitudes. The Iowa location has longer periods of time with warm temperatures combined with high levels of precipitation when compared to central South Dakota where high temperatures are for a shorter period of time (Figures 15, 16, 17, and 18).

The lower levels of precipitation with higher temperature can cause less biomass production due to periods of drought stress which can result in less SOC sequestration. The central South Dakota study site also has an average of five fewer freeze-free days than the north central Iowa location.

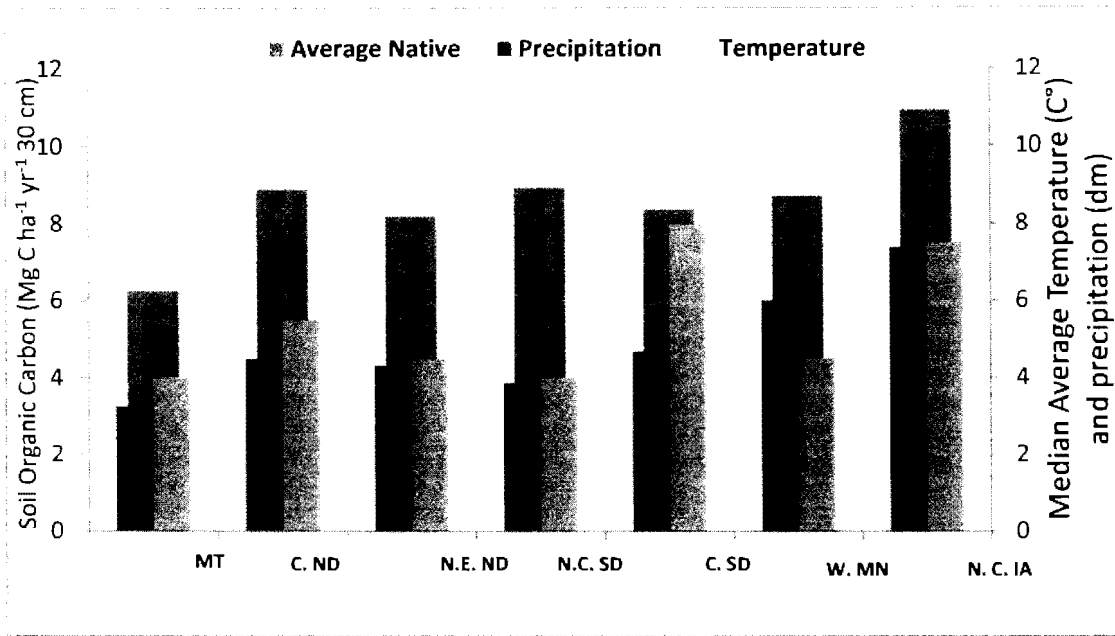


Figure 15. Average soil organic carbon sequestered in the soil, median mean average annual temp (C°), and mean annual precipitation (dm) for all land management types across all study locations.

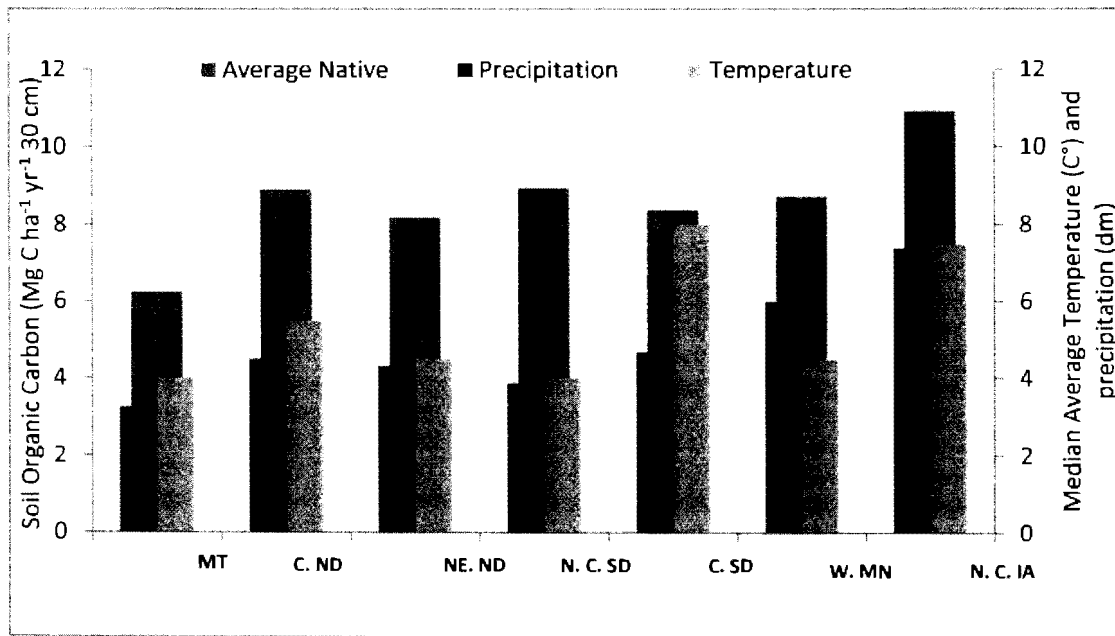


Figure 16. Average soil organic carbon levels and median average annual temp (C°) and median average annual precipitation (dm) across all native grasslands locations.

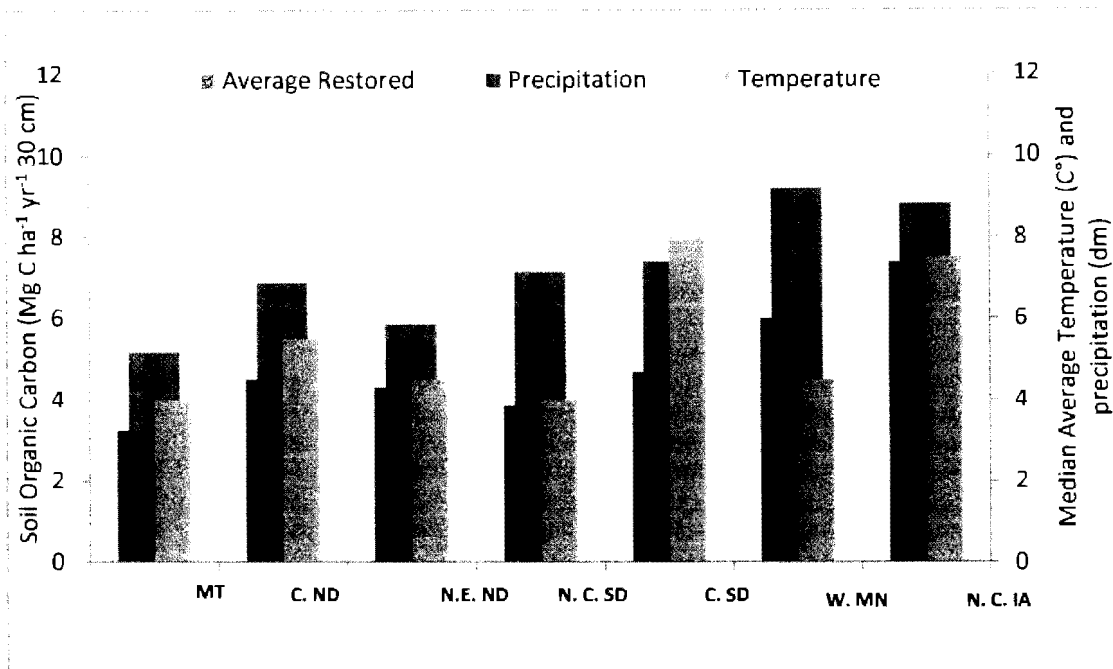


Figure 17. Average soil organic carbon levels in restored grasslands and median average annual temp (C°) and median average annual precipitation (dm) across all study locations.

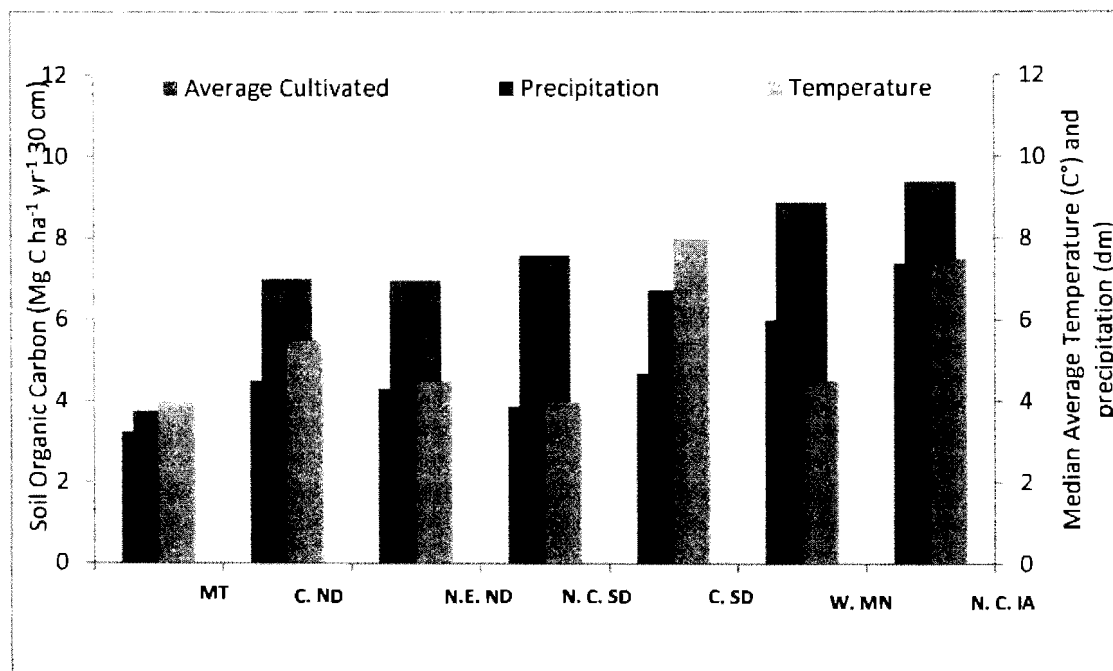


Figure 18. Average soil organic carbon levels in cultivated grasslands and median average annual temp (C°) and median average annual precipitation (dm) across all study locations.

SUMMARY

Physical and chemical changes occur within grassland soils after they have been disturbed due to cultivation or other soil disturbances, which usually results in losses of SOC. Soil organic carbon is an important factor within the soil due to its influence on soil properties. Soil organic carbon losses can affect soil water holding capacity, soil structure, and other soil characteristics. These changes within the soil have the potential for recovery when management practices with net losses of SOC are changed to management practices that promote net increases of SOC. Native grasslands can be used as an indicator for SOC threshold levels for comparison against nearby soils under different management practices. The difference between native grasslands compared to adjacent restored grasslands and cultivated cropland demonstrates the potential for SOC recovery. These differences can be used to quantify the effects of time on SOC restoration rates.

Science is a tool that can be used to determine potential management decisions by policy makers for making decisions on the best uses of resources. Options for managing soil carbon in the PPR are: (i) sequestering carbon out of the atmosphere and storing it in the soil for predetermined contract length, (ii) sequestering carbon out of the atmosphere and storing it in the soil permanently under perennial grasslands, and (iii) leaving native grasslands undisturbed and avoiding the loss of carbon from the soil. Society has limited resources which include the atmosphere, soils, and the elements involved with their interactions. It is within society's best interests to manage resources at the Pareto optimal level, where a resource is being used efficiently and the usage cannot be improved without degrading another use. The atmosphere is a global resource that can be subject to a

“Tragedy of the Commons” (Harding, 1968). Humans use the atmosphere for their own interests while pollution added to the atmosphere can affect the entire globe.

The results from this project can be useful for land managers, natural resource managers, and policy makers in making management decisions for trading carbon credits. When discussing carbon offset credits it is important to take into consideration that one metric ton of C within the soil is equivalent to approximately 3.66 metric tons of atmospheric CO₂. This is a conversion that is not often mentioned in publications and is useful to know since current carbon credits are traded in tons of CO₂.

Initial SOC levels and sequestration rates for fields within the study regions can vary among management types. Having benchmark values in different MLRA regions for land that has been converted from annual cultivation to perennial grasslands and for different age classes is necessary information for determining if carbon has been stored in the soil and the rate of storage over a given period of time. The natural fluctuation between wet and dry cycles in an area can cause changes in SOC sequestration rates, potentially, from SOC losses to gains or SOC gains to losses. The potential change from SOC gains to losses can pose a problem for trading carbon credits and is an issue that should be addressed in carbon trading contracts. Fields being used for carbon trading should be verified for SOC changes in different MLRA regions every five or ten years, depending on the contract, to verify actual amounts of carbon that is being sequestered into the soil.

Land managers with native grasslands have soils that are potentially at equilibrium carrying capacity for SOC. There is not much potential for storing more carbon within the native grasslands soil, but the avoided loss of SOC to the atmosphere by not disturbing the soil is a possible trading avenue for the carbon market. Policy makers should take into

consideration the potential for land in commodity production that could potentially be taken out of commodity production and put into perennial grasslands for storage of SOC. The potential changes in commodity production may cause shifts in commodity prices and cause producers to put previously untilled lands into production causing more carbon releases and possibly greater quantities of CO₂ back into the atmosphere relative to the soils ability to sequester C. The effect of trading soil carbon stocks within the north central Great Plains in the PPR has the potential for conversion of commodity production land to perennial grassland cover as well as retention of native grasslands. However, the total effect of carbon trading is not yet well known and requires additional study to refine the current knowledge base.

Many of the remaining native grasslands in the northern Great Plains were never cultivated due to low productivity, undesirable topography or terrain, or high levels of rocky glacial till materials which prevented or made cultivation difficult. Since these native grasslands typically are not ideal soil types for crop production and in some cases may have been overgrazed, the SOC levels may not represent climax values of all original grassland SOC values. In some instances, it is quite possible that, under proper management the SOC storage in cultivated croplands can potentially be higher than that of native grasslands. In central South Dakota, some fields sampled were farmed for a brief period in the 1920's and converted back to grasslands into the 1930's. These long-term restored grasslands showed higher average SOC levels than adjacent native grasslands. This may indicate that the long-term restored grassland SOC levels recovered back to levels that may be representative of true native levels of SOC.

Restoring cultivated lands to perennial cover showed both gains and losses in SOC levels within this study region. The annual rate of SOC sequestration within restored grasslands for each location as determined by linear regression analysis was: northeastern Montana 0.21 ± 1.66 , central North Dakota 0.59 ± 1.81 , northeastern North Dakota -1.98 ± 1.87 , north central South Dakota -0.05 ± 1.07 , western Minnesota 0.26 ± 1.95 , and north central Iowa and southern Minnesota $0.16 \pm 1.95 \text{ Mg C ha}^{-1} \text{ 30 cm}^{-1}$ (Table 16). However, when cropland and native grasslands are included in the regression analysis annual sequestration rates were found to be higher but with greater variability. The data obtained in this study were similar to other research showing high variability within SOC levels in restored grasslands (Liebig et al., 2005, Follett et al., 2001). These benchmark sites should be re-sampled in the near future (5-10 years) to help build a better understanding of SOC relationships at these individual locations so these data can be used in modeling and other predictions.

Restored grasslands can recover portions of SOC that has been lost due to cultivation. There are positive and negative relationships between grassland age and SOC sequestration at these study locations. However, the sequestration rates for all the study locations are highly variable. The high variability in SOC sequestration can be caused by many factors including temperature, precipitation, soil type, grassland age, land management, and condition of the land at the time of restoration. Further research is needed to examine the effects of each of these factors of C sequestration in soils. Study questions that can be addressed by future researchers are: (i) how are the SOC levels affected by landscape positions at each study site, (ii) should many different areas within the same MLRA regions be sampled to see what types of SOC changes take place within the MLRA

Table 16. Annual calculated SOC sequestration rate \pm standard deviations for all locations in restored grasslands and all management including native and cultivated lands.

Site	Annual SOC sequestration rate	
	Grasslands [†]	All Management [‡]
	-----Mg ha ⁻¹ 30 cm ⁻¹ -----	
Montana	0.21 \pm 1.66	0.45 \pm 2.10
Sheridan County, ND	0.59 \pm 1.81	0.43 \pm 1.96
Northeastern North Dakota	-1.98 \pm 1.87	0.23 \pm 2.14
North Central S. Dakota	-0.05 \pm 1.07	0.35 \pm 1.69
Central South Dakota	0.54 \pm 1.10	0.41 \pm 1.52
Western Minnesota	0.26 \pm 1.94	-0.05 \pm 2.00
North Central Iowa	0.16 \pm 1.95	0.31 \pm 2.10
All Sites Combined	0.09 \pm 1.92	0.23 \pm 2.33

[†] The value used to calculate the regression is the grassland age.

[‡] To calculate the regression equation the grassland age is used, 0 is used for cultivated croplands, 45 for long-term restored grasslands, and 50 for native grasslands.

regions, and (iii) what role does C sequestration play in North Dakota, the PPR, and the United States of America in respect to mitigating CO₂ in the atmosphere when the atmosphere is viewed as a global resource.

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APPENDIX A. SAMPLING MATRIX

Sampling Site	Rep 1	Rep 2	Rep 3
Native Grassland			
5-Year CRP			
10-Year CRP			
15-Year CRP			
20-Year CRP			
Cultivated			
Other			

APPENDIX B. SITE ID SYSTEM

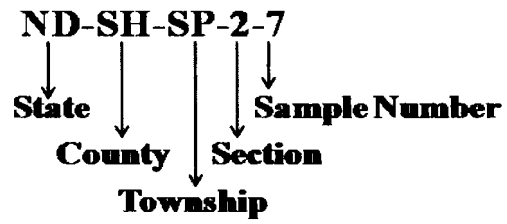


Figure 19. Diagram describing the labeling system using: state, county, township, section, and sample number (Augustin, 2009).

APPENDIX C. GLOSSARY OF SOIL MAP UNITS.

Table 17. Northeastern Montana description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
Dm	Dimmick silty clay	0-2
DoB	Dooley fine sandy loam	0-6
DoC	Dooley fine sandy loam	6-12
FaB	Farnuf loam	2-4
LaD	Lambert silty clay loam	8-15
LhB	Lihen loamy fine sand	0-6
Mr	Marias clay	0-15
PaB	Parshall fine sandy loam	2-6
Sh	Shambo loam	0-35
TaB	Tally sandy loam	2-6
WaE	Wabek gravelly sandy loam	0-35
WmB	Williams loam, undulating	0-35
WzB	Williams-Zahill loams, undulating	0-65
WzC	Williams-Zahill loams, gently rolling	0-65
ZaD	Zahill clay loam, strongly rolling	0-65
ZaD	Zahill clay loam, strongly rolling	0-65
ZaE	Zahill clay loam, steep	0-65
ZwE	Zahill-Williams complex, hilly	0-65

Table 18. Sheridan County, North Dakota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
2	Marysland loam	0-1
10	Southam silty clay loam	0-1
11	Parnell silty clay loam	0-1
15	Divide loam	0-2
18	Fram and Vallery loams	0-3
57	Hamerly-Tonka complex	0-3
24C	Barnes-Buse loams	6-9
26B	Barnes-Cresbard loams	0-6
30B	Barnes-Svea loams	3-6
35B	Overly silty clay loam	0-6
36D	Buse-Barnes loams	9-15
36F	Buse-Barnes loams	15-35
37B	Cresbard-Cavour loams	0-6
44B	Swenoda sandy loam	0-6
53B	Renshaw loam	0-6
54B	Arvilla sandy loam	0-6
62B	Heimdal-Emrick loams	3-6
63D	Esmond-Heimdal loams	9-15
64C	Heimdal-Esmond loams	6-9
65C	Maddock loamy fine sand	0-6
73D	Zahl-Williams loams	9-15
76C	Sioux-Arvilla complex	0-9
77B	Nutley silty clay	0-6
79F	Arvilla and Sioux soils	9-25
83B	Williams-Bowbells loams	3-6
83C	Williams-Bowbells loams	6-9
86C	Williams-Zahill loams	6-9

Table 19. Northeastern North Dakota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
118	Barnes-Buse loams	3-6
154	Barnes-Svea loams	0-3
167	Bearden silt loam	0-3
1782	Swenoda fine sandy loam	0-6
2287	Bearden-Lindaas slit loams	0-3
2292	Hamerly-Barnes loams	0-3
2324	Wyndmere-Tiffany loams, silty substratum	0-3
F100A	Hamerly-Tonka complex	0-3
F107A	Hamerly-Barnes loams	0-3
F112A	Hamerly-Tonka-Parnell, complex	0-3
F118A	Vallers loam, saline	0-1
F119A	Vallers-Hamerly loams, saline	0-1
F12A	Vallers saline-Parnell, complex	0-1
F143A	Barnes-Svea loams	0-3
F143C	Barnes-Buse-Langhei loams	6-9
F144B	Barnes-Buse loams	3-6
F167B	Balaton-Wyard loams	0-6
F249C	Esmond-Emrick loams, sandy substratums	3-9
F312B	Brantford-Coe complex	2-6
F481A	Overly silty clay loam	0-2
F523A	Lowe loam, channeled	0-2
F680C	Barnes-Sioux complex	3-9
G144B	Barnes-Buse loams	3-6
G229B	Heimdal-Emrick loams	3-6
G271B	Arvilla sandy loam	0-6
G299F	Esmond-Heimdal loams	15-35
G304E	Coe-Binford sandy loams	9-25
G376A	Embden fine sandy loam	0-2
G377B	Embden-Egeland fine sandy loams	2-6
G383B	Maddock-Hecla fine sandy loam	0-6
G432A	Glyndon silt loam	0-2
G749B	Towner-Heimdal complex	3-6

Table 20. North central South Dakota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
76	Parnell silty clay loam	0-3
14D	Vida extremely stony loam	3-15
15B	Williams-Bowbells loams	0-3
15C	Williams-Bowbells loams	1-6
16B	Williams-Bowbells-Tonka complex	1-6
17B	Vida-Williams loams	3-6
17C	Vida-Williams-Bowbells loams	2-15
20A	Lehr loam	0-3
27B	Lehr-Bowdle loam	0-6
43C	Wabek-Bowdle loams	3-15
44D	Wabek gravelly loam	6-20
45B	Wabek-Lehr complex	2-9
5A	Bowbells loam	0-2
Bc	Bowbells-Cresbard loams	0-9
WnB	Williams-Bowbells loams	3-6
WnC	Williams-Bowbells loams	6-9
WtB	Williams-Bowbells-Nishon complex	2-6
WuB	Woodburn silt loam	0-7

Table 21. Central South Dakota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
CaA	Dudley Silt loam, nearly level	0-1
BmD	Betts-Ethan loams, stony	6-40
DaB	Davis loam	2-9
DtA	Dudley-Tetonka silt loams	0-6
EsA	Jerauld silty clay, level	0-1
EtD	Ethan-Betts loams	9-20
GaA	Davis silt loam, nearly level	0-1
HaB	Hand-Bonilla loams	3-6
HdA	Durrstein-Bon complex, nearly level	0-1
HeB	Henkin Series	0-9
HoA	Houdek-Prosper loams	0-2
HoB	Houdek-Prosper loams	2-6
HwB	Houdek-Ethan-Prosper loams	1-5
HwC	Houdek-Ethan-Prosper loams	2-9
HyA	Houdek-Prosper loams	0-3
LdA	Davis silt loam, fans, nearly level	0-1
RaB	Raber loam, undulating	0-1
RcB	Raber-Cavo loams, undulating	0-1
ReB	Raber-Eakin complex, undulating	0-1
RmA	Raber-Jerauld complex, nearly level	0-1
RmB	Raber-Jerauld complex, undulating	0-1
RnA	Ree-Canning loams	0-2
RrC	Raber-Peno loams, rolling	0-25
WmB	Glenham loam, undulating	0-1
WnB	Glenham-Prosper loams, undulating	0-1
WpA	Glenham-Cavo loams, nearly level	0-1
WpB	Glenham-Cavo loams, undulating	0-1
WzC	Glenham-Java loams, rolling	0-40
ZrD	Peno-Raber loams, hilly	0-25

Table 22. Western Minnesota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
36	Flom	0-3
61	Arveson clay	0-2
64	Ulen fine silt	0-3
68	Arverson clay, depressional	0-2
108	Mcintosh silt	0-3
184	Hamerly loam	0-3
236	Vallers loam	0-3
398	Winger silty clay loam, depressional	0-3
494	Darnen loam	0-6
508	Wyndmere fine silty loam	0-3
785	Hamerly-Winger complex	0-3
786	Winger-Hamerly-Colvin complex	0-3
1055	Haplaquolls and Histosols, ponded	0-1
1130	Wolverton fine silty loam	0-3
1135	Foxlake silt	0-2
1149	Hamerly clay	0-3
1246	Winger silty Clay	0-2
1317	Vallers silty clay	0-3
1875	Flom silty clay, depressional	0-3
1878	Mamre muck	0-1
1967	Hamerly-Vallers complex	0-3
1997	Vallers-Hamerly-Winger	0-3
1125B	Sverdrup-Abbeylake complex	2-6
1234B	Formdale-Buse complex	2-60
127B	Sverdrup silty loam	0-18
171B	Formdal loam	2-30
180B	Gonvick clay loam	0-2
184B	Hamerly loam	0-2
293B	Swenoda silty loam	0-9
33B	Barnes loam	0-25
33B2	Barnes loam	2-6
38C2	Waukon loam	0-40
45B	Maddock fine silt	0-35
58B	Kittson loam	0-8
777C2	Sisseton-Heimdal complex	2-40
780B	Audubon-Boyerlake complex	1-40
780C2	Audubon-Boyerlake complex	6-12

Table 22. (continued)

780D2	Audubon-Boyerlake complex	12-20
903B	Barnes-Langhei	0-55
903C2	Barnes-Langhei complex	6-12
931C2	Formdale-Langhei complex	2-55
942C2	Langhei-Barnes	0-55
942D2	Langhei-Formdale complex	2-55
979B2	Waukon-Langhei loam	0-55
979C2	Langhei-Waukon loam	0-55
979D2	Langhei-Waukon loam	12-18

Table 23. North central Iowa and southern Minnesota description of map unit symbols.

Map Unit Symbol	Soil Type	Slope
		%
6	Okoboji silty clay loam	0-1
55	Nicollet loam	1-3
884	Webster-Deft clay loams	0-4
86	Canisteo clay loam	0-2
90	Canisteo clay loam	0-2
95	Harps clay loam	0-2
96	Collinwood silty clay	0-18
107	Webster silty clay loam	0-2
114	Glencoe clay loam	0-1
118	Crippin clay loam	0-3
130	Nicollet clay loam	0-5
138	Clarion loam	1-9
336	Delft clay loam	0-4
392	Biscay clay loam	0-2
41C	Estherville sandy loam	6-12
507	Canisteo clay loam	0-2
101B	Truman silty clay loam	2-6
102B	Clarion loam	2-4
102B2	Clarion loam, eroded	4-8
108B	Wadena loam	2-5
138B	Clarion loam	2-5
138C2	Clarion loam, moderately eroded	5-9
138D2	Clarion loam, moderately eroded	9-14
27B	Dickinson sandy loam	1-6
31D	Storden loam	12-18
327B	Dickman sandy loam	1-6
327C	Dickman sandy loam	6-12
34B	Estherville sandy loam	2-5
41B	Estherville sandy loam	2-6
485B	Spillville loam	2-5
541C	Estherville-Hawick complex	5-9
595B	Swanlake loam	2-6
62 E2	Storden loam, moderately eroded	14-18
62C2	Storden loam, moderately eroded	5-9
62D	Storden loam	9-14
62E	Storden loam	14-18

Table 23. (continued)

62F	Storden loam	18-25
638D2	Clarion-Storden complex, moderately eroded	9-14
740D	Hawick gravelly loamy sand	9-14
887D	Clarion-Swanlake loams	12-18
921C2	Clarion-Storden loams, eroded	6-12

APPENDIX D. DATA TABLES

Table 24. Northeastern Montana restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
9	9	1.41
19	41	2.16
23	3	0.73
35	12	2.3
45	16	1.3

Table 25. Central North Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
5	30	1.68
8	9	1.68
10	31	1.66
13	12	1.03
17	10	1.62
18	14	1.91
20	6	2.36
21	6	2.11

Table 26. Northeastern North Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
9	16	1.92
10	6	1.18
15	36	1.81
18	25	2.26

Table 27. North central South Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
1	8	1.69
7	4	0.66
9	40	0.94
17	32	1.15
20	14	0.87

Table 28. Central South Dakota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
8	42	1.37
10	6	1.03
12	3	0.83
14	6	1.26
15	12	1.15
17	16	0.79
20	24	1.06
45	44	0.98

Table 29. Western Minnesota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
3	9	1.86
4	13	3.26
5	12	2.04
8	6	2.18
12	23	1.68
16	10	1.77
18	12	1.29
19	11	1.49
20	27	1.61
22	6	2.88
25	14	1.88
26	8	1.25
28	6	1.96

Table 30. North central Iowa and southern Minnesota restored grassland age distribution with number of samples per age class and the SOC standard deviation for each age class.

Age Class	Number of Samples	SOC Standard Deviation
Years	Number	kg C m ⁻² 30 cm ⁻¹
2	12	2.13
3	24	1.80
6	14	1.63
10	8	2.03
11	16	1.83
12	14	2.14
13	6	2.05
14	12	2.09
18	20	1.88
20	16	1.78
25	15	2.71
40	14	1.23

Table 31. Average loss of SOC from cultivating native grasslands for each study location.

Site	Average SOC loss
	Mg C ha ⁻¹ 30 cm ⁻¹
Northeastern Montana	2.49
Sheridan County, North Dakota	1.88
Northeastern North Dakota	1.21
North Central South Dakota	1.34
Central South Dakota	2.29
Western Minnesota	-0.16
North Central Iowa	1.53

APPENDIX E. DATA FIGURES

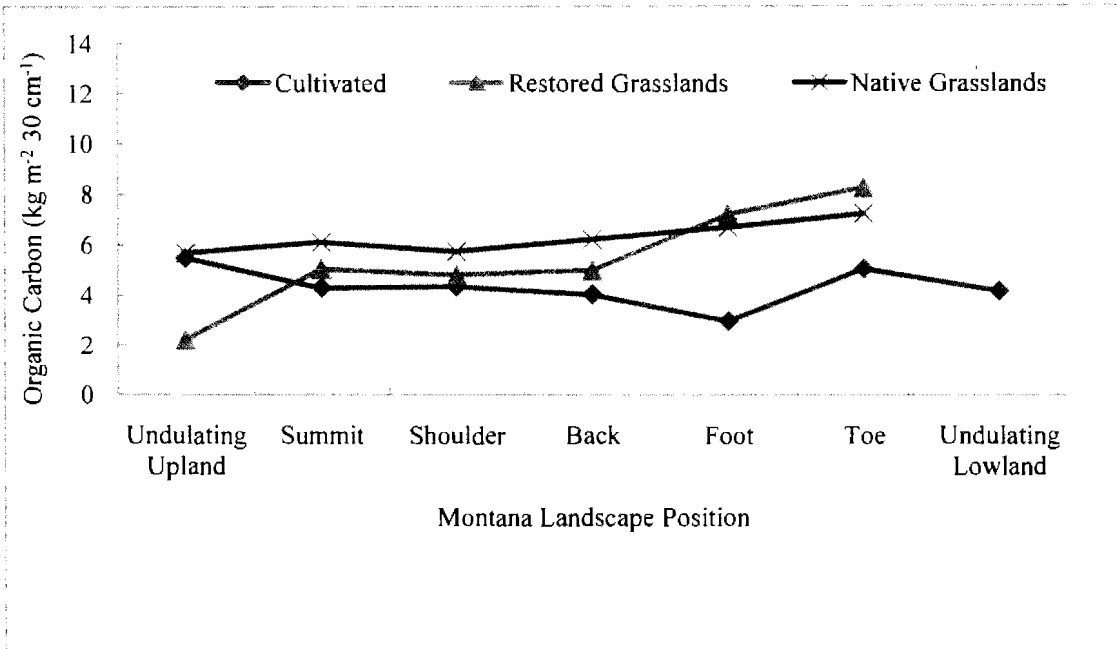


Figure 20. Northeastern Montana average SOC levels for landscape positions.

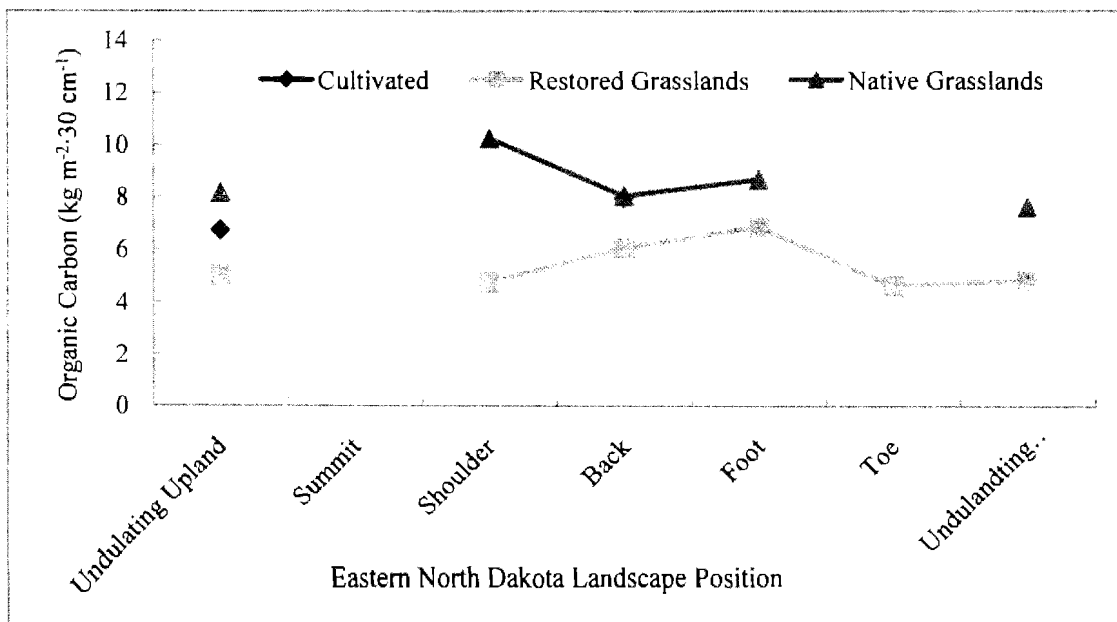


Figure 21. Northeastern North Dakota average SOC levels for landscape positions.

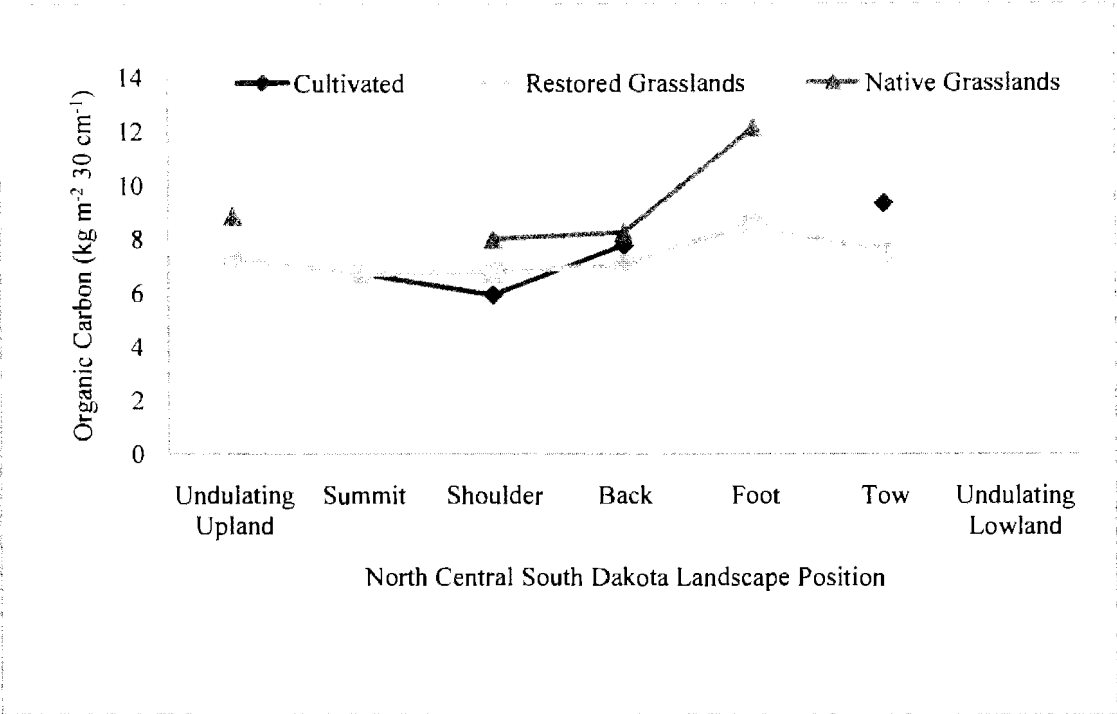


Figure 22. North central South Dakota average SOC for landscape positions.

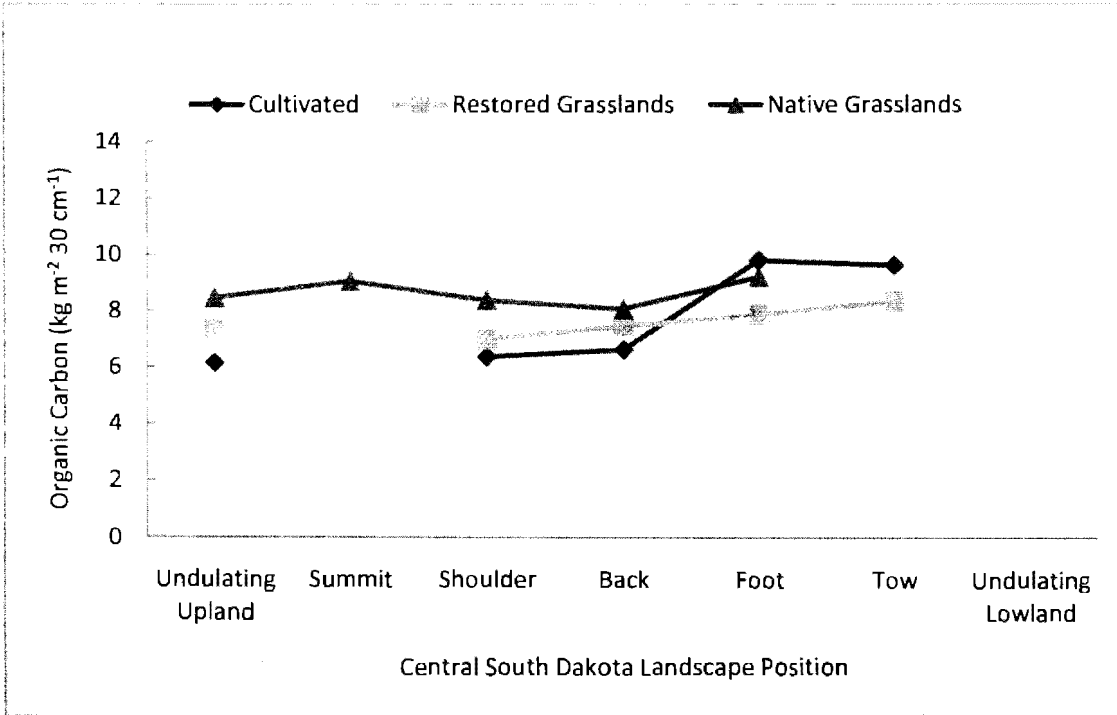


Figure 23. Central South Dakota average SOC levels for landscape positions.

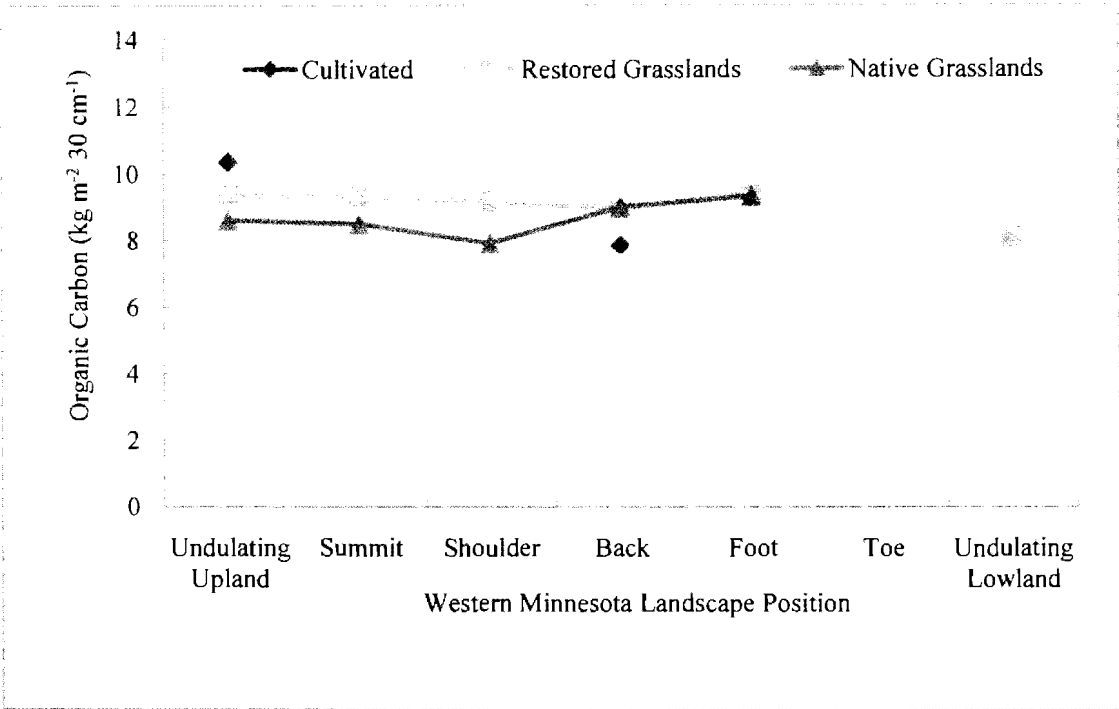


Figure 24. Western Minnesota average SOC levels for landscape positions.

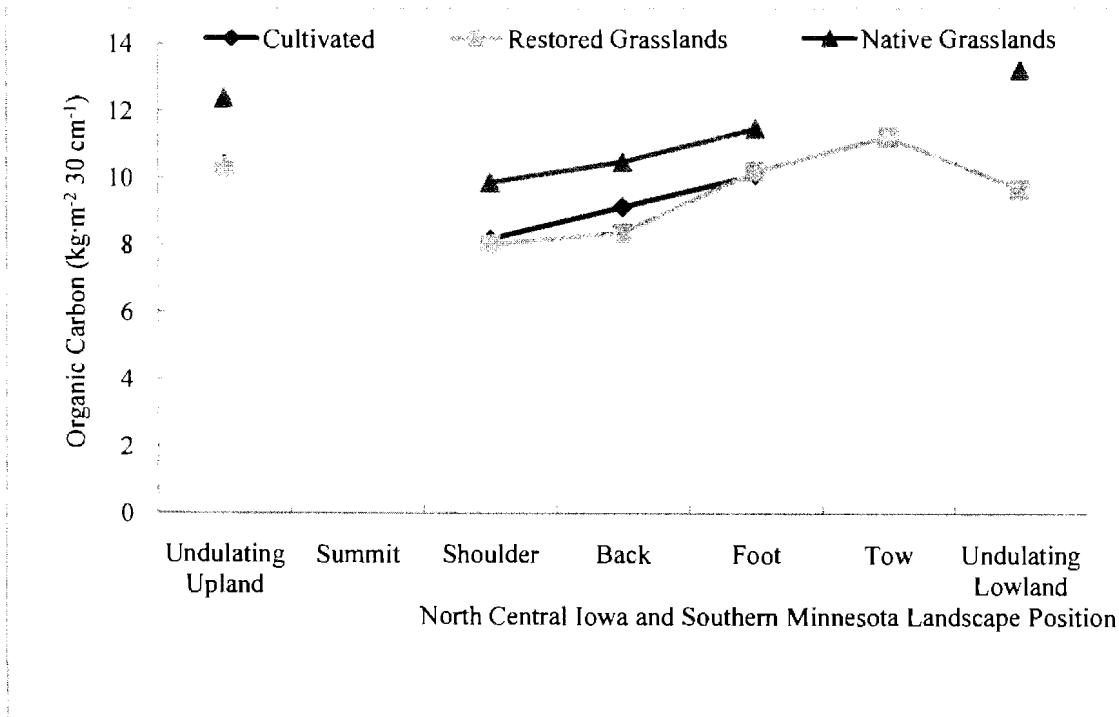


Figure 25. North central Iowa and southern Minnesota average SOC levels for landscape positions.

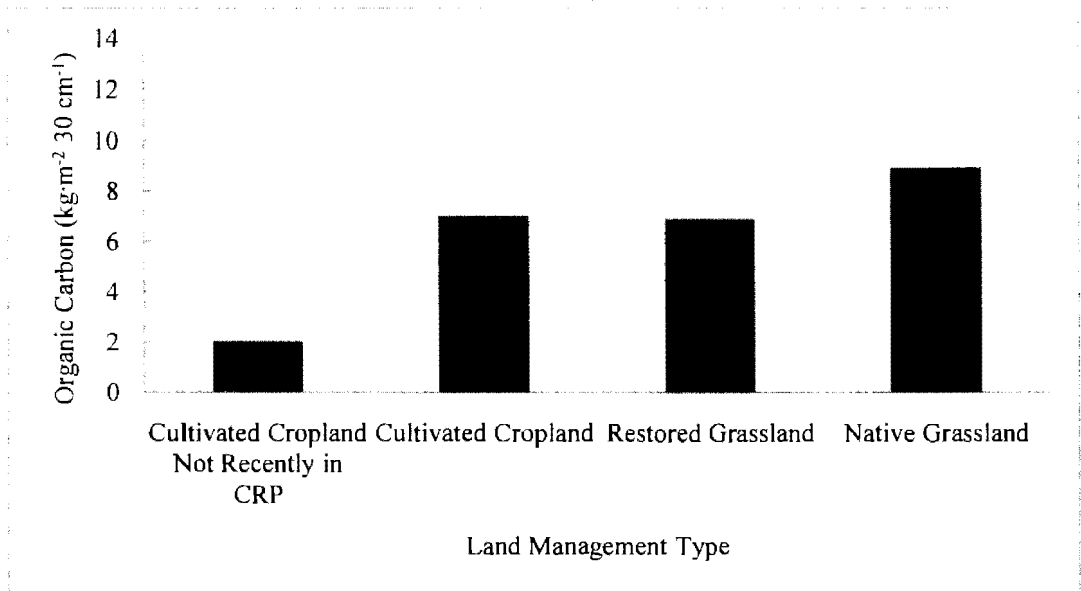


Figure 26. A comparison of average soil organic carbon levels in cultivated cropland that was not recently in CRP, cultivated cropland, and restored and native grasslands in Sheridan County, North Dakota.

APPENDIX F. SAMPLE COORDINATES AND LANDSCAPE POSITION

Table 32. Eastern Montana sample identification, coordinates, soil map unit sampled, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>MT-SH-TE-2/3</u>					
1	1250	N 48° 53' 53.6820" W 104° 13' 44.8600"	ZWE	9 year CRP	Backslope
2	1251	N 48° 54' 06.6420" W 104° 13' 31.0490"	ZWE	9 year CRP	Backslope
3	1252	N 48° 54' 04.4520" W 104° 13' 47.5920"	ZWE	3 year CRP	Backslope
4	1253	N 48° 54' 06.7080" W 104° 13' 47.7360"	ZWE	3 year CRP	Backslope
73 5	1254	N 48° 54' 04.8480" W 104° 13' 51.0360"	ZWE	3 year CRP	Backslope
6	1255	N 48° 54' 05.0360" W 104° 13' 58.4760"	ZWE	3 year CRP	Backslope
7	1256	N 48° 53' 56.5886" W 104° 14' 08.5514"	ZWE	3 year CRP	Backslope
8	1257	N 48° 53' 55.5420" W 104° 14' 21.4480"	ZWE	3 year CRP	Backslope
<u>MT-SH-TD-7</u>					
1	1258	N 48° 53' 42.602" W 104° 25' 50.791"	WZC	19 year CRP	Backslope
2	1259	N 48° 53' 35.6426" W 104° 25' 51.3552"	WZC	19 year CRP	Undulating upland
3	1260	N 48° 53' 26.6426" W 104° 25' 47.0532"	WZB	19 year CRP	Backslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	1261	N 48° 53' 21.1886" W 104° 25' 44.9412"	WZB	19 year CRP	Backslope
5	1262	N 48° 53' 19.4906" W 104° 25' 49.3752"	ZWE	19 year CRP	Backslope
6	1263	N 48° 53' 23.0666" W 104° 25' 52.8612"	WZB	19 year CRP	Backslope
7	1264	N 48° 53' 30.7106" W 104° 25' 58.8912"	WZC	19 year CRP	Backslope
8	1265	N 48° 53' 36.8186" W 104° 26' 00.8832"	WZC	19 year CRP	Backslope
9	1266	N 48° 53' 47.3786" W 104° 26' 26.0172"	WZC	19 year CRP	Footslope
10	1267	N 48° 53' 32.3186" W 104° 26' 16.7892"	WZC	19 year CRP	Toeslope
11	1268	N 48° 53' 26.9066" W 104° 26' 17.7252"	WZB	19 year CRP	Backslope
12	1269	N 48° 53' 21.5006" W 104° 26' 09.7992"	ZWE	19 year CRP	Footslope
13	1270	N 48° 50' 24.3686" W 104° 26' 07.3032"	WZB	19 year CRP	Backslope
14	1271	N 48° 53' 27.4046" W 104° 26' 06.5052"	WZB	19 year CRP	Footslope
15	1272	N 48° 53' 34.7485" W 104° 26' 07.4052"	WZC	19 year CRP	Shoulder
16	1273	N 48° 53' 42.8786" W 104° 26' 07.9812"	WZC	19 year CRP	Footslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>MT-SH-TD-8</u>					
1	1274	N 48° 53' 40.6286" W 104° 25' 22.8852"	WZB	19 year CRP	Backslope
2	1275	N 48° 53' 33.3986" W 104° 25' 20.8752"	WZB	19 year CRP	Backslope
3	1276	N 48° 53' 37.2506" W 104° 25' 15.8952"	WZB	19 year CRP	Backslope
4	1277	N 48° 53' 42.2846" W 104° 25' 09.1212"	WZB	19 year CRP	Backslope
5	1278	N 48° 53' 41.4986" W 104° 25' 03.2772"	WZB	19 year CRP	Backslope
75 6	1279	N 48° 53' 39.8366" W 104° 25' 29.3652"	WZB	19 year CRP	Shoulder
7	1280	N 48° 53' 35.9126" W 104° 25' 30.0492"	WZB	19 year CRP	Summit
8	1281	N 48° 53' 29.1686" W 104° 25' 30.7932"	WZB	19 year CRP	Shoulder
9	1282	N 48° 53' 30.9566" W 104° 25' 38.3052"	WZB	19 year CRP	Wetland [†]
10	1283	N 48° 53' 42.8066" W 104° 25' 39.1392"	WZC	19 year CRP	Shoulder
<u>MT-SH-TF-7</u>					
1	1284	N 48° 52' 58.5445" W 104° 10' 01.5614"	ZWE	Go Back Grassland [‡]	Backslope
2	1285	N 48° 53' 05.6545" W 104° 10' 00.0854"	ZWE	Go Back Grassland [‡]	Backslope
3	1286	N 48° 53' 14.9665"	ZWE	Go Back Grassland [‡]	Shoulder

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	1287	W 104° 09' 58.4474"	ZWE	Go Back Grassland [‡]	Backslope
		N 48° 53' 18.5675"			
5	1288	W 104° 09' 59.0894"	ZWE	Go Back Grassland [‡]	Backslope
		N 48° 53' 16.03345"			
6	1289	W 104° 10' 07.8554"	ZWE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 10.8025"			
7	1290	W 104° 10' 11.3534"	ZWE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 06.4705"			
8	1291	W 104° 10' 09.5834"	ZWE	Go Back Grassland [‡]	Backslope
		N 48° 52' 59.3845"			
9	1292	W 104° 10' 10.1534"	WZC	35 year CRP	Footslope
		N 48° 52' 57.9385"			
10	1293	W 104° 10' 34.3634"	WZC	35 year CRP	Footslope
		N 48° 53' 02.7325"			
11	1294	W 104° 10' 35.1734"	ZWE	35 year CRP	Shoulder
		N 48° 53' 08.2225"			
12	1295	W 104° 10' 35.0474"	ZWE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 16.3045"			
13	1296	W 104° 10' 35.3414"	ZWE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 15.9985"			
14	1297	W 104° 10' 23.5934"	WZE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 09.8365"			
15	1298	W 104° 10' 18.9974"	ZWE	Go Back Grassland [‡]	Shoulder
		N 48° 53' 04.1365"			
16	1299	W 104° 10' 17.8634"	WZC	Go Back Grassland [‡]	Footslope
		N 48° 52' 58.1845"			
		W 104° 10' 17.3954"			

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
17	1300	N 48° 53' 01.2565" W 104° 11' 10.4774"	WAE	35 year CRP	Backslope
18	1301	N 48° 52' 57.4405" W 104° 11' 02.3954"	ZWE	35 year CRP	Backslope
19	1302	N 48° 52' 58.5565" W 104° 10' 52.0994"	WZC	35 year CRP	Backslope
20	1303	N 48° 52' 56.0785" W 104° 10' 42.5474"	WZC	35 year CRP	Backslope
21	1304	N 48° 53' 00.8605" W 104° 10' 41.4134"	WZC	35 year CRP	Backslope
22	1305	N 48° 53' 04.8265" W 104° 10' 51.4874"	ZWE	35 year CRP	Backslope
77 22	1306	N 48° 53' 07.5925" W 104° 10' 48.9374"	ZWE	35 year CRP	Footslope
24	1307	N 48° 53' 06.9805" W 104° 10' 38.6894"	ZWE	35 year CRP	Backslope
25	1308	N 48° 53' 14.7685" W 104° 10' 37.0094"	ZWE	35 year CRP	Shoulder
26	1309	N 48° 53' 15.2545" W 104° 10' 45.5174"	ZWE	35 year CRP	Backslope
27	1310	N 48° 53' 05.2705" W 104° 10' 55.2494"	ZWE	35 year CRP	Backslope
28	1311	N 48° 53' 06.4165" W 104° 11' 04.7654"	ZWE	35 year CRP	Footslope
<u>MT-SH-TC-16</u>					
1	1312	N 48° 57' 59.7685" W 104° 12' 49.0693"	ZAD	Cropland	Backslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	1313	N 48° 57' 51.6565" W 104° 12' 49.1353"	SH	Cropland	Backslope
3	1314	N 48° 57' 49.1545" W 104° 12' 49.0813"	SH	Cropland	Backslope
4	1315	N 48° 57' 42.3445" W 104° 12' 49.6513"	MR	Crop-Fallow	Backslope
5	1316	N 48° 57' 42.6745" W 104° 12' 55.5553"	MR	Crop-Fallow	Backslope
6	1317	N 48° 57' 44.9725" W 104° 12' 55.6093"	WZC	Crop-Fallow	Shoulder
7	1318	N 48° 57' 51.8845" W 104° 12' 53.7313"	MI	Cropland	Undulating lowland
8	1319	N 48° 58' 02.7565" W 104° 112' 50.7434"	MI	Cropland	Footslope
9	1320	N 48° 58' 02.6245" W 104° 13' 13.4413"	ZAD	Crop/Fallow	Backslope
10	1321	N 48° 57' 55.5145" W 104° 13' 18.2713"	WZC	Crop/Fallow	Shoulder
11	1322	N 48° 57' 49.2205" W 104° 13' 18.2533"	MR	Crop/Fallow	Toeslope
12	1323	N 48° 57' 43.5445" W 104° 13' 18.4035"	MR	Crop/Fallow	Footslope
13	1324	N 48° 57' 44.8585" W 104° 13' 06.4213"	MR	Crop/Fallow	Footslope
14	1325	N 48° 57' 49.6345" W 104° 13' 05.8393"	MR	Crop/Fallow	Toeslope
15	1326	N 48° 57' 57.8545"	WZC	Crop/Fallow	Backslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
16	1327	W 104° 13' 10.8553" N 48° 58' 03.5365" W 104° 13' 05.2393"	MR	Crop/Fallow	Backslope
<u>MT-SH-TB-14</u>					
1	1328	N 48° 57' 19.1725" W 104° 17' 22.3519"	ZWE	Native Grassland	Backslope
2	1329	N 48° 57' 17.2106" W 104° 17' 31.9513"	ZWE	Native Grassland	Backslope
3	1330	N 48° 57' 17.8226" W 104° 17' 44.5813"	ZWE	Native Grassland	Backslope
4	1331	N 48° 57' 18.5006" W 104° 17' 53.2873"	ZWE	Native Grassland	Backslope
5	1332	N 48° 57' 25.9766" W 104° 17' 47.4673"	ZWE	Native Grassland	backslope
6	1333	N 48° 57' 24.2546" W 104° 17' 40.7173"	ZWE	Native Grassland	Backslope
7	1334	N 48° 57' 24.2245" W 104° 17' 27.6793"	ZWE	Native Grassland	Backslope
8	1335	N 48° 57' 24.6805" W 104° 17' 22.5133"	ZWE	Native Grassland	Backslope
9	1336	N 48° 57' 36.8425" W 104° 17' 21.5653"	ZWE	Native Grassland	Footslope
10	1337	N 48° 57' 38.0365" W 104° 17' 31.4953"	ZWE	Native Grassland	Footslope
11	1338	N 48° 57' 37.0945" W 104° 17' 42.1992"	ZWE	Native Grassland	Undulating upland
12	1339	N 48° 57' 36.8786"	ZWE	Native Grassland	Footslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
13	1340	W 104° 17' 54.1992" N 48° 57' 31.5746"	ZWE	Native Grassland	Backslope
14	1341	W 104° 17' 52.3212" N 48° 57' 29.0186"	ZWE	Native Grassland	Backslope
15	1342	W 104° 17' 42.2293" N 48° 57' 26.3905"	ZWE	Native Grassland	Backslope
16	1343	W 104° 17' 33.9973" N 48° 57' 26.4205"	ZWE	Native Grassland	Backslope
17	1344	W 104° 17' 23.3713" N 48° 57' 44.7566"	WZC	19 Year CRP	Undulating upland
18	1345	W 104° 18' 22.1352" N 48° 57' 48.5546"	WZC	19 Year CRP	Undulating upland
19	1346	W 104° 18' 27.2472" N 48° 57' 49.3946"	WZC	19 Year CRP	Undulating upland
20	1347	W 104° 18' 35.3472" N 48° 57' 43.3046"	ZWE	19 Year CRP	Backslope
21	1348	W 104° 18' 32.8392" N 48° 57' 48.9866"	WZC	19 Year CRP	Backslope
22	1349	W 104° 18' 17.6592" N 48° 57' 51.5546"	ZWE	19 Year CRP	Backslope
23	1350	W 104° 18' 19.6932" N 48° 57' 48.4586"	ZWE	19 Year CRP	Backslope
24	1351	W 104° 18' 05.9772" N 48° 57' 44.5466"	WZC	19 Year CRP	Backslope
25	1352	W 104° 18' 08.5392" N 48° 57' 37.9706"	WAE	19 Year CRP	Shoulder
		W 104° 18' 21.9672"			

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
26	1353	N 48° 57' 31.7186" W 104° 18' 26.0472"	WAE	19 Year CRP	Summit
27	1354	N 48° 57' 29.1266" W 104° 18' 31.2252"	ZWE	19 Year CRP	Backslope
28	1355	N 48° 57' 37.5326" W 104° 18' 31.1592"	WZC	19 Year CRP	Backslope
29	1356	N 48° 57' 37.4786" W 104° 18' 17.4252"	WZC	19 Year CRP	Backslope
30	1357	N 48° 57' 35.4206 W 104° 18' 04.5312"	ZWE	19 Year CRP	Shoulder
31	1358	N 48° 57' 31.2686" W 104° 18' 05.7492"	ZWC	19 Year CRP	Shoulder
32	1359	N 48° 57' 32.3666" W 104° 18' 15.6072"	WZC	19 Year CRP	Backslope
<u>MT-SH-TC-29</u>					
1	1360	N 48° 56' 19.6585" W 104° 14' 36.4693"	ZWE	Native Grassland	Backslope
2	1361	N 48° 56' 17.9725" W 104° 14' 24.8413"	ZWE	Native Grassland	Backslope
3	1362	N 48° 56' 12.1825" W 104° 14' 25.0573"	ZWE	Native Grassland	Backslope
4	1363	N 48° 56' 12.1345" W 104° 14' 37.9633"	ZWE	Native Grassland	Backslope
5	1364	N 48° 57' 09.5425" W 104° 14' 34.0873"	ZWE	Native Grassland	Shoulder
6	1365	N 48° 56' 08.7865" W 104° 14' 20.0413"	ZWE	Native Grassland	Summit

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
7	1366	N 48° 56' 04.1365" W 104° 14' 28.4113	ZWE	Native Grassland	Backslope
8	1367	N 48° 55' 58.1005" W 104° 14' 32.9293"	ZWE	Native Grassland	Footslope
9	1368	N 48° 55' 50.9365" W 104° 14' 41.1373"	ZWE	Native Grassland	Backslope
10	1369	N 48° 55' 46.9405" W 104° 14' 36.8833"	ZWE	Native Grassland	Backslope
11	1370	N 48° 55' 48.3325" W 104° 14' 22.6993"	ZWE	Native Grassland	Footslope
12	1371	N 48° 55' 53.2165" W 104° 14' 23.5033"	ZWE	Native Grassland	Backslope
13	1372	N 48° 55' 39.6925" W 104° 14' 36.1453"	ZWE	Native Grassland	Backslope
14	1373	N 48° 55' 11.7205" W 104° 14' 21.4993"	ZWE	Native Grassland	Backslope
15	1374	N 48° 55' 33.8485" W 104° 14' 19.1053"	ZWE	Native Grassland	Backslope
16	1375	N 48° 55' 33.9445" W 104° 14' 35.14553"	ZWE	Native Grassland	Backslope
17	1376	N 48° 55' 32.1625" W 104° 13' 52.3333"	DOB	23 year CRP	Shoulder
18	1377	N 48° 55' 34.90585" W 104° 13' 47.1373"	LHB	23 year CRP	Backslope
19	1378	N 48° 55' 31.3825" W 104° 13' 38.5933"	DOB	23 year CRP	Shoulder

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>MT-SH-TE-10</u>					
1	1379	N 48° 53' 36.6746" W 104° 14' 52.5313"	ZWE	Cropland	Backslope
2	1380	N 48° 53' 33.8666" W 104° 14' 40.6993"	ZWE	Cropland	Backslope
3	1381	N 48° 53' 33.0206" W 104° 14' 52.2493"	WZB	Cropland	Backslope
4	1382	N 48° 53' 24.0566" W 104° 14' 51.9673"	ZAD	Cropland	Shoulder
5	1383	N 48° 53' 28.7966" W 104° 14' 51.8353"	WZB	Cropland	Backslope
6	1384	N 48° 53' 27.2846" W 104° 14' 41.2213"	WZB	Cropland	Footslope
7	1385	N 48° 53' 24.7706" W 104° 14' 43.7953"	WZB	Cropland	Backslope
8	1386	N 48° 53' 38.7146" W 104° 15' 03.3673"	WMB	Cultivated crop/Fallow	Footslope
9	1387	N 48° 53' 31.8326" W 104° 15' 09.7933"	ZWE	Cultivated crop/Fallow	Backslope
10	1388	N 48° 53' 31.5686" W 104° 15.02.7793"	WZC	Cultivated crop/Fallow	Shoulder
11	1389	N 48° 53' 33.3146" W 104° 14' 59.1313"	WZC	Cultivated crop/Fallow	Footslope
12	1390	N 48° 53' 24.8426" W 104° 15' 09.2653"	ZWE	Cultivated crop/Fallow	Shoulder
13	1391	N 48° 53' 25.2506" W 104° 15' 02.7613"	WZC	Cultivated crop/Fallow	Shoulder

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	1392	N 48° 53' 26.7926" W 104° 14' 56.8993"	ZAD	Cultivated crop/Fallow	Shoulder
15	1393	N 48° 53' 45.3566" W 104° 13' 56.1974"	ZWE	9 year CRP	Backslope
<u>MT-SH-TB-27</u>					
1	1394	N 48° 56' 20.7326" W 104° 19' 49.4172"	ZWE	Native Grassland	Backslope
2	1395	N 48° 56' 14.8046" W 104° 19' 52.7412"	ZWE	Native Grassland	Backslope
3	1396	N 48° 56' 05.9426" W 104° 19' 55.2192"	ZWE	Native Grassland	Backslope
4	1397	N 48° 55' 57.9386" W 104° 19' 50.9652"	ZWE	Native Grassland	Backslope
5	1398	N 48° 55' 59.0546" W 104° 109' 39.7452"	WZB	Native Grassland	Undulating upland
6	1399	N 48° 56' 04.8206" W 104° 19' 41.072"	ZWE	Native Grassland	Backslope
7	1400	N 48° 56' 11.6306" W 104° 19' 12.1392"	ZWE	Native Grassland	Shoulder
8	1401	N 48° 56' 20.1146" W 104° 19' 42.4392"	ZWE	Native Grassland	Backslope
9	1402	N 48° 56' 17.6846" W 104° 19' 23.6172"	ZWE	Native Grassland	Backslope
10	1403	N 48° 56' 11.2826" W 104° 19' 22.3872"	ZWE	Native Grassland	Backslope
11	1404	N 48° 56' 03.1946" W 104° 19' 22.7832"	ZWE	Native Grassland	Backslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
12	1405	N 48° 55' 58.2206" W 104° 19' 24.5772"	ZWE	Native Grassland	Summit
13	1406	N 48° 55' 57.6626" W 104° 19' 32.0832"	WZB	Native Grassland	Toeslope
14	1407	N 48° 56' 09.3626" W 104° 19' 31.0512"	ZWE	Native Grassland	Footslope
15	1408	N 48° 56' 13.0706" W 104° 19' 30.5952"	ZWE	Native Grassland	Backslope
16	1409	N 48° 56' 19.2086" W 104° 19' 30.9792"	ZWE	Native Grassland	Backslope
17	1410	N 48° 55' 20.2046" W 104° 19' 04.7952"	WZB	Cropland	Backslope
18	1411	N 48° 56' 09.3206" W 104° 18' 59.8752"	WZB	Cropland	Backslope
19	1412	N 48° 56' 02.2765" W 104° 18' 59.9173"	ZWE	Cropland	Backslope
20	1413	N 48° 56' 01.2625" W 104° 19' 02.5992"	WZB	Cropland	Shoulder
21	1414	N 48° 56' 18.7286" W 104° 19' 13.0152"	WZB	Cropland	Footslope
22	1415	N 48° 56' 15.4946" W 104° 19' 07.7112"	ZWE	Cropland	Summit
23	1416	N 48° 56' 04.8326" W 104° 19' 06.1332"	ZWE	Cropland	Shoulder
<u>MT-SH-TB-22</u>					
1	1417	N 48° 56' 24.9266" W 104° 19' 13.7352"	WZB	Cropland	Backslope

Table 32. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	1418	N 48° 56' 32.7326" W 104° 19' 14.5512"	WZE	Cropland	Backslope
3	1419	N 48° 56' 36.7586" W 104° 19' 14.4072"	ZAE	Cropland	Undulating upland
4	1420	N 48° 56' 27.2125" W 104° 19' 01.0092"	WZB	Cropland	Shoulder
5	1421	N 48° 56' 32.5646" W 104° 18' 59.4312"	PAB	Cropland	Backslope
6	1422	N 48° 56' 36.7286" W 104° 19' 00.6292"	ZAE	Cropland	Footslope
7	1423	N 48° 56' 24.8246" W 104° 18' 50.4012"	DOC	Cropland	Backslope
8	1424	N 48° 56' 24.1166" W 104° 18' 46.0152"	DOC	Cropland	Backslope

[†] Wetland not sampled.

[‡] Grasslands that were cultivated approximately 70 years previous to the study and then returned to grasslands.

[§]GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

Table 33. Sheridan County, North Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>ND-SH-GR-12</u>					
1	1	N 47°44' 43.86" W 100°20'11.61"	64C	13 year CRP	Summit
2	2	N 47°44' 43.33" W 100°20'6.74"	64C	13 year CRP	Undulating Upland
3	3	N 47°44' 43.09" W 100°20'2.60"	63D	13 year CRP	Undulating Upland
4	4	N 47°44' 40.92" W 100°20'0.23"	62B	13 year CRP	Backslope
5	5	N 47°44' 36.76" W 100°19'57.00"	64C	13 year CRP	Backslope
87 6	6	N 47°44' 33.16" W 100°19'56.52"	62B	13 year CRP	Summit
7	7	N 47°44' 32.30" W 100°19'56.64"	64C	13 year CRP	Footslope
8	8	N 47°44' 26.56" W 100°20'2.81"	64C	13 year CRP	Undulating Upland
9	9	N 47°44' 23.19" W 100°20'11.31"	64C	13 year CRP	Undulating Upland
10	10	N 47°44' 24.57" W 100°20'15.06"	62B	13 year CRP	Summit
11	11	N 47°44' 31.93" W 100°20'14.78"	65C	13 year CRP	Undulating Upland
12	12	N 47°44' 36.50" W 100°20'15.42"	64C	13 year CRP	Backslope
13	13	N 47°43' 58.16"	64C	17 year CRP	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	14	N 47°44' 3.12" W 100°19'46.15"	62B	17 year CRP	Backslope
15	15	N 47°44' 4.28" W 100°19'53.13"	62B	17 year CRP	Undulating Upland
16	16	N 47°43' 57.51" W 100°19'54.22"	64C	17 year CRP	Backslope
17	17	N 47°43' 57.77" W 100°20'3.43"	62B	17 year CRP	Backslope
18	18	N 47°44' 5.65" W 100°20'11.59"	62B	17 year CRP	Undulating Upland
19	19	N 47°44' 5.64" W 100°20'17.03"	54B	17 year CRP	Backslope
20	20	N 47°44' 5.79" W 100°20'27.37"	54B	17 year CRP	Backslope
21	21	N 47°44' 0.94" W 100°20'28.89"	2	17 year CRP	
22	22	N 47°43' 58.41" W 100°20'25.12"	15	17 year CRP	Undulating Lowland
<u>ND-SH-NG-17</u>					
1	23	N 47°43' 28.61" W 100°18.53'5.91"	63D	Native grassland	Backslope
2	24	N 47°43' 30.55" W 100°18'1.84"	64C	Native grassland	Backslope
3	25	N 47°43' 35.06" W 100°18'0.30"	63D	Native grassland	Backslope
4	26	N 47°43' 37.39" W 100°18'1.66"	63D	Native grassland	Footslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	27	N 47°43' 37.85" W 100°18'4.59"	63D	Native grassland	Footslope
6	28	N 47°43' 39.28" W 100°18'8.65"	63D	Native grassland	Backslope
7	29	N 47°43' 43.45" W 100°18'6.87"	63D	Native grassland	Backslope
8	30	N 47°43' 42.00" W 100°18'1.83"	63D	Native grassland	Summit
9	31	N 47°43' 44.61" W 100°17'58.73"	63D	Native grassland	Backslope
10	32	N 47°43' 46.83" W 100°17'59.70"	63D	Native grassland	Backslope
11	33	N 47°43' 47.92" W 100°18'3.41"	63D	Native grassland	Backslope
12	34	N 47°43' 48.44" W 100°18'10.20"	63D	Native grassland	Shoulder
<u>ND-SH-GR-28</u>					
35	35	N 47°41.30' 30.12" W 100°24.3'3.73"	44B	Alfalfa - grass	Backslope
36	36	N 47°41' 32.31" W 100°24.0'0.71"	44B	Alfalfa - grass	Toeslope
37	37	N 47°41' 34.34" W 100°23.56'.77"	44B/62B	Alfalfa - grass	Summit
38	38	N 47°41' 37.17" W 100°23.54'.31"	62B	Alfalfa - grass	Summit
39	39	N 47°41' 38.16" W 100°24.3'3.77"	54B	Alfalfa - grass	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
40	40	N 47°41' 27.57" W 100°24'1.71"	44B	Alfalfa - grass	Backslope
41	41	N 47°41' 27.36" W 100°24'20.96"	44B	Alfalfa - grass	Backslope
42	42	N 47°41' 33.32" W 100°24'18.04"	44B	Alfalfa - grass	Backslope
43	43	N 47°41' 20.17" W 100°24'20.10"	18	Alfalfa - grass	Toeslope
44	44	N 47°41' 22.20" W 100°24'11.88"	54B	Alfalfa - grass	Backslope
45	45	N 47°41' 20.90" W 100°24'1.06"	76C	Alfalfa - grass	Backslope
46	46	N 47°41' 20.65" W 100°23'54.44"	76C	Alfalfa - grass	Backslope
<u>ND-SH-NG-17</u>					
1	47	N 47°43' 30.336" W 100°18'17.940"	64C	Tame Grassland [†]	Shoulder
2	48	N 47°43' 25.116" W 100°18'16.760"	64C	Tame Grassland [†]	Undulating Upland
3	49	N 47°43' 28.704" W 100°18'11.040"	64C	Tame Grassland [†]	Backslope
4	50	N 47°43' 32.676" W 100°18'12.720"	64C	Tame Grassland [†]	Backslope
5	51	N 47°43' 36.864" W 100°18'13.068"	64C	Tame Grassland [†]	Backslope
6	52	N 47°43' 36.846" W 100°18'13.556"	64C	Tame Grassland [†]	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>ND-SH-NG-18</u>					
1	53	N 47°43' 29.058" W 100°18'24.144"	64C	Tame Grassland [†]	Undulating Upland
2	54	N 47°43' 26.388" W 100°18'30.312"	64C	Tame Grassland [†]	Summit
3	55	N 47°43' 25.458" W 100°18'31.512"	64C	Tame Grassland [†]	Backslope
4	56	N 47°43' 27.276" W 100°18'35.904"	64C	Tame Grassland [†]	Undulating Upland
5	57	N 47°43' 33.702" W 100°18'39.342"	64C	Tame Grassland [†]	Backslope
6	58	N 47°43' 35.040" W 100°18'33.414"	64C	Tame Grassland [†]	Backslope
<u>ND-SH-HA-20</u>					
1	59	N 47°37' 07.962" W 100°30'49.532"	36F	Native Grassland	Backslope
2	60	N 47°37' 08.460" W 100°30'40.350"	36F	Native Grassland	Shoulder
3	61	N 47°37' 08.112" W 100°30'35.508"	24C	Native Grassland	Footslope
4	62	N 47°37' 15.732" W 100°30'34.248"	36F	Native Grassland	Upper backslope
5	63	N 47°37' 21.318" W 100°30'30.810"	36F	Native Grassland	Summit
6	64	N 47°37' 25.860" W 100°30'29.094"	10	Native Grassland	Toeslope
7	65	N 47°37' 26.508"	36F	Native Grassland	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	66	W 100°30'37.902"	36F	Native Grassland	Backslope
		N 47°37' 18.468"			
9	67	W 100°30'41.166"	36F	Native Grassland	Shoulder
		N 47°37' 17.748"			
10	68	W 100°30'46.782"	36F	Native Grassland	Backslope
		N 47°37' 17.808"			
11	69	W 100°30'50.220"	36F	Native Grassland	Summit
		N 47°37' 18.822"			
12	70	W 100°30'57.024"	36F	Native Grassland	Backslope
		N 47°37' 12.233"			
13	71	W 100°30'53.150"	36D	20 year CRP	Backslope
		N 47°37' 14.945"			
14	72	W 100°30'60.000"	30B	20 year CRP	Summit
		N 47°37' 19.326"			
15	73	W 100°30'59.520"	24C	20 year CRP	Undulating Upland
		N 47°37' 22.902"			
16	74	W 100°30'59.148"	30B	20 year CRP	Undulating Upland
		N 47°37' 26.418"			
17	75	W 100°30'59.100"	24C	20 year CRP	Backslope
		N 47°37' 33.525"			
18	76	W 100°31'09.698"	36D	20 year CRP	Backslope
		N 47°37' 33.198"			
		W 100°31'19.624"			
<u>ND-SH-HA-28</u>					
1	77	N 47°36' 42.360"	30B	21 year CRP	Footslope
		W 100°30'03.948"			
2	78	N 47°36' 41.100"	24C	21 year CRP	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	79	W 100°29'59.364" N 47°36' 43.962"	24C	21 year CRP	Backslope
4	80	W 100°29'55.230" N 47°36' 44.574"	24C	21 year CRP	Backslope
5	81	W 100°29'50.426" N 47°36' 48.330"	36D	21 year CRP	Backslope
6	82	W 100°29'49.728" N 47°36' 55.824" W 100°29'49.530"	24C	21 year CRP	Undulating upland
<u>ND-SH-SP-16</u>					
1	83	N 47°23' 01.188" W 100°14'13.980"	73D	18 year CRP	Backslope
2	84	N 47°23' 02.742" W 100°14'26.625"	86C	18 year CRP	Undulating upland
3	85	N 47°23' 05.966" W 100°14'36.276"	86C	18 year CRP	Backslope
4	86	N 47°23' 00.930" W 100°14'38.472"	83B	18 year CRP	Backslope
5	87	N 47°23' 57.594" W 100°14'41.280"	83B	18 year CRP	Shoulder
6	88	N 47°23' 57.132" W 100°14'29.838"	73D	18 year CRP	Shoulder
7	89	N 47°22' 42.264" W 100°14'44.130"	73F	18 year CRP	Backslope
8	90	N 47°22' 45.516" W 100°14'42.876"	73D	18 year CRP	Backslope
9	91	N 47°22' 50.586"	73D	18 year CRP	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position	
10	92	W 100°14'41.712" N 47°22' 50.424"	83C	18 year CRP	Undulating upland	
11	93	W 100°14'17.694" N 47°22' 47.250"	73D	18 year CRP	Backslope	
12	94	W 100°14' 21.240" N 47°22' 42.972"	73D	18 year CRP	Backslope	
13	95	W 100°14'25.494" N 47°22' 49.770"	86C	18 year CRP	Backslope	
14	96	W 100°14'28.278" N 47°22' 51.252" W 100°14' 25.308"	11	18 year CRP	Toeslope	
94	<u>ND-SH-SP-2</u>					
	1	97	N 47°24' 34.086" W 100°11' 53.562"	77B	5 year CRP	Backslope
	2	98	N 47°24' 31.770" W 100°11' 47.982"	76C	5 year CRP	Backslope
	3	99	N 47°24' 31.950" W 100°11' 39.330"	53B	5 year CRP	Backslope
	4	100	N 47°24' 36.846" W 100°11' 45.570"	44B	5 year CRP	Backslope
	5	101	N 47°24' 27.190" W 100°12' 01.746"	24C	5 year CRP	Backslope
	6	102	N 47°24' 29.808" W 100°12' 06.504"	24C	5 year CRP	Backslope
	7	103	N 47°24' 35.910" W 100°12'06.732"	77B	5 year CRP	Backslope
8	104	N 47°24' 35.868"	11	5 year CRP	Undulating lowland	

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
9	105	W 100°12'02.172"	35B	5 year CRP	Undulating Upland
		N 47°24' 49.674"			
10	106	W 100°12'45.376"	77B	5 year CRP	Backslope
		N 47°24' 41.389"			
11	107	W 100°11'55.212"	44B	5 year CRP	Backslope
		N 47°24' 42.144"			
12	108	W 100°11'44.196"	35B	5 year CRP	Undulating Upland
		N 47°24' 48.894"			
13	109	W 100°11'40.242"	77B	5 year CRP	Backslope
		N 47°24' 47.568"			
14	110	W 100°12' 10.314"	77B	5 year CRP	Backslope
		N 47°24' 41.996"			
15	111	W 100°12' 10.788"	77B	5 year CRP	Backslope
		N 47°24' 42.036"			
16	112	W 100°12' 07.245"	77B	5 year CRP	Backslope
		N 47°24' 47.696"			
		W 100°12' 04.290"			
<u>ND-SH-SP-11</u>					
1	113	N 47°23' 09.288"	24C	5 year CRP	Backslope
2	114	W 100°11' 19.128"	30B	5 year CRP	Footslope
		N 47°23' 12.318"			
3	115	W 100°11' 17.442"	30B	5 year CRP	Backslope
		N 47°23' 16.302"			
4	116	W 100°11' 16.752"	36D	5 year CRP	Backslope
		N 47°23' 19.578"			
5	117	W 100°11' 30.192"	36D	5 year CRP	Undulating Upland
		N 47°23' 15.894"			

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
6	118	W 100°11' 28.314"	36D	5 year CRP	Backslope
		N 47°23' 11.514"			
7	119	W 100°11' 25.206"	30B	5 year CRP	Undulating Upland
		N 47°23' 08.814"			
8	120	W 100°11' 08.886"	24C	5 year CRP	Undulating Upland
		N 47°23' 13.110"			
9	121	W 100°11' 08.310"	57	5 year CRP	Backslope
		N 47°23' 10.098"			
10	122	W 100°11' 03.516"	30B	5 year CRP	Backslope
		N 47°23' 16.248"			
11	123	W 100°10' 58.650"	30B	5 year CRP	Backslope
		N 47°23' 32.148"			
12	124	W 100°11' 03.150"	37B	5 year CRP	Backslope
		N 47°23' 27.954"			
13	125	W 100°11' 09.192"	30B	5 year CRP	Backslope
		N 47°23' 30.612"			
14	126	W 100°11' 15.222"	30B	5 year CRP	Backslope
		N 47°23' 33.156"			
		W 100°11' 21.288"			
<u>ND-SH-MA-7</u>					
1	127	N 47°23' 23.046"	30B	10 year CRP	Backslope
2	128	W 100°08' 49.926"	57	10 year CRP	Toeslope
		N 47°23' 20.712"			
3	129	W 100°08' 56.688"	24C	10 year CRP	Backslope
		N 47°23' 24.822"			
4	130	W 100°08' 57.342"	79F	10 year CRP	Backslope
		N 47°23' 28.524"			

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	131	W 100°08' 53.778" N 47°23' 22.248"	24C	10 year CRP	Backslope
6	132	W 100°08' 40.998" N 47°23' 20.754"	24C	10 year CRP	Backslope
7	133	W 100°08' 34.080" N 47°23' 25.332"	57	10 year CRP	Undulating Upland
8	134	W 100°08' 38.016" N 47°23' 29.340"	30B	10 year CRP	Backslope
9	135	W 100°08' 44.328" N 47°23' 14.688"	18	10 year CRP	Backslope
10	136	W 100°08' 48.894" N 47°23' 11.550"	36D	10 year CRP	Backslope
11	137	W 100°08' 50.514" N 47°23' 20.976"	24C	10 year CRP	Backslope
12	138	W 100°08' 27.066" N 47°23' 12.834"	57	10 year CRP	Toeslope
13	139	W 100°08' 26.454" N 47°23' 22.308"	30B	Cropland	Backslope
14	140	W 100°09' 17.040" N 47°23' 26.058"	79F	Cropland	Backslope
15	141	W 100°09' 04.554" N 47°23' 30.198"	24C	Cropland	Shoulder
16	142	W 100°09' 12.012" N 47°23' 26.026"	24C	Cropland	Backslope
17	143	W 100°09' 28.110" N 47°23' 28.320"	30B	Cropland	Backslope
		W 100°09' 32.502"			

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
18	144	N 47°23' 26.262" W 100°09' 35.760"	30B	Cropland	Backslope
19	145	N 47°23' 17.778" W 100°09' 32.070"	30B	Cropland	Backslope
20	146	N 47°23' 19.016" W 100°09' 38.172"	26B	Cropland	Toeslope
21	147	N 47°23' 12.332" W 100°09' 26.800"	57	Cropland	Toeslope
22	148	N 47°23' 17.928" W 100°09' 18.792"	24C	Cropland	Backslope
23	149	N 47°23' 12.144" W 100°09' 11.460"	24C	Cropland	Backslope
24	150	N 47°23' 17.556" W 100°09' 12.558"	24C	Cropland	Backslope
25	151	N 47°23' 57.150" W 100°08' 55.332"	76C	10 year CRP	Backslope
26	152	N 47°23' 45.120" W 100°08' 51.834"	30B	10 year CRP	Backslope
27	153	N 47°23' 46.698" W 100°08' 48.438"	24C	10 year CRP	Backslope
28	154	N 47°23' 53.997" W 100°08' 47.322"	36D	10 year CRP	Backslope
29	155	N 47°23' 32.232" W 100°08' 53.370"	79F	10 year CRP	Backslope
30	156	N 47°23' 34.638" W 100°08' 47.694"	24C	10 year CRP	Backslope
31	157	N 47°23' 41.555"	24C	10 year CRP	Backslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
32	158	W 100°08' 47.442"	30B	10 year CRP	Backslope
		N 47°23' 44.910"			
33	159	W 100°08' 59.448"	24C	10 year CRP	Backslope
		N 47°23' 41.124"			
34	160	W 100°09' 00.858"	30B	10 year CRP	Undulating Upland
		N 47°23' 57.276"			
35	161	W 100°09' 28.698"	57	10 year CRP	Undulating Upland
		N 47°23' 47.352"			
36	162	W 100°09' 32.064"	24C	10 year CRP	Backslope
		N 47°23' 47.371"			
37	163	W 100°09' 26.460"	24C	10 year CRP	Summit
		N 47°23' 50.184"			
38	164	W 100°09' 22.034"	36D	10 year CRP	Backslope
		N 47°23' 56.868"			
39	165	W 100°09' 19.974"	30B	10 year CRP	Backslope
		N 47°23' 35.496"			
40	166	W 100°09' 32.646"	57	10 year CRP	Undulating Upland
		N 47°23' 37.782"			
41	164	W 100°09' 36.156"	24C	10 year CRP	Backslope
		N 47°23' 40.482"			
42	168	W 100°09' 27.126"	30B	10 year CRP	Undulating Upland
		N 47°23' 40.296"			
43	169	W 100°09' 20.502"	24C	10 year CRP	Backslope
		N 47°23' 36.348"			
		W 100°09' 23.994"			
<u>ND-SH-MA-18</u>					
1	170	N 47°22' 36.396"	57	Cropland	Toeslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
100	2	W 100°09' 29.652" N 47°22' 39.456"	36D	Cropland	Backslope
	3	W 100°09' 33.024" N 47°22' 36.006"	30B	Cropland	Footslope
	4	W 100°09' 36.864" N 47°22' 31.830"	30B	Cropland	Undulating Upland
	5	W 100°09' 31.950" N 47°22' 32.442"	24C	Cropland	Backslope
	6	W 100°09' 20.316" N 47°22' 30.666"	30B	Cropland	Undulating Upland
	7	W 100°09' 15.030" N 47°22' 35.478"	24C	Cropland	Backslope
	8	W 100°09' 13.684" N 47°22' 37.416"	24C	Cropland	Backslope
			W 100°09' 17.718"		
<u>ND-SH-GR-14</u>					
	1	N 47°23' 38.592" W 100°21' 11.820"	64C	Cropland	Backslope
	2	N 47°23' 33.576" W 100°21' 09.786"	64C	Cropland	Undulating Upland
	3	N 47°23' 38.490" W 100°21' 03.786"	63D	Cropland	Backslope
	4	N 47°23' 38.562" W 100°21' 20.130"	62B	Cropland	Undulating Upland
	5	N 47°23' 34.542" W 100°21' 28.206"	64C	Cropland	Backslope
	6	N 47°23' 33.540"	62B	Cropland	Toeslope

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
7	184	W 100°21' 17.664"	64C	Cropland	Shoulder
		N 47°23' 26.580"			
8	185	W 100°21' 31.962"	64C	Cropland	Backslope
		N 47°23' 25.440"			
9	186	W 100°21' 22.824"	64C	Cropland	Backslope
		N 47°23' 30.300"			
10	187	W 100°21' 26.850"	62B	Cropland	Undulating Upland
		N 47°23' 31.506"			
11	188	W 100°21' 05.922"	65C	Cropland	Backslope
		N 47°23' 25.602"			
12	189	W 100°21' 10.602"	64C	Cropland	Toeslope
		N 47°23' 28.632"			
101 ND-SH-HA-28	190	W 100°21' 03.816"	24C	Cropland	Backslope
		N 47°36' 58.788"			
8	191	W 100°29' 13.554"	36D	Cropland	Backslope
		N 47°36' 59.190"			
9	192	W 100°29' 17.364"	24C	Cropland	Backslope
		N 47°36' 52.458"			
10	193	W 100°29' 19.686"	24C	Cropland	Backslope
		N 47°36' 43.140"			
11	194	W 100°29' 13.260"	30B	Cropland	Backslope
		N 47°36' 42.930"			
12	195	W 100°29' 08.808"	24C	Cropland	Backslope
		N 47°36' 39.684"			
13	196	W 100°29' 57.474"	24C	Cropland	Backslope
		N 47°36' 42.918"			

Table 33. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	197	W 100°29' 58.950" N 47°36' 30.852"	30B	Cropland	Undulating Upland
15	198	W 100°29' 15.024" N 47°36' 28.290"	24C	Cropland	Backslope
16	199	W 100°29' 07.530" N 47°36' 32.112" W 100°28' 53.142"	24C	Cropland	Backslope
<u>ND-SH-GR-24</u>					
1	200	N 47°42' 52.266" W 100°19' 53.910"	53B	8 year CRP	Undulating Upland
2	201	N 47°42' 48.912" W 100°20' 01.662"	64C	8 year CRP	Backslope
3	202	N 47°42' 40.596" W 100°20' 11.532"	62B	8 year CRP	Backslope
4	203	N 47°42' 39.018" W 100°19' 58.572"	64C	8 year CRP	Undulating Upland
5	204	N 47°42' 40.434" W 100°19' 50.916"	64C	8 year CRP	Backslope
6	205	N 47°42' 45.720" W 100°19' 53.202"	53B	8 year CRP	Undulating Upland
7	206	N 47°42' 48.078" W 100°19' 46.944"	53B	8 year CRP	Undulating Upland
8	207	N 47°42' 44.280" W 100°19' 41.664"	15	8 year CRP	Undulating Upland
9	208	N 47°42' 53.124" W 100°19' 44.160"	15	8 year CRP	Undulating Upland

†Grasslands that were cultivated at some unknown time and reverted back into grasslands.

Table 34. Northeastern North Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>ND-RM-RY-28</u>					
1	1500	N 48°28' 38.286" W 98°46' 40.416"	F144B	40 year CRP	Backslope
2	1501	N 48°28' 31.9680" W 98°46' 38.7960"	F144B	40 year CRP	Backslope
3	1502	N 48°28' 26.6400" W 98°46' 33.410"	F100A	< 10 year CRP	Footslope
4	1503	N 48°28' 19.7400" W 98°46' 32.3400"	F144B	< 10 year CRP	Backslope
5	1504	N 48°28' 25.5420" W 98°47' 04.3380"	F 680C	< 10 year CRP	Backslope
6	1505	N 48°28' 32.1120" W 98°47' 06.2220"	F 680C	< 10 year CRP	Backslope
7	1506	N 48°28' 35.1960" W 98°46' 57.3420"	F 680C	< 10 year CRP	Backslope
8	1507	N 48°28' 20.5620" W 98°46' 49.9140"	F249C	< 10 year CRP	Footslope
9	1508	N 48°28' 28.0680" W 98°46' 47.8980"	F167B	< 10 year CRP	Shoulder
10	1509	N 48°28' 35.6520" W 98°46' 48.0540"	F167B	< 10 year CRP	Backslope
<u>ND-CV-BN-29</u>					
1	1510	N 48°33' 52.4760" W 98°47' 50.1500"	F143C	18 year CRP	Backslope
2	1511	N 48°33' 50.8500" W 98°47' 53.9880"	F143C	18 year CRP	Backslope

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	1512	N 48°33' 36.882" W 98°47' 50.916"	F100A	18 year CRP	Shoulder
4	1513	N 48°33' 33.8940" W 98°47' 58.5840"	F143C	18 year CRP	Backslope
5	1514	N 48°33' 33.1440" W 98°48' 21.1500"	F144B	18 year CRP	Backslope
6	1515	N 48°33' 40.4580" W 98°48' 25.2760"	F144B	18 year CRP	Backslope
7	1516	N 48°33' 50.5560" W 98°48' 26.0160"	F144B	18 year CRP	Backslope
8	1517	N 48°33' 53.2980" W 98°48' 17.2860"	F144B	18 year CRP	Backslope
9	1518	N 48°33' 49.5240" W 98°48' 13.8540"	F100A	18 year CRP	Backslope
10	1519	N 48°33' 34.2304" W 98°48' 08.6634"	F144B	18 year CRP	Footslope
11	1520	N 48°33' 39.942" W 98°48' 13.308"	F144B	18 year CRP	Footslope
12	1521	N 48°33' 44.680" W 98°48' 18.222"	F144B	18 year CRP	Shoulder
13	1522	N 48°33' 47.718" W 98°48' 02.614"	F100A	18 year CRP	Backslope
14	1523	N 48°33' 59.7900" W 98°49' 04.9620"	F100A	18 year CRP	Backslope
15	1524	N 48°33' 59.790" W 98°49' 00.666"	F144B	18 year CRP	Backslope
16	1525	N 48°34' 03.612"	F144B	18 year CRP	Shoulder

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
17	1526	W 98°48' 53.670"	F100A	18 year CRP	Backslope
		N 48°34' 09.8100"			
18	1527	W 98°49' 03.2400"	F144B	18 year CRP	Backslope
		N 48°34' 16.7400"			
19	1528	W 98°49' 02.0460"	F144B	18 year CRP	Backslope
		N 48°34' 12.0420"			
20	1529	W 98°48' 52.3200"	F100A	18 year CRP	Backslope
		N 48°34' 15.3240"			
21	1530	W 98°48' 48.1260"	F144B	18 year CRP	Backslope
		N 48°34' 03.9960"			
22	1531	W 98°48' 40.2960"	F144B	18 year CRP	Shoulder
		N 48°34' 18.918"			
23	1532	W 98°48' 49.7044"	F100A	18 year CRP	Footslope
		N 48°34' 18.534"			
24	1533	W 98°48' 37.644"	F144B	18 year CRP	Backslope
		N 48°34' 13.608"			
25	1534	W 98°48' 34.182"	F100A	18 year CRP	Footslope
		N 48°34' 10.440"			
<u>ND-TW-PL-18</u>		W 98°48' 31.704"			
1	1535	N 48°35' 22.6980"	F312B	15 year CRP	Footslope
2	1536	W 98°12' 41.2800"	F312B	15 year CRP	Undulating upland
		N 48°35' 24.4440"			
3	1537	W 99° 12' 51.9180"	F312B	15 year CRP	Undulating upland
		N 48° 35' 27.8400"			
4	1538	W 99° 12' 58.0260"	F 119A	15 year CRP	Undulating upland
		N 48°35' 28.2000"			

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	1539	W 99°13' 11.1480"	F144B	15 year CRP	Backslope
		N 48°35' 33.0180"			
6	1540	W 99°13' 12.5580"	F144B	15 year CRP	Backslope
		N 48°35' 38.8440"			
7	1541	W 99°13' 10.9920"	F 119A	15 year CRP	Undulating lowland
		N 48°35' 28.201"			
8	1542	W 99°12' 39.288"	F 119A	15 year CRP	Undulating lowland
		N 48°35' 31.495"			
9	1543	W 99°12' 39.048"	F12A	15 year CRP	Undulating lowland
		N 48°35' 37.531"			
10	1544	W 99°12' 39.952"	F312B	15 year CRP	Undulating lowland
		N 48°35' 42.259"			
11	1545	W 99°12' 45.924"	F312B	15 year CRP	Backslope
		N 48°35' 39.817"			
12	1546	W 99°12' 53.034"	F12A	15 year CRP	Undulating lowland
		N 48°35' 43.960"			
13	1547	W 99°12' 57.384"	F144B	15 year CRP	Backslope
		N 48°36' 07.1820"			
14	1548	W 99°12' 44.7306"	F107A	15 year CRP	Backslope
		N 48°36' 00.8100"			
15	1549	W 99°12' 44.7000"	F144B	15 year CRP	Backslope
		N 48°35' 52.9320"			
16	1550	W 99°12' 43.7160"	F12A	15 year CRP	Toeslope
		N 48°35' 48.0060"			
17	1551	W 99°12' 41.9160"	F144B	15 year CRP	Backslope
		N 48°35' 49.2480"			
		W 99°12' 47.8980"			

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
18	1552	N 48°35' 53.5080" W 99°12' 54.5340"	F119A	15 year CRP	Backslope
19	1553	N 48°36' 00.8460" W 99°12' 53.0100"	F119A	15 year CRP	Undulating upland
20	1554	N 48°36' 05.791" W 99°13' 10.476"	F144B	15 year CRP	Shoulder
21	1555	N 48°35' 58.141" W 99°13' 09.792"	F144B	15 year CRP	Shoulder
22	1556	N 48°35' 54.529" W 99°13' 11.388"	F12A	15 year CRP	Backslope
23	1557	N 48°35' 49.573" W 99°13' 11.190"	F12A	15 year CRP	Backslope
24	1558	N 48°35' 51.673" W 99°13' 06.102"	F144B	15 year CRP	Footslope
25	1559	N 48°36' 01.675" W 99°13' 04.584"	F144B	15 year CRP	Toeslope
26	1560	N 48°36' 06.565" W 99°13' 02.964"	F119A	15 year CRP	Footslope
<u>ND-TW-PL-19</u>					
1	1561	N 48°35' 13.9380" W 99°12' 42.9900"	F144B	15 year CRP	Backslope
2	1562	N 48°35' 09.4920" W 99°12' 39.1080"	F119A	15 year CRP	Undulating upland
3	1563	N 48°35' 05.4000" W 99°12' 44.4540"	F144B	15 year CRP	Shoulder
4	1564	N 48°34' 59.0220" W 99°12' 42.6540"	F144B	15 year CRP	Backslope

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	1565	N 48°34' 59.3100" W 99°12' 50.5800"	F112A	15 year CRP	Undulating upland
6	1566	N 48°35' 13.333" W 99°13' 10.878"	F144B	15 year CRP	Backslope
7	1567	N 48°35' 01.112" W 99°13' 13.450"	F144B	15 year CRP	Backslope
8	1568	N 48°34' 54.919" W 99°13' 09.552"	F112A	15 year CRP	Undulating upland
9	1569	N 48°34' 56.995" W 99°13' 00.636"	F144B	15 year CRP	Backslope
10	1570	N 48°35' 14.449" W 99°12' 55.734"	F523A	15 year CRP	Backslope
	<u>ND-BN-AB-36</u>				
1	1571	N 48°01.44.7900" W 99°27'41.1180"	F12A	Native Grassland	Backslope
2	1572	N 48°01' 46.7220" W 99°27' 48.3300"	F118A	Native Grassland	Undulating upland
3	1573	N 48°01.57.7260" W 99°27' 38.6580"	F481A	Native Grassland	Backslope
4	1574	N 48°02' 01.3620" W 99°27' 34.8240"	F481A	Native Grassland	Backslope
5	1575	N 48°01.57.805" W 99°28' 05.886"	F144B	Native Grassland	Backslope
6	1576	N 48°01' 49.153" W 99°28' 07.380"	F144B	Native Grassland	Backslope
7	1577	N 48°01' 45.715" W 99°28' 03.732"	F118A	Native Grassland	Undulating lowland

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	1578	N 48°01' 43.999" W 99°27' 37.814"	F143A	Native Grassland	Undulating lowland
<u>ND-BN-AB-25</u>					
1	1579	N 48°02' 19.015" W 99°27' 51.270"	F143C	Native Grassland	Shoulder
2	1580	N 48°02' 18.001" W 99°27' 56.952"	F143B	Native Grassland	Footslope
3	1581	N 48°02' 14.4000" W 99°27' 51.5700"	F143B	Native Grassland	Backslope
4	1582	N 48°02' 16.1460" W 99°27' 39.9480"	F143B	Native Grassland	Undulating upland
<u>ND-NL-BG-31</u>					
109 1	1583	N 47°40' 37.1160" W 98°23' 10.6680"	6377B	Native Grassland	Backslope
2	1584	N 47°40' 44.2266" W 98°23' 06.6060"	6229F	Native Grassland	Backslope
3	1585	N 47°40' 47.8700" W 98°23' 02.7600"	6144B	Native Grassland	Undulating upland
4	1586	N 47°40' 37.3260" W 98°22' 56.8800"	6229F	Native Grassland	Backslope
5	1587	N 47°40' 21.679" W 99°23' 09.295"	6304E	Native Prairie	Backslope
6	1588	N 47°40' 22.177" W 98°23' 01.093"	6304E	Native Prairie	Backslope
7	1589	N 47°40' 28.141" W 98°22' 35.329"	6377B	Native Prairie	Footslope
8	1590	N 47°40' 28.099"	6377B	Native Prairie	Backslope

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
		W 98°22' 35.317"			
<u>ND-ED-LW-22</u>					
1	1591	N 47°42' 28.9200" W 98°41' 52.8540"	6744B	Hayland	Backslope
2	1592	N 47°42' 24.1500" W 98°41' 53.7720"	6229B	Hayland	Backslope
3	1593	N 47°42' 20.8980" W 98°41' 55.4220"	6271B	Hayland	Backslope
4	1594	N 47°42' 20.167" W 98°42' 12.625"	6271B	Hayland	Backslope
5	1595	N 47°42' 23.821" W 98°42' 08.425"	6229B	Hayland	Footslope
110 6	1596	N 47°42' 28.561" W 98°42' 10.021"	6376A	Hayland	Backslope
<u>ND-ED-LW-12</u>					
1	1597	N 47°43' 52.9020" W 98°39' 56.0400"	6383B	9 year CRP	Backslope
2	1598	N 47°44' 03.1080" W 98°39' 57.0120"	6432A	9 year CRP	Backslope
3	1599	N 47°44' 08.3400" W 98°40' 04.5900"	6383B	9 year CRP	Backslope
4	1600	N 47°44' 29.041" W 98°40' 21.115"	6749B	9 year CRP	Backslope
5	1601	N 47°44' 21.253" W 98°40' 12.541"	6432A	9 year CRP	Footslope
6	1602	N 47°44' 13.135" W 98°40' 04.051"	6383B	9 year CRP	Footslope

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>ND-TN-CL-28</u>					
1	1603	N 48° 23' 44.329" W 99° 02' 12.786"	2287	Cropland	Undulating upland
2	1604	N 48° 23' 40.987" W 99° 02' 23.154"	2287	Cropland	Undulating upland
3	1605	N 48° 23' 37.345" W 99° 02' 26.604"	2292	Cropland	Undulating upland
4	1606	N 48° 23' 37.297" W 99° 02' 14.616"	2292	Cropland	Undulating upland
5	1607	N 48° 23' 47.515" W 99° 02' 12.552"	2287	Cropland	Undulating upland
6	1608	N 48° 23' 48.067" W 99° 02' 25.626"	2292	Cropland	Backslope
7	1609	N 48° 23' 52.723" W 99° 02' 25.416"	2292	Cropland	Backslope
8	1610	N 48° 23' 55.997" W 99° 02' 15.936"	2287	Cropland	Undulating upland
<u>ND-TN-CL-16</u>					
1	1611	N 48° 24' 51.613" W 99° 02' 16.020"	167	Cropland	Undulating upland
2	1612	N 48° 24' 52.231" W 99° 02' 26.456"	2292	Cropland	Undulating upland
3	1613	N 48° 24' 57.547" W 99° 02' 36.012"	2292	Cropland	Undulating upland
4	1614	N 48° 24' 55.813" W 99° 02' 19.572"	167	Cropland	Undulating upland
5	1615	N 48° 25' 12.037"	167	Cropland	Undulating upland

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
6	1616	W 99° 02' 18.426"	167	Cropland	Undulating upland
		N 48° 25' 11.035"			
7	1617	W 99° 02' 33.936"	167	Cropland	Undulating upland
		N 48° 25' 01.993"			
8	1618	W 99° 02' 32.184"	167	Cropland	Undulating upland
		N 48° 25' 03.049"			
9	1619	W 99° 02' 21.660"	2287	Cropland	Undulating upland
		N 48° 25' 18.349"			
10	1620	W 99° 02' 18.222"	2287	Cropland	Undulating upland
		N 48° 25' 18.067"			
11	1621	W 99° 02' 29.334"	118	Cropland	Backslope
		N 48° 25' 21.217"			
12	1622	W 99° 02' 30.036"	2287	Cropland	Undulating upland
		N 48° 25' 21.859"			
13	1623	W 99° 02' 17.886"	2287	Cropland	Undulating upland
		N 48° 25' 29.173"			
14	1624	W 99° 02' 13.356"	2292	Cropland	Backslope
		N 48° 25' 29.161"			
15	1625	W 98 02' 21.198"	154	Cropland	Backslope
		N 48° 25' 32.899"			
16	1626	W 99° 02' 21.264"	167	Cropland	Backslope
		N 48° 25' 33.457"			
		W 99° 02' 14.328"			
<u>ND-TN-CL-5</u>					
1	1627	N 48° 26' 40.573"	2324	Cropland	Undulating upland
		W 99° 04' 31.314"			
2	1628	N 48° 26' 38.611"	167	Cropland	Undulating upland

Table 34. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
		W 99° 04' 36.810"			
3	1629	N 48° 26' 37.681"	2292	Cropland	Undulating upland
		W 99° 04' 43.434"			
4	1630	N 48° 26' 41.971"	1782	Cropland	Undulating upland
		W 99° 04' 43.260"			
5	1631	N 48° 26' 45.499"	1782	Cropland	Undulating upland
		W 99° 04' 38.412"			
6	1632	N 48° 26' 45.625"	2324	Cropland	Undulating upland
		W 99° 04' 20.310"			
7	1633	N 48° 26' 51.611"	1782	Cropland	Undulating upland
		W 99° 04' 20.166"			
8	1634	N 48° 26' 56.350"	2324	Cropland	Undulating upland
		W 99° 04' 19.980"			
9	1635	N 48° 26' 57.463"	1782	Cropland	Undulating upland
		W 99° 04' 24.438"			
10	1636	N 48° 26' 57.643"	2324	Cropland	Undulating upland
		W 99° 04' 33.600"			
11	1637	N 48° 26' 58.567"	2292	Cropland	Backslope
		W 99° 04' 39.024"			
12	1638	N 48° 26' 53.713"	2324	Cropland	Undulating upland
		W 99° 04' 37.332"			

†GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

Table 35. North central South Dakota sample identification, coordinates, soil map unit sampled, management and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-MP-LL-15</u>					
1	500	N 45° 48' 571" W 99° 15' 32"	43C	9 year CRP	Backslope
2	501	N 45° 49' 25.464" W 99° 16' 00.030"	27B	9 year CRP	Backslope
3	502	N 45° 49' 24.468" W 99° 16' 09.906"	27B	9 year CRP	Backslope
4	503	N 45° 49' 23.016" W 99° 16' 17.610"	27B	9 year CRP	Shoulder
5	504	N 45° 49' 20.790" W 99° 15' 46.824"	27B	1 year CRP	Backslope
6	505	N 45° 49' 18.294" W 99° 15' 59.802"	43C	1 year CRP	Backslope
7	506	N 45° 49' 18.036" W 99° 16' 10.380"	43C	1 year CRP	Backslope
8	507	N 45° 49' 19.026" W 99° 16' 18.168"	27B	1 year CRP	Backslope
9	508	N 45° 49' 12.378" W 99° 15' 54.846"	43C	7 year CRP	Backslope
10	509	N 45° 49' 12.030" W 99° 15' 59.940"	43C	7 year CRP	Backslope
11	510	N 45° 49' 12.972" W 99° 16' 10.926"	43C	7 year CRP	Backslope
12	511	N 45° 49' 13.680" W 99° 16' 16.872"	43C	7 year CRP	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-MP-LL-10</u>					
1	512	N 45° 49' 39.450" W 99° 16' 56.730"	45B	Native Grassland	Backslope
2	513	N 45° 49' 38.496" W 99° 16' 48.102"	45B	Native Grassland	Backslope
3	514	N 45° 49' 37.878" W 99° 16' 39.209"	44D	Native Grassland	Backslope
4	515	N 45° 49' 39.720" W 99° 16' 28.094"	44D	Native Grassland	Undulating upland
5	516	N 45° 49' 47.736" W 99° 16' 37.794"	44D	Native Grassland	Undulating upland
6	517	N 45° 49' 45.594" W 99° 16' 40.620"	44D	Native Grassland	Backslope
7	518	N 45° 49' 46.518" W 99° 16' 49.632"	44D	Native Grassland	Backslope
8	519	N 45° 49' 46.200" W 99° 16' 55.356"	44D	Native Grassland	Backslope
9	520	N 45° 49' 43.704" W 99° 16' 57.732"	44D	Native Grassland	Undulating upland
10	521	N 45° 49' 31.062" W 99° 16' 33.924"	44D	10 year CRP	Shoulder
11	522	N 45° 49' 33.864" W 99° 16' 32.112"	45B	10 year CRP	Backslope
12	523	N 45° 49' 37.122" W 99° 16' 27.996"	20A	10 year CRP	Backslope
13	524	N 45° 49' 39.024"	20A	10 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	525	W 99° 16' 26.616"	43C	10 year CRP	Backslope
		N 45° 49' 38.118"			
15	526	W 99° 16' 33.546"	43C	10 year CRP	Backslope
		N 45° 49' 35.328"			
16	527	W 99° 16' 41.310"	43C	10 year CRP	Backslope
		N 45° 49' 31.500"			
17	528	W 99° 16' 57.414"	27B	10 year CRP	Undulating upland
		N 45° 49' 33.624"			
18	529	W 99° 16' 49.158"	27B	10 year CRP	Backslope
		N 45° 49' 35.898"			
19	530	W 99° 16' 57.276"	44D	10 year CRP	Undulating upland
		N 45° 49' 37.854"			
20	531	W 99° 16' 49.890"	45B	10 year CRP	Undulating upland
		N 45° 49' 37.212"			
21	532	W 99° 16' 57.552"	45B	10 year CRP	Undulating upland
		N 45° 49' 35.346"			
		W 99° 16' 59.346"			
<u>SD-MP-LL-22</u>					
1	533	N 45° 49' 50.652"	16B	10 year CRP	Backslope
		W 99° 16' 28.542"			
2	534	N 45° 47' 46.746"	17C	10 year CRP	Footslope
		W 99° 16' 28.464"			
3	535	N 45° 47' 47.586"	16B	10 year CRP	Backslope
		W 99° 16' 38.010"			
4	536	N 45° 48' 53.490"	16B	10 year CRP	Backslope
		W 99° 16' 41.646"			
5	537	N 45° 47' 59.196"	16B	10 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
6	538	W 99° 16' 35.148" N 45° 47' 58.044"	16B	10 year CRP	Backslope
7	539	W 99° 16' 27.762" N 45° 47' 47.364"	16B	10 year CRP	Backslope
8	540	W 99° 16' 52.896" N 45° 47' 51.426"	16B	10 year CRP	Undulating upland
9	541	W 99° 16' 57.918" N 45° 47' 56.322"	16B	10 year CRP	Backslope
10	542	W 99° 16' 52.272" N 45° 47' 58.488"	16B	10 year CRP	Backslope
		W 99° 16' 58.908"			
117	<u>SD-ED-HT-26</u>				
1	543	N 45° 26' 25.806" W 99° 07' 53.658"	WNB	20 year CRP	Footslope
2	544	N 45° 26' 24.450" W 99° 07' 49.608"	WNB	20 year CRP	Undulating upland
3	545	N 45° 26' 25.926" W 99° 07' 40.710"	WTB	20 year CRP	Undulating upland
4	546	N 45° 26' 25.428" W 99° 07' 36.174"	WTB	20 year CRP	Undulating upland
5	547	N 45° 26' 18.354" W 99° 07' 30.924"	WUB	20 year CRP	Undulating upland
6	548	N 45° 26' 22.788" W 99° 07' 42.708"	WNB	20 year CRP	Undulating upland
7	549	N 45° 26' 23.790" W 99° 07' 47.922"	WUB	20 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	550	N 45° 26' 22.962" W 99° 07' 56.910"	BC	20 year CRP	Backslope
9	551	N 45° 26' 07.380" W 99° 07' 48.816"	WNB	20 year CRP	Undulating upland
10	552	N 45° 26' 05.958" W 99° 07' 58.188"	WTB	20 year CRP	Undulating upland
11	553	N 45° 26' 09.192" W 99° 07' 56.514"	WUB	20 year CRP	Undulating upland
12	554	N 45° 26' 09.648" W 99° 07' 53.166"	BC	20 year CRP	Undulating upland
13	555	N 45° 26' 09.156" W 99° 07' 47.952"	WUB	20 year CRP	Undulating upland
14	556	N 45° 26' 09.384" W 99° 07' 45.828"	BC	20 year CRP	Backslope
15	557	N 45° 26' 10.992" W 99° 07' 37.374"	WNB	20 year CRP	Undulating upland
16	558	N 45° 26' 04.494" W 99° 07' 41.628"	WUB	20 year CRP	Undulating upland
<u>SD-ED-HT-35</u>					
1	559	N 45° 25' 57.480" W 99° 07' 57.204"	WTB	10 year CRP	Undulating upland
2	560	N 45° 25' 53.238" W 99° 07' 51.318"	WTB	10 year CRP	Undulating upland
3	561	N 45° 25' 49.860" W 99° 07' 39.738"	WTB	10 year CRP	Undulating upland
4	562	N 45° 25' 54.300"	WTB	10 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	563	W 99° 07' 27.342"	WTB	10 year CRP	Undulating upland
		N 45° 25' 56.358"			
6	564	W 99° 07' 33.474"	WTB	10 year CRP	Undulating upland
		N 45° 25' 56.736"			
7	565	W 99° 07' 37.854"	WTB	10 year CRP	Undulating upland
		N 45° 25' 58.080"			
8	566	W 99° 07' 43.350"	WTB	10 year CRP	Undulating upland
		N 45° 25' 755'			
9	567	W 99° 07.953'	WTB	10 year CRP	Undulating upland
		N 45° 25.656'			
10	568	W 99° 07.878'	WTB	10 year CRP	Undulating upland
		N 45° 25.111'			
11	569	W 99° 07.757'	WTB	10 year CRP	Undulating upland
		N 45° 25' 37.650"			
12	570	W 99° 07' 37.194"	WTB	10 year CRP	Shoulder
		N 45° 25' 44.184"			
13	571	W 99° 07' 36.642"	WTB	10 year CRP	Shoulder
		N 45° 25' 41.718"			
14	572	W 99° 07' 31.554"	WTB	10 year CRP	Shoulder
		N 45° 25' 948"			
		W 99° 07' 27.222"			
<u>SD-MP-HR-6</u>					
1	573	N 45° 55' 37.194"	17B	Alfalfa	Backslope
2	574	W 99° 05' 38.400"	17B	Alfalfa	Shoulder
		N 45° 55' 46.158"			
		W 99° 05' 38.766"			

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	575	N 45° 55' 49.434" W 99° 05' 42.144"	17B	Alfalfa	Shoulder
4	576	N 45° 55' 46.824" W 99° 05' 45.288"	77B	Alfalfa	Footslope
5	577	N 45° 55' 39.264" W 99° 05' 43.608"	17B	Alfalfa	Shoulder
6	578	N 45° 55' 35.190" W 99° 05' 40.866"	17C	Alfalfa	Footslope
7	579	N 45° 55.799' W 99° 05.466'	17B	Alfalfa	Backslope
8	580	N 45° 55.876' W 99° 05.473'	17B	Alfalfa	Backslope
9	581	N 45° 55.916' W 99° 05.401'	15B	Alfalfa	Backslope
10	582	N 45° 55.811' W 99° 05.315'	17B	Alfalfa	Backslope
11	583	N 45° 55.620' W 99° 05.323'	15B	Alfalfa	Backslope
12	584	N 45° 55.620' W 99° 05.504'	17C	Alfalfa	Backslope
<u>SD-MP-HR-1</u>					
1	585	N 45° 55' 35.070" W 99° 07' 03.012"	17B	Cropland	Shoulder
2	586	N 45° 55' 45.534" W 99° 07' 01.644"	17B	Cropland	Backslope
3	587	N 45° 55' 50.370"	17B	Cropland	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	588	W 99° 07' 03.132" N 45° 55' 54.720"	17C	Cropland	Backslope
5	589	W 99° 06' 58.908" N 45° 56' 01.554"	17B	Cropland	Backslope
6	590	W 99° 06' 58.716" N 45° 55.602'	16B	Cropland	Backslope
7	591	W 99° 06.853' N 45° 55.646'	17C	Cropland	Backslope
8	592	W 99° 06.788' N 45° 55.782'	17B	Cropland	Backslope
9	593	W 99° 06.890' N 45° 55.879'	17B	Cropland	Backslope
10	594	W 99° 06.882' N 45° 56.041' W 99° 06.889'	17C	Cropland	Shoulder
<u>SD-ED-HT-35</u>					
15	595	N 45° 25' 22.758" W 99° 06' 55.830"	WTB	20 year CRP	Backslope
16	596	N 45° 25' 20.460" W 99° 06.49.506"	WTB	20 year CRP	Backslope
17	597	N 45° 25' 22.692" W 99° 07' 03.618"	WTB	20 year CRP	Undulating upland
18	598	N 45° 25' 22.524" W 99° 07' 16.794"	WTB	20 year CRP	Shoulder
19	599	N 45° 25' 29.916" W 99° 07' 20.700"	WTB	20 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
20	600	N 45° 25' 32.274" W 99° 07' 10.398"	WTB	20 year CRP	Shoulder
21	601	N 45° 25' 28.734" W 99° 07' 03.684"	WTB	20 year CRP	Undulating upland
22	602	N 45° 25' 28.356" W 99° 06' 49.182"	WTB	20 year CRP	Backslope
23	603	N 45° 25.226' W 99° 06.894'	WTB	20 year CRP	Backslope
24	604	N 45° 25.253' W 99° 06.923'	WTB	20 year CRP	Undulating upland
25	605	N 45° 25.206' W 99° 07.062'	WTB	20 year CRP	Shoulder
26	606	N 45° 25.222' W 99° 07.185'	WTB	20 year CRP	Backslope
27	607	N 45° 25.227' W 99° 07.261'	WTB	20 year CRP	Undulating upland
28	608	N 45° 25.177' W 99° 07.262'	WTB	20 year CRP	Undulating upland
29	609	N 45° 25.190' W 99° 07.183'	WTB	20 year CRP	Backslope
30	610	N 45° 25.182' W 99° 07.033'	WTB	20 year CRP	Backslope
<u>SD-ED-CL-2</u>					
1	611	N 45° 24.493' W 99° 06.818'	WTB	20 year CRP	Undulating upland
2	612	N 45° 29.492'	WTB	20 year CRP	Undulating upland

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	613	W 99° 06.937' N 45° 24.476'	WTB	20 year CRP	Undulating upland
4	614	W 99° 07.131' N 45° 24.492'	WTB	20 year CRP	Undulating upland
5	615	W 99° 07.213' N 45° 29.438'	WTB	20 year CRP	Undulating upland
6	616	W 99° 07.225' N 45° 29.390'	WTB	20 year CRP	Backslope
7	617	W 99° 07.294' N 45° 29.344'	WTB	20 year CRP	Backslope
8	618	W 99° 07.111' N 45° 24' 19.002'	WTB	20 year CRP	Backslope
9	619	W 99° 06' 56.712" N 45° 24' 39.012"	WTB	20 year CRP	Toeslope
10	620	W 99° 06' 56.682" N 45° 24' 40.344"	WTB	20 year CRP	Undulating upland
11	621	W 99° 07' 12.570" N 45° 24' 36.552"	WTB	20 year CRP	Undulating upland
12	622	W 99° 07' 04.866" N 45° 24' 33.096"	WTB	20 year CRP	Summit
13	623	W 99° 07' 04.254" N 45° 24' 33.456"	WTB	20 year CRP	Shoulder
14	624	W 99° 06' 52.956" N 45° 24' 33.348"	WTB	20 year CRP	Backslope
		W 99° 06' 47.766"			

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-ED-HT-2</u>					
1	625	N45 29' 34.566" W 99° 07' 20.640"	BC	Native Prairie	Footslope
2	626	N 45° 29' 40.122" W 99° 07' 18.930"	WTB	Native Prairie	Footslope
3	627	N 45° 29' 45.810" W 99° 07' 18.888"	WTB	Native Prairie	Undulating upland
4	628	N 45° 29' 49.878" W 99° 07' 22.182"	WTB	Native Prairie	Undulating upland
5	629	N 45° 29' 52.578" W 99° 07' 10.578"	WTB	Native Prairie	Shoulder
6	630	N 45° 29' 48.312" W 99° 07' 10.614"	WTB	Native Prairie	Undulating upland
7	631	N 45° 29' 41.694" W 99° 07' 08.994"	WTB	Native Prairie	Backslope
8	632	N 45° 29' 31.908" W 99° 07' 04.248"	WTB	Native Prairie	Backslope
9	633	N 45° 29.522' W 99° 06.960'	WTB	Native Grassland	Undulating upland
10	634	N 45° 29.623' W 99° 06.981'	WNB	Native Grassland	Backslope
11	635	N 45° 29.737' W 99° 06.969'	WTB	Native Grassland	Undulating upland
12	636	N 45° 29.852' W 99° 06.898'	WTB	Native Grassland	Undulating upland
13	637	N 45° 29.862'	WTB	Native Grassland	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	638	W 99° 06.836' N 45° 29.789'	WTB	Native Grassland	Undulating upland
15	639	W 99° 06.834' N 45° 29.707'	WNB	Native Grassland	Backslope
16	640	W 99° 06.852' N 45° 29.561' W 99° 06.861'	WNB	Native Grassland	Backslope
<u>SD-ED-AD-19</u>					
1	641	N 45° 32' 37.176" W 99° 11' 45.558"	WNC	Cropland	Backslope
2	642	N 45° 32' 35.508" W 99° 11' 51.480"	WNC	Cropland	Backslope
3	643	N 45° 32' 42.978" W 99° 11' 51.300"	WNC	Cropland	Backslope
4	644	N 45° 32' 41.754" W 99° 11' 47.616"	WNC	Cropland	Backslope
5	645	N 45° 32.778' W 99° 11.791'	WNC	Cropland	Backslope
6	646	N 45° 32.745' W 99° 11.952'	WNC	Cropland	Backslope
7	647	N 45° 32.910' W 99° 11.881'	WNC	Cropland	Backslope
8	648	N 45° 32.908' W 99° 11.805'	WNC	Cropland	Shoulder
<u>SD-MP-DW-10</u>					
1	649	N 45° 39.591' W 99° 08.999'	15B	Cropland	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	650	N 45° 39.599' W 99° 08.518'	15B	Cropland	Backslope
3	651	N 45° 39.627' W 99° 08.573'	15B	Cropland	Backslope
4	652	N 45° 39.630' W 99° 08.381'	15B	Cropland	Backslope
5	653	N 45° 39' 44.316" W 99° 08' 26.076"	15B	Cropland	Backslope
6	654	N 45° 39' 45.312" W 99° 08' 35.322"	15C	Cropland	Toeslope
7	655	N 45° 39' 49.254" W 99° 08' 30.258"	15C	Cropland	Backslope
8	656	N 45° 39' 48.798" W 99° 08' 23.244"	17B	Cropland	Backslope
<u>SD-MP-DW-9</u>					
1	657	N 45° 39.401' W 99° 09.669'	15B	Alfalfa	Backslope
2	658	N 45° 39.352' W 99° 09.824'	15B	Alfalfa	Backslope
3	659	N 45° 39.266' W 99° 09.690'	15B	Alfalfa	Backslope
4	660	N 45° 39.185' W 99° 09.613'	15B	Alfalfa	Footslope
5	661	N 45° 39' 23.604" W 99° 09' 52.332"	17B	Alfalfa	Shoulder
6	662	N 45° 39' 19.362"	17B	Alfalfa	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
7	663	W 99° 09' 52.518" N 45° 39' 14.208"	15B	Alfalfa	Toeslope
8	664	W 99° 09' 48.012" N 45° 39' 08.464"	15B	Alfalfa	Shoulder
9	665	W 99° 09' 44.676" N 45° 39' 18.204"	16B	Alfalfa	Backslope
10	666	W 99° 10' 04.986" N 45° 39' 15.162"	17C	Alfalfa	Footslope
11	667	W 99° 10' 06.042" N 45° 39' 11.236"	15B	Alfalfa	Backslope
12	668	W 99° 10' 05.418" N 45° 39' 06.246"	16B	Alfalfa	Backslope
13	669	W 99° 10' 07.188" N 45° 39' 04.092"	16B	Alfalfa	Backslope
14	670	W 99° 09' 57.084" N 45° 39' 07.536"	15B	Alfalfa	Footslope
15	671	W 99° 09' 52.368" N 45° 39' 15.510" W 99° 09' 58.674"	15B	Alfalfa	Footslope
<u>SD-MP-LL-35</u>					
1	672	N 45° 51' 57.090" W 99° 15' 32.802"	15B	Native Prairie (Grazed)	Footslope
2	673	N 45° 51' 51.912" W 99° 15' 32.478"	76	Native Prairie (Grazed)	Undulating upland
3	674	N 45° 51' 44.868"	14D	Native Prairie (Grazed)	Backslope

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	675	W 99° 15' 29.868"	15B	Native Prairie (Grazed)	Shoulder
		N 45° 51' 40.098"			
5	676	W 99° 15' 22.032"	5A	Native Prairie (Grazed)	Footslope
		N 45° 51' 40.398"			
6	677	W 99° 15' 18.864"	17C	Native Prairie (Grazed)	Backslope
		N 45° 51' 45.912"			
7	678	W 99° 15' 13.542"	15B	Native Prairie (Grazed)	Shoulder
		N 45° 51' 48.810"			
8	679	W 99° 15' 17.856"	14D	Native Prairie (Grazed)	Backslope
		N 45° 51' 52.962"			
9	680	W 99° 15' 16.764"	15B	Native Prairie (Grazed)	Footslope
		N 45° 51' 52.902"			
10	681	W 99° 15' 09.704"	15B	Native Prairie (Grazed)	Backslope
		N 45° 51' 52.470"			
11	682	W 99° 15' 02.100"	43C	Native Prairie (Grazed)	Shoulder
		N 45° 51' 42.276"			
12	683	W 99° 14' 52.128"	43C	Native Prairie (Grazed)	Backslope
		N 45° 51' 46.488"			
13	684	W 99° 14' 50.346"	14D	Native Pasture	Footslope
		N 45° 51' 52.896"			
14	685	W 99° 14' 52.422"	14D	Native Pasture	Backslope
		N 45° 51' 58.248"			
15	686	W 99° 14' 55.182"	14D	Native Pasture	Shoulder
		N 45° 52' 00.906"			
16	687	W 99° 14' 57.936"	14D	Native Pasture	Shoulder
		N 45° 51' 59.688"			
		W 99° 15' 12.678"			

Table 35. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-MP-HR-1</u>					
11	688	N 45° 55' 42.204" W 99° 06' 03.204"	15B	New Switch Grass	Toeslope
12	689	N 45° 55' 42.150" W 99° 05' 57.666"	17C	New Switch Grass	Undulating upland
13	690	N 45° 55.621' W 99° 05.945'	17B	New Switch Grass	Shoulder
14	691	N 45° 55.622' W 99° 06.034'	15B	New Switch Grass	Undulating upland

[†]GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

Table 36. Central South Dakota sample identification, coordinates, soil map unit sampled, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
SD-HD-HL-9					
1	750	N 44° 20' 32.724" W 98° 53' 05.190"	CAA	Go back grassland [†]	Footslope
2	751	N 44° 20' 33.258" W 98° 53' 18.180"	WPB	Go back grassland [†]	Shoulder
3	752	N 44° 20' 34.302" W 98° 53' 33.252"	WMB	Go back grassland [†]	Backslope
4	753	N 44° 20' 38.484" W 98° 53' 31.482"	WMB	Go back grassland [†]	Shoulder
5	754	N 44° 20' 38.988" W 98° 53' 21.282"	WMB	Go back grassland [†]	Backslope
6	755	N 44° 20' 37.440" W 98° 53' 13.938"	WMB	Go back grassland [†]	Backslope
7	756	N 44° 20' 35.472" W 98° 53' 06.618"	WMB	Go back grassland [†]	Backslope
8	757	N 44° 20' 39.120" W 98° 53' 05.526"	WPB	Go back grassland [†]	Backslope
9	758	N 44° 20.772' W 98° 53.103'	WPB	Go back grassland [†]	Footslope
10	759	N 44° 20.859' W 98° 53.111'	WPB	Go back grassland [†]	Undulating upland
11	760	N 44° 20.805' W 98° 53.220'	WPB	Go back grassland [†]	Backslope
12	761	N 44° 20.878' W 98° 53.338'	WMB	Go back grassland [†]	Backslope
13	762	N 44° 20.869'	WMB	Go back grassland [†]	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	763	W 98° 53.410' N 44° 20.831'	WPB	Go back grassland [†]	Backslope
15	764	W 96 53.589' N 44° 20.794'	WMB	Go back grassland [†]	Backslope
16	765	W 98° 53.528' N 44° 20.738' W 98° 53.250'	WMB	Go back grassland [†]	Undulating upland
<u>SD-HD-HL-15</u>					
1	766	N 44° 19' 50.202" W 98° 52' 58.794"	WPB	Native prairie	Shoulder
2	767	N 44° 19' 54.078" W 98° 52' 58.152"	WPB	Native prairie	Shoulder
3	768	N 44° 19' 58.140" W 98° 52' 57.858"	WPB	Native prairie	Shoulder
4	769	N 44° 19' 54.936" W 98° 52' 51.180"	WPB	Native prairie	Footslope
5	770	N 44° 19' 51.336" W 98° 52' 51.492"	WPB	Native prairie	Undulating upland
6	771	N 44° 19' 54.486" W 98° 52' 42.924"	WPB	Native prairie	Footslope
7	772	N 44° 19' 54.138" W 98° 52' 35.220"	WPB	Native prairie	Shoulder
8	773	N 44° 19.853' W 98° 52.594'	WPB	Native prairie	Backslope
9	774	N 44° 19.727' W 98° 52.991'	WPB	Go back grassland [†]	Backslope
10	775	N 44° 19.674'	WPB	Go back grassland [†]	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
11	776	W 98° 52.982' N 44° 19.707'	WPB	Go back grassland [†]	Backslope
12	777	W 98° 52.863' N 44° 19.696'	WPB	Go back grassland [†]	Backslope
13	778	W 98° 52.724' N 44° 19.672'	WPB	Go back grassland [†]	Undulating upland
14	779	W 98° 52.528' N 44° 19.753' W 98° 52.666'	WPB	Go back grassland [†]	Undulating upland
<u>SD-HD-HL-16</u>					
1	780	N 44° 20' 00.606" W 98° 54' 11.994"	WPB	Native prairie	Undulating upland
2	781	N 44° 19' 59.586" W 98° 54' 00.960"	WPB	Native prairie	Undulating upland
3	782	N 44° 20' 00.114" W 98° 53' 47.478"	WPB	Native prairie	Summit
4	783	N 44° 19' 52.368" W 98° 53' 48.294"	WPB	Native prairie	Shoulder
5	784	N 44° 19' 53.736" W 98° 53' 54.870"	DPB	Native prairie	Backslope
6	785	N 44° 19' 51.540" W 98° 54' 01.212"	DPB	Native prairie	Shoulder
7	786	N 44° 19' 51.408" W 98° 54' 09.336"	WPB	Native prairie	Shoulder
8	787	N 44° 19.826' W 98° 54.207'	WPB	Native grassland	Shoulder
9	788	N 44° 19.719'	WPB	Native grassland	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position	
10	789	W 98° 54.183' N 44° 19.661'	WPB	Native grassland	Undulating upland	
11	790	W 98° 53.925' N 44° 19.760'	WPB	Native grassland	Undulating upland	
12	791	W 98° 53.774' N 44° 19.787'	WPB	Native grassland	Undulating upland	
13	792	W 98° 53.830' N 44° 19.714'	WPB	Native grassland	Backslope	
14	793	W 98° 53.960' N 44° 19.784'	WPB	Native grassland	Backslope	
		W 98° 54.093'				
		<u>SD-HD-HL-17</u>				
133	1	794	N 44° 19' 41.424" W 98° 54' 19.386"	WPB	Native prairie	Footslope
	2	795	N 44° 19' 40.698" W 98° 54' 26.388"	WPB	Native prairie	Footslope
	3	796	N 44° 19' 40.308" W 98° 54' 38.268"	WNB	Native prairie	Shoulder
	4	797	N 44° 19' 43.458" W 98° 54' 46.008"	WNB	Native prairie	Backslope
	5	798	N 44° 19' 45.792" W 98° 54' 41.370"	WPB	Native prairie	Undulating upland
	6	799	N 44° 19' 45.846" W 98° 54' 28.758"	WPB	Native prairie	Summit
	7	800	N 44° 19' 46.230" W 98° 59' 21.162"	WPB	Native prairie	Backslope
	8	801	N 44° 19.914'	WPB	Native prairie	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
9	802	W 98° 54.309' N 44° 19.972'	WPB	Native prairie	Backslope
10	803	W 98° 54.347' N 44° 20.002'	WPB	Native prairie	Backslope
11	804	W 98° 54.459' N 44° 20.004'	WPB	Native prairie	Backslope
12	805	W 98° 54.661' N 44° 19.907'	WPB	Native prairie	Backslope
13	806	W 98° 54.829' N 44° 19.887'	WNB	Native prairie	Backslope
14	807	W 98° 54.624' N 44° 19.890' W 98° 54.369'	WNB	Native prairie	Undulating upland
<u>SD-HD-HL-10</u>					
1	808	N 44° 21' 17.868" W 98° 51' 52.074"	WNB	Go back grassland [†]	Undulating upland
2	809	N 44° 21' 14.742" W 98° 52' 06.474"	WPB	Go back grassland [†]	Backslope
3	810	N 44° 21' 16.866" W 98° 52' 14.070"	WPB	Go back grassland [†]	Backslope
4	811	N 44° 21' 13.360" W 98° 52' 21.294"	WPB	Go back grassland [†]	Backslope
5	812	N 44° 21' 10.158" W 98° 52' 19.698"	WPB	Go back grassland [†]	Shoulder
6	813	N 44° 21' 11.754" W 98° 52' 04.272"	WPB	Go back grassland [†]	Undulating upland
7	814	N 44° 21' 13.362"	WPB	Go back grassland [†]	Footslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	815	W 98° 51' 53.868" N 44° 21.147"	WPB	Go back grassland [†]	Backslope
9	816	W 98° 51.878" N 44° 21.140'	WPB	Go back grassland [†]	Undulating upland
10	817	W 98° 52.001' N 44° 21.180'	WPB	Go back grassland [†]	Backslope
11	818	W 98° 52.036' N 44° 21.163'	WPB	Go back grassland [†]	Backslope
12	819	W 98° 52.232' N 44° 21.078'	WPB	Go back grassland [†]	Backslope
13	820	W 98° 52.156' N 44° 20.970'	WPB	Go back grassland [†]	Undulating upland
14	821	W 98° 52.179' N 44° 20.987'	WPB	Go back grassland [†]	Backslope
15	822	W 98° 52.018' N 44° 20' 51.600" W 98° 51' 53.490"	WPB	Bluestem [‡]	Undulating upland
16	823	N 44° 20' 51.648" W 98° 51' 59.178"	WPB	Bluestem [‡]	Toeslope
17	824	N 44° 20' 48.708" W 98° 52' 10.614"	WNB	Bluestem [‡]	Undulating upland
18	825	N 44° 20' 48.804" W 98° 52' 18.042"	WNB	Bluestem [‡]	Backslope
19	826	N 44° 20' 45.492" W 98° 52' 19.680"	WNB	Bluestem [‡]	Shoulder
20	827	N 44° 20.687' W 98° 51.876'	WPB	Bluestem [‡]	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
21	828	N 44° 20.674' W 98° 51.998'	WPB	Bluestem [‡]	Backslope
22	829	N 44° 20.799' W 98° 52.023'	WNB	Bluestem [‡]	Backslope
23	830	N 44° 20.674' W 98° 52.129'	WPB	Bluestem [‡]	Backslope
24	831	N 44° 20.690' W 98° 52.261'	WPB	Bluestem [‡]	Backslope
<u>SD-HD-HL-16</u>					
15	832	N 44° 20' 23.87" W 98° 54' 11.44"	WPB	Switchgrass [‡]	Footslope
16	833	N 44° 20' 18.91" W 98° 54' 10.79"	WPB	Switchgrass [‡]	Backslope
17	834	N 44° 20' 12.52" W 98° 54' 10.70"	WPB	Switchgrass [‡]	Undulating upland
18	835	N 44° 20.119' W 98° 54.213'	WPB	Switchgrass [‡]	Undulating upland
19	836	N 44° 20.092' W 98° 54.098'	WPB	Switchgrass [‡]	Backslope
20	837	N 44° 20.174' W 98° 54.057'	WPB	Switchgrass [‡]	Backslope
<u>SD-HD-HL-18</u>					
1	838	N 44° 20' 34.734' W 98° 56' 20.340'	WzC	Indian Grass [‡]	Backslope
2	839	N 44° 20' 20.316' W 98° 56' 00.990"	WzC	Indian Grass [‡]	Shoulder
3	840	N 44° 20' 13.512"	WnB	Indian Grass [‡]	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
		W 98° 56' 02.040"			
<u>SD-HD-OH-27</u>					
1	841	N 44° 17' 55.734" W 98° 59' 51.506"	WNB	8 year CRP	Backslope
2	842	N 44° 18' 01.146" W 98° 59' 33.252"	WNB	8 year CRP	Backslope
3	843	N 44° 18' 05.058" W 98° 59' 31.230"	WNB	8 year CRP	Shoulder
4	844	N 44° 18' 08.184" W 98° 59' 27.132"	WNB	8 year CRP	Backslope
5	845	N 44° 18' 02.370" W 98° 59' 25.056"	WNB	8 year CRP	Undulating upland
6	846	N 44° 17' 57.756" W 98° 59' 21.426"	WNB	8 year CRP	Backslope
7	847	N 44° 20' 20.322" W 98° 56' 00.906"	WNB	8 year CRP	Backslope
8	848	N 44° 17' 56.346" W 98° 59' 15.216"	WNB	8 year CRP	Backslope
9	849	N 44° 18.04.254" W 98° 59' 14.466"	WNB	8 year CRP	Backslope
10	850	N 44° 18' 04.128" W 98° 59' 14.448"	WNB	8 year CRP	Backslope
11	851	N 44° 18' 02.346" W 98° 59' 05.736"	WNB	8 year CRP	Backslope
12	852	N 44° 16' 02.136" W 98° 59' 05.706"	WNB	8 year CRP	Undulating upland

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-HD-OH-21</u>					
1	853	N 44° 19' 14.328" W 99° 01' 17.375"	WNB	8 year CRP	Undulating upland
2	854	N 44° 19' 14.490" W 99° 01' 10.938"	WNB	8 year CRP	Shoulder
3	855	N 44° 19' 14.094" W 99° 01' 01.758"	WNB	8 year CRP	Footslope
4	856	N 44° 19' 13.734" W 99° 00' 51.774"	WNB	8 year CRP	Undulating upland
5	857	N 44° 19' 06.558" W 99° 00' 50.904"	WNB	8 year CRP	Backslope
6	858	N 44° 19' 04.326" W 98° 00' 55.410"	WNB	8 year CRP	Shoulder
7	859	N 44° 19' 04.050" W 99° 01' 07.398"	WNB	8 year CRP	Shoulder
8	860	N 44° 19' 06.654" W 99° 01' 21.090"	WNB	8 year CRP	Footslope
9	861	N 44° 18.948' W 99° 01.388'	WNB	8 year CRP	Backslope
10	862	N 44° 18.945' W 99° 01.267'	WNB	8 year CRP	Backslope
11	863	N 44° 18.944' W 99° 01.078'	WNB	8 year CRP	Undulating upland
12	864	N 44° 18.898' W 99° 00.922'	WNB	8 year CRP	Undulating upland
13	865	N 44° 18.797' W 99° 00.899'	WNB	8 year CRP	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	866	N 44° 18.807' W 99° 01.012'	WNB	8 year CRP	Backslope
15	867	N 44° 18.790' W 99° 01.221'	WNB	8 year CRP	Backslope
16	868	N 44° 18.786' W 99° 01.393'	WNB	8 year CRP	Backslope
<u>SD-HD-OH-31</u>					
1	869	N 44° 17' 02.718" W 99° 03' 10.272"	6AA	8 year CRP	Undulating upland
2	870	N 44° 17' 07.368" W 99° 03' 10.164"	6AA	8 year CRP	Toeslope
3	871	N 44° 17' 14.276' W 99° 03' 09.774'	LDA	8 year CRP	Backslope
4	872	N 44° 17' 18.462" W 99° 03' 08.340"	LDA	8 year CRP	Shoulder
5	873	N 44° 17' 22.032" W 99° 03' 02.580"	LDA	8 year CRP	Footslope
6	874	N 44° 17' 11.495" W 99° 03' 01.020"	LDA	8 year CRP	Undulating upland
7	875	N 44° 17' 03.306" W 99° 03' 02.994"	PAB	8 year CRP	Undulating upland
8	876	N 44° 17.062' W 99° 02.883'	RAB	8 year CRP	Backslope
9	877	N 44° 17.104' W 99° 02.862'	RAB	8 8 year CRP Old-CRP	Backslope
10	878	N 44° 17.174' W 99° 02.837'	LDA	8 year CRP	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
11	879	N 44° 17.257' W 99° 02.926'	LDA	8 year CRP	Undulating upland
12	880	N 44° 17.331' W 99° 02.787'	LDA	8 year CRP	Undulating upland
13	881	N 44° 17.243' W 99° 02.707'	LDA	8 year CRP	Undulating upland
14	882	N 44° 17.156' W 99° 02.736'	ESA	8 year CRP	Undulating upland
<u>SD-HD-MD-18</u>					
1	883	N 44° 14' 28.464" W 99° 10' 00.556"	RCB	Cultivated	Undulating upland
2	884	N 44° 14' 28.386" W 99° 10' 06.582"	RCB	Cultivated	Footslope
3	885	N 44° 14' 28.260" W 99° 10' 16.992"	RMA	Cultivated	Backslope
4	886	N 44° 14' 28.128" W 99° 10' 30.276"	RCB	Cultivated	Shoulder
5	887	N 44° 14' 32.370" W 99° 10' 30.288"	REB	Cultivated	Backslope
6	888	N 44° 14' 32.472" W 99° 10' 21.466"	RMA	Cultivated	Undulating
7	889	N 44° 14' 32.478" W 99° 10' 06.396"	RCB	Cultivated	Shoulder
8	890	N 44° 14' 32.424" W 99° 09' 59.802"	RCB	Cultivated	Undulating
9	891	N 44° 14.761' W 99° 10.008'	RCB	Cultivated	Shoulder

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
10	892	N 44° 14.763' W 99° 10.113'	RCB	Cultivated	Backslope
11	893	N 44° 14.762' W 99° 10.262'	RMA	Cultivated	Undulating upland
12	894	N 44° 14.769' W 99° 10.349'	RMA	Cultivated	Undulating upland
13	895	N 44° 14.713' W 99° 10.365'	RMA	Cultivated	Undulating upland
14	896	N 44° 14.708' W 99° 10.272'	RMA	Cultivated	Backslope
15	897	N 44° 14.711' W 99° 10.151'	RCB	Cultivated	Backslope
141 16	898	N 44° 14.708' W 99° 10.092'	RCB	Cultivated	Backslope
<u>SD-HD-MD-8</u>					
1	899	N 44° 15' 41.594" W 99° 09' 46.908"	RMB	Foxtail Millet	Toeslope
2	900	N 44° 15' 51.174" W 99° 09' 46.884"	RMB	Foxtail Millet	Footslope
3	901	N 44° 15' 57.072" W 99° 09' 46.8956"	RCB	Foxtail Millet	Shoulder
4	902	N 44° 16' 02.922" W 99° 89' 47.112"	RMB	Foxtail Millet	Toeslope
5	903	N 44° 16' 02.610" W 99° 09' 51.498"	REB	Foxtail Millet	Shoulder
6	904	N 44° 15' 55.194" W 99° 09' 51.432"	REB	Foxtail Millet	Toeslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
7	905	N 44° 15' 49.248" W 99° 09' 51.408"	RCB	Foxtail Millet	Shoulder
8	906	N 44° 15' 43.644" W 99° 09' 51.264"	RMB	Foxtail Millet	Shoulder
9	907	N 44° 15.634' W 99° 09.842'	RMB	Foxtail Millet	Backslope
10	908	N 44° 15.518' W 99° 09.843'	RMB	Foxtail Millet	Backslope
11	909	N 44° 15.410' W 99° 09.847'	RMB	Foxtail Millet	Backslope
12	910	N 44° 15.337' W 99° 09.891'	RMB	Foxtail Millet	Backslope
13	911	N 44° 15.324' W 99° 09.730'	RMB	Foxtail Millet	Backslope
14	912	N 44° 15.471' W 99° 09.733'	RMB	Foxtail Millet	Backslope
15	913	N 44° 15.538' W 99° 09.725'	RMB	Foxtail Millet	Backslope
16	914	N 44° 15.628' W 99° 09.714'	RMB	Foxtail Millet	Shoulder
<u>SD-HD-GL-10</u>					
1	915	N 44° 37' 10.656" W 99° 07' 17.184"	WPB	10 year CRP	Footslope
2	916	N 44° 37' 00.948" W 99° 07' 17.514"	WPB	10 year CRP	Shoulder
3	917	N 44° 36.52.332" W 99° 07' 15.870"	WPB	10 year CRP	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	918	N 44° 36' 47.688" W 99° 07' 19.146"	WPB	10 year CRP	Shoulder
5	919	N 44° 36' 43.618" W 99° 07' 23.274"	WPB	10 year CRP	Footslope
6	920	N 44° 36' 51.738" W 99° 07' 25.122"	WPB	10 year CRP	Shoulder
7	921	N 44° 36' 57.726" W 99° 07' 23.276"	WPB	10 year CRP	Shoulder
8	922	N 44° 37' 04.764" W 99° 07' 24.900"	WPB	10 year CRP	Undulating
9	923	N 44° 37.057' W 99° 07.610'	WNB	10 year CRP	Undulating upland
10	924	N 44° 36.955' W 99° 07.569'	WNB	10 year CRP	Undulating upland
11	925	N 44° 36.849' W 99° 07.557'	WNB	10 year CRP	Undulating upland
12	926	N 44° 36.768' W 99° 07.639'	WNB	10 year CRP	Backslope
13	927	N 44° 36.847' W 99° 07.783'	WNB	10 year CRP	Backslope
14	928	N 44° 36.956' W 99° 07.743'	WNB	10 year CRP	Backslope
15	929	N 44° 37.031' W 99° 07.751'	WNB	10 year CRP	Undulating upland
16	930	N 44° 37.091' W 99° 07.772'	WNB	10 year CRP	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>SD-HD-GL-23</u>					
1	931	N 44° 34' 52.182" W 99° 05' 46.152"	WPB	17 year CRP	Backslope
2	932	N 44° 34' 58.470" W 99° 05' 46.674"	WNB	17 year CRP	Backslope
3	933	N 44° 34' 59.780" W 99° 05' 55.344"	WPB	17 year CRP	Shoulder
4	934	N 44° 34' 50.028" W 99° 05' 696"	WPB	17 year CRP	Undulating
5	935	N 44° 34' 44.934" W 99° 05' 56.718"	WPB	17 year CRP	Backslope
6	936	N 44° 34' 38.130" W 99° 05' 55.950"	WPB	17 year CRP	Undulating
7	937	N 44° 34' 36.186" W 99° 05' 47.112"	WPB	17 year CRP	Undulating
8	938	N 44° 34' 44.640" W 99° 05' 45.486"	WPB	17 year CRP	Undulating
9	939	N 44° 34.842' W 99° 05.687'	WPB	17 year CRP	Undulating upland
10	940	N 44° 34.981' W 99° 05.692'	WNB	17 year CRP	Undulating upland
11	941	N 44° 34.986' W 99° 05.609'	WNB	17 year CRP	Undulating upland
12	942	N 44° 34.862' W 99° 05.495'	WNB	17 year CRP	Undulating upland
13	943	N 44° 34.768' W 99° 05.669'	WPB	17 year CRP	Undulating upland

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	944	N 44° 34.661' W 99° 05.663'	WPB	17 year CRP	Undulating upland
15	945	N 44° 34.658' W 99° 05.984'	WPA	17 year CRP	Backslope
16	946	N 44° 34.756' W 99° 05.533'	WPB	17 year CRP	Backslope
<u>SD-HD-GL-14</u>					
1	947	N 44° 35' 33.354' W 99° 05' 57.138'	WNB	10 year CRP	Undulating
2	948	N 44° 35' 34.086' W 99° 05' 50.028'	WNB	10 year CRP	Undulating
3	949	N 44° 35' 30.660" W 99° 05' 46.944"	WNB	10 year CRP	Undulating
4	950	N 44° 35.495' W 99° 05.614'	WNB	10 year CRP	Backslope
5	951	N 44° 35.571' W 99° 05.643'	WNB	10 year CRP	Undulating upland
6	952	N 44° 35.546' W 99° 05.480'	WNB	10 year CRP	Backslope
<u>SD-HD-GN-36</u>					
1	953	N 44° 17.032' W 99° 03.941'	RRC	15 year CRP	Footslope
2	954	N 44° 17.070' W 99° 04.065'	RRC	15 year CRP	Backslope
3	955	N 44° 17.084' W 99° 04.119'	RRC	15 year CRP	Backslope
4	956	N 44° 17' 09.774"	ZRD	15 year CRP	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	957	W 99° 03' 54.450" N 44° 17' 15.330"	RAB	15 year CRP	Footslope
6	958	W 99° 04' 00.192" N 44° 17' 10.662" W 99° 04' 05.574"	RAB	15 year CRP	Shoulder
<u>SD-JD-MR-11</u>					
1	959	N 44° 10' 21.684" W 98° 50' 45.468"	ETD	Native prairie	Backslope
2	960	N 44° 10' 08.862" W 98° 50' 45.498"	BMD	Native prairie	Footslope
3	961	N 44° 09' 59.118" W 98° 50' 42.834"	DAB	Native prairie	Footslope
4	962	N 44° 10' 01.782" W 98° 50' 49.854"	BMD	Native prairie	Shoulder
5	963	N 44° 10' 07.872" W 98° 50' 51.786"	BMD	Native prairie	Shoulder
6	964	N 44° 10' 15.546" W 98° 50' 51.012"	HWL	Native prairie	Undulating
7	965	N 44° 10' 26.580" W 99 50' 51.534"	HWL	Native prairie	Footslope
8	966	N 44° 10.544' W 98° 50.841'	ETD	Native Grassland	Backslope
9	967	N 44° 10.420' W 98° 50.690'	ETD	Native Grassland	Backslope
10	968	N 44° 10.364' W 98° 50.652'	ETD	Native Grassland	Backslope
11	969	N 44° 10.319'	HWB	Native Grassland	Backslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
12	970	W 98° 50.504' N 44° 10.733'	BMD	Native Grassland	Backslope
13	971	W 98° 50.498' N 44° 10.163'	HWC	Native Grassland	Shoulder
14	972	W 98° 50.596' N 44° 10.078'	BMD	Native Grassland	Backslope
15	973	W 98° 50.481' N 44° 10' 27.900"	HAS	14 year CRP	Undulating
16	974	W 98° 50' 23.928" N 44° 10' 32.478"	HWC	14 year CRP	Shoulder
17	975	W 98° 50' 18.006" N 44° 10' 33.588"	HWC	14 year CRP	Shoulder
18	976	W 98° 50' 25.752" N 44° 10.731'	HWC	14 year CRP	Backslope
19	977	W 98° 50.970' N 44° 10.746'	HWC	14 year CRP	Backslope
20	978	W 98° 50.359' N 44° 10.691'	HWC	14 year CRP	Backslope
		W 98° 50.338'			
<u>SD-JD-CR-10</u>					
1	979	N 44° 04' 50.574" W 98° 51' 36.612"	HCB	20 year switchgrass	Shoulder
2	980	N 44° 04' 52.524" W 98° 51' 40.338"	RRA	20 year switchgrass	Footslope
3	981	N 44° 04' 52.212" W 98° 51' 46.608"	HEB	20 year switchgrass	Footslope
4	982	N 44° 04' 52.548"	RRA	20 year switchgrass	Footslope

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	983	W 98° 51' 55.614" N 44° 04.930'	RNA	20 year switchgrass	Undulating upland
6	984	W 98° 51.730' N 44° 04.930'	RNA	20 year switchgrass	Undulating upland
7	985	W 98° 51.922' N 44° 04. 988'	RNA	20 year switchgrass	Undulating upland
8	986	W 98° 51.960' N 44° 05.037'	RNA	20 year switchgrass	Undulating upland
		W 98° 51.931'			
<u>SD-BD-HL-30</u>					
1	987	N 44° 23' 30.990" W 98° 26' 24.600"	HaB	Cultivated	Shoulder
2	988	N 44° 23' 31.162" W 98° 26' 32.838"	HaB	Cultivated	Shoulder
3	989	N 44° 23' 31.212" W 98° 26' 42.984"	HaB	Cultivated	Undulating
4	990	N 44° 23' 27.738" W 98° 26' 47.580"	HaB	Cultivated	Undulating
5	991	N 44° 23' 27.768" W 98° 26' 42.312"	HaB	Cultivated	Undulating
6	992	N 44° 25' 26.756" W 98° 26' 34.080"	HaB	Cultivated	Backslope
7	993	N 44° 23' 27.726" W 98° 26' 25.884"	HaB	Cultivated	Shoulder
8	994	N 44° 23.304' W 98° 26.343'	HaB	Cultivated	Undulating upland
9	995	N 44° 23.297'	HaB	Cultivated	Undulating upland

Table 36. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
10	996	W 98° 26.416' N 44° 23.289'	HaB	Cultivated	Undulating upland
11	997	W 98° 26.541' N 44° 23.310'	HaB	Cultivated	Undulating upland
12	998	W 98° 26.642' N 44° 23.309'	HaB	Cultivated	Undulating upland
13	999	W 98° 26.732' N 44° 23.264'	HaB	Cultivated	Backslope
14	1000	W 98° 26.774' N 44° 23.265'	HaB	Cultivated	Undulating upland
15	1001	W 98° 26.657' N 44° 23.265'	HaB	Cultivated	Backslope
		W 98° 26.542'			
		<u>SD-BD-HL-29</u>			
1	1002	N 44° 23' 11.220" W 98° 25' 39.642"	HOB	15 year switchgrass	Shoulder
2	1003	N 44° 23' 15.504" W 98° 25' 33.852"	HOB	15 year switchgrass	Undulating
3	1004	N 44° 23' 16.272" W 98° 25' 08.598"	DTA	15 year switchgrass	Shoulder
4	1005	N 44° 23.204' W 98° 26.109'	HOB	15 year CRP	Backslope
5	1006	N 44° 23.184' W 98° 25.934'	HOA	15 year CRP	Undulating upland
6	1007	N 44° 23.210' W 98° 25.131'	HOB	15 year CRP	Backslope

149

† Grasslands that were cultivated approximately 70 years previous to the study and then returned to grasslands.

[‡] Grassland age is unknown.

[§] GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

Table 37. Western Minnesota sample identification, coordinates, soil map unit sampled, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>MN-CL-UL-31</u>					
1	250	N 47° 04.307' W 96° 19.282'	33B	25 year CRP	Undulating upland
2	251	N 47° 04.320' W 96° 19.180'	33B	25 year CRP	Undulating upland
3	252	N 47° 04.341' W 96° 19.91'	1875	25 year CRP	Undulating upland
4	253	N 47° 04.405' W 96° 19.169'	33B	25 year CRP	Undulating upland
5	254	N 47° 04.377' W 96° 19.258'	33B	25 year CRP	Undulating upland
151 6	255	N 47° 04.634' W 96° 19.058'	33B	25 year CRP	Undulating upland
7	256	N 47° 04.351' W 96° 19.128'	33B	22 year CRP	Undulating upland
8	257	N 47° 04.446' W 96° 19.852'	33B	22 year CRP	Undulating upland
9	258	N 47° 04.427' W 96° 19.761'	33B	22 year CRP	Undulating upland
10	259	N 47° 04.34' W 96° 19.703'	184B	22 year CRP	Undulating upland
11	260	N 47° 04.568' W 96° 19.107'	127B	22 year CRP	Undulating upland
12	261	N 47° 04.614' W 96° 19.165'	127B	22 year CRP	Undulating upland
13	262	N 47° 03' 44"	127B	22 year CRP	Undulating upland

Table 37. (continued)

Site	Sample Number		Soil Map Unit	Management	Landscape Position
14	263	W 96° 19' 10" N 47° 03' 55"	127B	16 year CRP	Backslope
15	264	W 96° 19' 16" N 47° 03' 55.164"	33B	16 year CRP	Undulating upland
16	265	W 96° 19' 03.216" N 47° 03' 58.794"	33B	16 year CRP	Undulating upland
17	266	W 96° 18' 48.012" N 47° 3' 59.780"	58B	16 year CRP	Undulating upland
18	267	W 96° 18' 40.644" N 47° 04' 02.652"	58B	16 year CRP	Undulating upland
152 19	268	W 96° 18' 37.176" N 47° 04' 02.304"	33B	16 year CRP	Undulating upland
20	269	W 96° 18' 43.662" N 47° 04' 05.310"	184B	16 year CRP	Undulating upland
21	270	W 96° 18' 49.896" N 47° 04' 03.192"	293B	16 year CRP	Undulating upland
22	271	W 96° 18' 58.614" N 47° 03' 59.574"	293B	16 year CRP	Undulating upland
		W 96° 19' 07.464"			
<u>MN-CL-UL-30</u>					
1	272	N 47° 04' 44.652" W 96° 18' 44.592"	184B	Native grassland	Backslope
2	273	N 47° 04' 48.696" W 96° 18' 43.548"	61	Native grassland	Undulating upland
3	274	N 47° 04' 51.204" W 96° 18' 55.026"	45B	Native grassland	Backslope

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	275	N 47° 04' 49.626" W 96° 18' 53.904"	61	Native grassland	Undulating upland
5	276	N 47° 04' 55.026" W 96° 18' 15.216"	64	Native grassland	Undulating upland
6	277	N 47° 04' 49.704" W 96° 18' 10.362"	61	Native grassland	Undulating upland
7	278	N 47° 04' 01.782" W 96° 18' 02.232"	61	Native grassland	Undulating upland
8	279	N 47° 04' 58.824" W 96° 18' 56.034"	64	Native grassland	Undulating upland
<u>MN-CL-HG-2</u>					
153	1	N 46° 58' 36.966" W 96° 12' 29.406"	58B	Native grassland	Shoulder
	2	N 46° 58' 36.372" W 96° 12' 54.444"	903B	Native grassland	Shoulder
	3	N 46° 58' 34.380" W 96° 12' 53.454"	33B	Native grassland	Backslope
	4	N 46° 58' 31.818" W 96° 12' 47.256"	942C2	Native grassland	Backslope
	5	N 46° 58' 32.502" W 96° 12' 38.856"	236	Native grassland	Footslope
	6	N 46° 58' 33.756" W 96° 12' 35.406"	942C2	Native grassland	Backslope
<u>MN-CL-HG-18</u>					
	1	N 46° 56' 28.842" W 96° 16' 51.87 "	184B	18 year CRP	Undulating Upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	287	N 46° 56' 30.978" W 96° 16' 58.398"	184B	18 year CRP	Backslope
3	288	N 46° 56' 33.288" W 96° 16' 13.278"	184B	18 year CRP	Shoulder
4	289	N 46° 56' 38.904" W 96° 16' 55.764"	184B	18 year CRP	Backslope
5	290	N 46° 56' 31.014" W 96° 17' 38.394"	184B	18 year CRP	Shoulder
6	291	N 46° 56' 32.724" W 96° 17' 53.904"	184B	18 year CRP	Shoulder
7	292	N 46° 56' 29.478" W 96° 18' 1.008"	184B	18 year CRP	Backslope
8	293	N 46 56.438' W 96 17.567'	184B	18 year CRP	Undulating Upland
9	294	N 46° 56.407' W 96° 17.359'	1875	18 year CRP	Backslope
10	295	N 46° 56' 32.436" W 96° 17' 27.546"	33B2	18 year CRP	Backslope
11	296	N 46° 56' 26.160" W 96° 17' 15.390"	1875	18 year CRP	Shoulder
12	297	N 46° 56' 28.446" W 96° 17' 19.590"	33B2	18 year CRP	Backslope
<u>MN-CL-EG-12</u>					
1	298	N 46° 52' 20.358" W 96° 10' 53.496"	979D2	20 year CRP	Backslope
2	299	N 46° 52' 23.616"	979C2	20 year CRP	Backslope

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	300	W 96° 10' 59.106" N 46° 52' 20.94 "	979D2	20 year CRP	Footslope
4	301	W 96° 11' 2.592 " N 46° 52' 17.154"	979C2	20 year CRP	Backslope
5	302	W 96° 10' 59.64 " N 46° 52' 13.932"	979B2	20 year CRP	Shoulder
6	303	W 96° 10' 57.144" N 46° 52' 13.83 "	979C2	20 year CRP	Backslope
7	304	W 96° 11' 7.818 " N 46° 52' 12.186"	979C2	20 year CRP	Backslope
8	305	W 96° 11' 4.65 " N 46° 52' 9.318 "	979C2	20 year CRP	Backslope
9	306	W 96° 10' 52.254" N 46° 52' 5.43 "	979C2	20 year CRP	Backslope
10	307	W 96° 10' 54.974" N 46° 52' 5.766 "	979C2	20 year CRP	Backslope
11	308	W 96° 11' 1.302 " N 46° 52' 2.91 "	979C2	20 year CRP	Backslope
12	309	W 96° 11' 6.96 " N 46° 52' 2.772 "	979C2	20 year CRP	Shoulder
		W 96° 10' 58.602"			
<u>MN-CL-EG-25</u>					
1	310	W 96° 10' 39.090" N 46° 49' 58.434"	180B	25 year CRP	Shoulder
2	311	W 96° 10' 36.354" N 46° 49' 53.370"	38C2	25 year CRP	Shoulder

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	312	N 46° 49' 50.116" W 96° 10' 42.660"	979D2	25 year CRP	Footslope
4	313	N 46° 49' 50.280" W 96° 10' 48.330"	38C2	25 year CRP	Shoulder
5	314	N 46° 49.950' W 96° 10.831'	979D2	25 year CRP	Shoulder
6	315	N 46° 49.850' W 96° 10.986'	1055	25 year CRP	Footslope
7	316	N 46° 49.911' W 96° 11.004'	38C2	25 year CRP	Undulating upland
8	317	N 46° 49.907' W 96° 11.158'	979D2	25 year CRP	Backslope
<u>MN-CL-EG-30</u>					
1	318	N 46° 49' 35.532" W 96° 17' 57.474"	33B2	3 year CRP	Backslope
2	319	N 46° 49' 43.680" W 96° 18' 06.828"	33B2	3 year CRP	Footslope
3	320	N 46° 49' 44.850" W 96° 17' 57.012"	903B	3 year CRP	Backslope
4	321	N 46° 49' 41.436" W 96° 17' 56.256"	942C2	3 year CRP	Shoulder
5	322	N 46° 49' 39.450" W 96° 17' 56.520"	942C2	3 year CRP	Shoulder
6	323	N 46° 49.427' W 96° 17.929'	942C2	3 year CRP	Backslope
7	324	N 46° 49.373'	33B2	3 year CRP	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	325	W 96° 17.913' N 46° 49.303'	184B	3 year CRP	Backslope
9	326	W 96° 17.912' N 46° 49.229' W 96° 17.936'	184B	3 year CRP	Undulating upland
<u>MN-BK-CB-17</u>					
1	327	N 46° 56' 55.056" W 96° 08' 23.802"	184	5 year CRP	Footslope
2	328	N 46° 56' 46.218" W 96° 08' 21.864"	184	5 year CRP	Backslope
3	329	N 46° 56' 41.988" W 96° 08' 21.486"	184	5 year CRP	Undulating lowland
4	330	N 46° 56' 38.850" W 96° 08' 28.530"	184	5 year CRP	Footslope
5	331	N 46° 56' 47.766" W 96° 08' 34.236"	903B	5 year CRP	Backslope
6	332	N 46° 56' 50.934" W 96° 08' 33.984"	786	5 year CRP	Footslope
7	333	N 46° 56.899' W 96° 08.302'	903B	5 year CRP	Undulating upland
8	334	N 46° 56.833' W 96° 08.266'	184	5 year CRP	Undulating upland
9	335	N 46° 56.687' W 96° 08.135'	508	5 year CRP	Footslope
10	336	N 46° 56.811' W 96° 08.053'	942D2	5 year CRP	Backslope

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
11	337	N 46° 56.884' W 96° 08.047'	184	5 year CRP	Backslope
12	338	N 46° 56.947' W 96° 08.089'	903B	5 year CRP	Backslope
<u>MN-BK-HM-9</u>					
1	339	N 46° 57.786' W 96° 00.094'	108	12 year CRP	Undulating upland
2	340	N 46° 57.726' W 96° 00.009'	108	12 year CRP	Backslope
3	341	N 46° 57.637' W 95° 55.973'	184	12 year CRP	Backslope
4	342	N 46° 57.611' W 95° 59.894'	1246	12 year CRP	Backslope
5	343	N 46° 57.567' W 95° 59.911'	171B	12 year CRP	Shoulder
6	344	N 46° 57.473' W 96° 00.070'	184	12 year CRP	Undulating upland
7	345	N 46° 57.556' W 96° 00.100'	184	12 year CRP	Undulating upland
8	346	N 46° 57.556' W 96° 00.206'	184	12 year CRP	Undulating upland
9	347	N 46° 57.668' W 96° 00.086'	184	12 year CRP	Undulating upland
10	348	N 46° 57' 42.876" W 96° 00' 18.246"	184	20 year CRP	Undulating
11	349	N 46° 57' 39.852"	184	20 year CRP	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
12	350	W 96° 00' 19.800' N 46° 57.561' W 96° 00.316'	184	20 year CRP	Undulating upland
<u>MN-BK-RV-27</u>					
1	351	N 46° 59' 43.284" W 95° 54' 49.302"	786	Cropland	Backslope
2	352	N 46° 59' 43.890" W 95° 59' 44.538"	785	Cropland	Backslope
3	353	N 46° 59' 43.962" W 95° 59' 36.666"	1246	Cropland	Undulating upland
4	354	N 46° 59' 48.432" W 95° 59' 31.014"	1246	Cropland	Undulating upland
5	355	N 46° 59' 48.930" W 95° 59' 37.272"	508	Cropland	Undulating upland
6	356	N 46° 59' 50.130" W 95° 59' 43.452"	1246	Cropland	Backslope
7	357	N 46° 59' 49.656" W 95° 59' 49.134"	786	Cropland	Undulating upland
8	358	N 47° 00' 04.992" W 95° 59' 47.586"	785	Cropland	Backslope
9	359	N 47° 00' 07.248" W 95° 59' 44.976"	785	Cropland	Undulating upland
10	360	N 47° 00' 06.096" W 95° 59' 36.390"	1246	Cropland	Undulating upland
11	361	N 47° 00' 08.244" W 95° 59' 27.048"	1246	Cropland	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
12	362	N 47° 00' 05.616" W 95° 59' 26.178"	108	Cropland	Undulating upland
13	363	N 46° 59' 56.928" W 95° 59' 29.400"	508	Cropland	Undulating upland
14	364	N 46° 59' 58.632" W 95° 59' 39.312"	1130	Cropland	Undulating upland
<u>MN-BK-RV-14</u>					
1	365	N 47° 01' 19.068" W 95° 57' 59.424"	1246	26 year CRP	Backslope
2	366	N 47° 01' 22.182" W 95° 57' 56.952"	171B	26 year CRP	Undulating upland
3	367	N 47° 01' 24.624" W 95° 57' 53.460"	63	26 year CRP	Backslope
4	368	N 47° 01' 20.646" W 95° 57' 48.918"	171B	26 year CRP	Undulating upland
5	369	N 47° 01' 20.586" W 95° 57' 39.630"	108	26 year CRP	Undulating upland
6	370	N 47° 01' 15.834" W 95° 57' 46.068"	1234B	26 year CRP	Backslope
7	371	N 47° 01' 20.106" W 95° 58' 12.222"	108	26 year CRP	Shoulder
8	372	N 47° 01.374' W 95° 58.177'	108	26 year CRP	Undulating upland
<u>MN-BK-RV-8</u>					
1	373	N 47° 02' 20.106" W 96° 02' 20.970"	786	Native grassland	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	374	N 47° 02' 14.088" W 96° 02' 05.952"	785	Native grassland	Backslope
3	375	N 47° 02' 19.428" W 96° 02' 11.196"	398	Native grassland	Undulating upland
4	376	N 47° 02.387' W 96° 02.357'	785	Native grassland	Undulating upland
5	377	N 47° 02.429' W 96° 02.297'	785	Native grassland	Backslope
6	378	N 47° 02.394' W 96° 02.233'	786	Native grassland	Backslope
	<u>MN-BK-HM-9</u>				
161	13	N 46° 57' 46.188" W 95° 59' 14.754"	108	20 year CRP	Backslope
	14	N 46° 57' 38.484" W 95° 59' 12.960"	108	20 year CRP	Footslope
	15	N 46° 57' 33.882" W 95° 59' 18.198"	1125B	20 year CRP	Shoulder
	16	N 46° 57' 36.342" W 95° 59' 24.546"	1149	20 year CRP	Shoulder
	17	N 46° 57' 41.514" W 95° 59' 24.048"	931C2	20 year CRP	Shoulder
	18	N 46° 57' 47.034" W 95° 59' 20.880"	171B	20 year CRP	Backslope
	19	N 46° 57.786' W 95° 59.445'	171B	20 year CRP	Shoulder
	20	N 46° 57.775'	1878	20 year CRP	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
21	387	W 95° 59.667' N 46° 57.761'	171B	20 year CRP	Backslope
22	388	W 95° 59.562' N 46° 57.703'	108	20 year CRP	Undulating upland
23	389	W 95° 59.543' N 46° 57.581'	108	20 year CRP	Undulating upland
24	390	W 95° 59.535' N 46° 57.499'	108	20 year CRP	Undulating upland
		W 95° 59.564'			
<u>MN-BK-HM-17</u>					
162	1	N 46° 56' 07.968" W 96° 00' 26.058"	1149	28 year CRP	Shoulder
	2	N 46° 56' 10.560" W 96° 00' 27.318"	1246	28 year CRP	Undulating upland
	3	N 46° 56' 12.024" W 96° 00' 26.232"	108	28 year CRP	Backslope
	4	N 46° 56' 20.286" W 96° 00' 23.868"	108	28 year CRP	Backslope
	5	N 46° 56' 26.928" W 96° 00' 23.484"	171B	28 year CRP	Undulating upland
	6	N 46° 56' 32.148" W 96° 00' 22.698"	943D2	28 year CRP	Backslope
<u>MN-BK-HM-15</u>					
	1	N 46° 56' 39.144" W 95° 59' 04.404"	1317	12 year CRP	Undulating upland
	2	N 46° 56' 34.094"	1149	12 year CRP	Backslope

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	399	W 95° 59' 02.784" N 46° 56' 34.314"	1149	12 year CRP	Undulating upland
4	400	W 95° 58' 58.290" N 46° 56' 33.096"	1149	12 year CRP	Backslope
5	401	W 95° 58' 51.624" N 46° 56' 39.600"	1149	12 year CRP	Backslope
6	402	W 95° 58' 50.922" N 46° 56' 40.158"	1234B	12 year CRP	Backslope
7	403	W 95° 58' 48.222" N 46° 56' 41.670"	1149	12 year CRP	Backslope
8	404	W 95° 58' 55.314" N 46° 56' 53.376"	1149	12 year CRP	Undulating upland
9	405	W 95° 59' 04.392" N 46° 56' 54.438"	1149	12 year CRP	Undulating upland
10	406	W 95° 59' 56.265" N 46° 56.923'	1317	12 year CRP	Undulating upland
11	407	W 95° 58.816' N 46° 56.909'	1149	12 year CRP	Undulating upland
12	408	W 95° 58.751' N 46° 56.885'	1149	12 year CRP	Backslope
13	409	W 95° 58.691' N 46° 56' 52.698"	1149	12 year CRP	Shoulder
14	410	W 95° 58' 44.136" N 46° 56' 52.458"	1234B	12 year CRP	Backslope
		W 95° 58' 50.370"			

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>MN-CL-HG-20</u>					
1	411	N 46° 55' 17.706" W 96° 15' 38.040"	184B	8 year CRP	Undulating upland
2	412	N 46° 55' 23.064" W 96° 15' 41.958"	184B	8 year CRP	Undulating upland
3	413	N 46° 55' 21.036" W 96° 15' 46.116"	184B	8 year CRP	Undulating upland
4	414	N 46° 55.314' W 96° 16.005'	236	8 year CRP	Undulating upland
5	415	N 46° 55.372' W 96° 15.954'	184B	8 year CRP	Undulating upland
6	416	N 46° 55.385' W 96° 16.043'	184B	8 year CRP	Undulating upland
<u>MN-BK-HM-10</u>					
1	417	N 46° 57' 16.770" W 95° 59' 04.590"	108	19 year CRP	Backslope
2	418	N 46° 57' 15.738" W 95° 58' 57.738"	1967	19 year CRP	Undulating upland
3	419	N 46° 57' 15.732" W 95° 58' 54.312"	1997	19 year CRP	Footslope
4	420	N 46° 57' 15.780" W 95° 58' 97.532"	1997	19 year CRP	Undulating upland
5	421	N 46° 57' 13.176" W 95° 58' 45.378"	1997	19 year CRP	Undulating
6	422	N 46° 57.235' W 95° 58.946'	1967	19 year CRP	Undulating upland
7	423	N 46° 56.969'	931C2	19 year CRP	Shoulder

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	424	W 95° 58.985' N 46° 57.020'	1149	19 year CRP	Undulating upland
9	425	W 95° 58.886' N 46° 57.019'	1149	19 year CRP	Undulating upland
10	426	W 95° 58.734' N 46° 57.171'	1997	19 year CRP	Undulating upland
11	427	W 95° 58.775' N 46° 57.175' W 95° 58.932'	1967	19 year CRP	Undulating upland
<u>MN-BK-HM-36</u>					
1	428	N 46° 53' 57.312" W 95° 55' 21.354"	780C2	Native grassland	Summit
2	429	N 46° 53' 59.538" W 95° 55' 20.922"	780C2	Native grassland	Backslope
3	430	N 46° 54' 00.906" W 95° 55' 27.258"	931C2	Native grassland	Backslope
4	431	N 46° 53' 57.846" W 95° 55' 28.032"	1135	Native grassland	Footslope
5	432	N 46° 53' 52.362" W 95° 55' 26.640"	931C2	Native grassland	Summit
6	433	N 46° 53' 52.116" W 95° 55' 22.122"	780D2	Native grassland	Footslope
7	434	N 46° 53.948' W 95° 55.635'	780B	Native grassland	Backslope
8	435	N 46° 54.043' W 95° 55.749'	931C2	Native grassland	Backslope

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
9	436	N 46° 54.033' W 95° 55.866'	931C2	Native grassland	Shoulder
10	437	N 46° 53.966' W 95° 55.847'	931C2	Native grassland	Backslope
11	438	N 46° 53.882' W 95° 55.545'	780B	Native grassland	Shoulder
12	439	N 46° 53.827' W 95° 55.547'	943D2	Native grassland	Shoulder
<u>MN-OT-OS-11</u>					
1	440	N 46° 26' 28.440" W 96° 11' 10.482"	777C2	Cropland	Backslope
2	441	N 46° 26' 15.984" W 96° 11' 08.400"	777C2	Cropland	Backslope
3	442	N 46° 26' 09.726" W 96° 11' 08.538"	777C2	Cropland	Backslope
4	443	N 46° 26' 04.740" W 96° 11' 06.930"	777D2	Cropland	Backslope
5	444	N 46° 26' 13.368" W 96° 11' 01.302"	777C2	Cropland	Backslope
6	445	N 46° 26' 20.694" W 96° 11' 03.330"	777C2	Cropland	Backslope
<u>MN-OT-OS-35</u>					
1	446	N 46° 22.265' W 96° 11.333'	902B	Cropland	Backslope
2	447	N 46° 22.332' W 96° 11.321'	902B	Cropland	Undulating upland

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	448	N 46° 22.369' W 96° 11.310'	1317	Cropland	Undulating upland
4	449	N 46° 22.418' W 96° 11.296'	494	Cropland	Backslope
5	450	N 46° 22.518' W 96° 11.339'	902B	Cropland	Backslope
6	451	N 46° 22.541' W 96° 11.474'	494	Cropland	Backslope
7	452	N 46° 22.543' W 96° 11.614'	903C2	Cropland	Backslope
8	453	N 46° 22.511' W 96° 11.647'	903C2	Cropland	Backslope
9	454	N 46° 22.456' W 96° 11.637'	902B	Cropland	Backslope
<u>MN-BK-CB-22</u>					
1	455	N 46° 55' 20.010" W 96° 06' 36.726"	931C2	4 year CRP	Backslope
2	456	N 46° 55' 19.422" W 96° 06' 34.320"	1234B	4 year CRP	Shoulder
3	457	N 46° 55' 19.308" W 96° 06' 34.438"	931C2	4 year CRP	Backslope
4	458	N 46° 55' 20.088" W 96° 06' 23.436"	1234B	4 year CRP	Backslope
5	459	N 46° 55' 21.282" W 96° 06' 16.536"	1234B	4 year CRP	Backslope
6	460	N 46° 55' 24.564"	1234B	4 year CRP	Shoulder

Table 37. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
7	461	W 96° 06' 13.626" N 46° 55' 27.150"	1317	4 year CRP	Backslope
8	462	W 96° 06' 13.776" N 46° 55' 30.978"	1149	4 year CRP	Undulating upland
9	463	W 96° 06' 17.058" N 46° 55' 32.718"	1234B	4 year CRP	Undulating upland
10	464	W 96° 06' 19.668" N 46° 55' 29.496"	1234B	4 year CRP	Undulating upland
11	465	W 90 06' 23.742" N 46° 55' 29.520"	931C2	4 year CRP	Backslope
12	466	W 96° 06' 26.556" N 46° 55' 32.160"	931C2	4 year CRP	Backslope
13	467	W 96° 06' 33.702" N 46° 55' 27.570"	1149	4 year CRP	Footslope
		W 96° 06' 34.704"			

†GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

Table 38. North Central Iowa and Southern Minnesota sample identification, coordinates, soil map unit, land management, and landscape position.

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
<u>IA-CL-LK-26</u>					
1	1750	N 43° 11' 26.0785" W 94° 56' 09.7517"	740D	Native Grassland	Backslope
<u>IA-CL-LK-25</u>					
1	1751	N 43° 11' 27.2305" W 94° 55' 46.2017"	34B	Native Grassland	Backslope
2	1752	N 43° 11' 25.0705" W 94° 55' 51.9017"	138	Native Grassland	Backslope
3	1753	N 43° 11' 24.1225" W 94° 55' 51.3857"	108B	Native Grassland	Backslope
4	1754	N 48 11' 32.9725" W 94° 54' 45.0197"	541C	Native Grassland	Backslope
5	1755	N 43° 11' 59.1025" W 94° 55' 45.5177"	107	Native Grassland	Backslope
6	1756	N 43° 11' 58.2385" W 94° 55' 44.9657"	138B	Native Grassland	Shoulderslope
7	1757	N 43° 11' 53.9700" W 94° 55' 12.1740"	108B	Native Grassland	Backslope
<u>IA-PA-LJ-32</u>					
1	1758	N 43° 10' 25.3645" W 94° 53' 11.1618"	138C2	13 year CRP	Backslope
2	1759	N 43° 10' 26.9425" W 94° 53' 16.8788"	107	13 year CRP	Backslope
3	1760	N 43° 10' 23.1145" W 94° 53' 15.2718"	138C2	13 year CRP	Backslope
4	1761	N 43° 10' 13.7185"	55	13 year CRP	Footslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	1762	W 94° 53' 21.0258" N 43° 10' 16.7185"	62D	13 year CRP	Backslope
6	1763	W 94° 53' 20.8698" N 43° 10' 10.8385" W 94° 53' 112.6918"	138C2	13 year CRP	Shoulderslope
<u>1A-PA-LI-23</u>					
1	1764	N 43° 12' 44.0425" W 94° 49' 37.3178"	138C2	3 year CRP	Backslope
2	1765	N 43° 12' 36.6385" W 94° 49' 37.8298"	138C2	3 year CRP	Backslope
3	1766	N 43° 12' 36.4105" W 94° 49' 28.6218"	62D	3 year CRP	Shoulderslope
170 4	1767	N 43° 12' 36.4705" W 94° 49' 28.6218"	507	3 year CRP	Footslope
5	1768	N 43° 12' 42.7585" W 94° 49' 06.2838"	138B	3 year CRP	Backslope
6	1769	N 43° 12' 35.4685" W 94° 49' 10.5438"	138C2	3 year CRP	Shoulderslope
7	1770	N 43° 12' 37.2685" W 94° 49' 17.2398"	507	3 year CRP	Toeslope
8	1771	N 43° 12' 43.06445" W 94° 49' 17.0838"	62D	3 year CRP	Backslope
9	1772	N 43° 12' 23.5165" W 94° 49' 08.2818"	55	3 year CRP	Footslope
10	1773	N 43° 12' 29.3785" W 94° 12' 29.3785"	107	3 year CRP	Footslope
11	1774	N 43° 12' 30.7825"	138C2	3 year CRP	Shoulderslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
12	1775	W 94° 49' 10.0038"	62D	3 year CRP	Backslope
		N 43° 12' 22.8175"			
13	1776	W 94° 49' 13.6458"	62F	3 year CRP	Backslope
		N 43° 12' 15.8185"			
14	1777	W 94° 49' 11.4858"	62E	3 year CRP	Backslope
		N 43° 12' 15.5065"			
15	1778	W 94° 49' 17.2158"	62D	3 year CRP	Backslope
		N 43° 12' 11.8105"			
16	1779	W 94° 49' 13.6518"	62F	3 year CRP	Backslope
		N 43° 12' 13.2565"			
17	1780	W 94° 49' 05.9288"	62F	3 year CRP	Backslope
		N 43° 12' 04.5265"			
18	1781	W 94° 49' 04.4118"	485B	3 year CRP	Footslope
		N 43° 12' 03.0805"			
19	1782	W 94° 49' 08.7798"	55	3 year CRP	Footslope
		N 43° 11' 55.3045"			
20	1783	W 94° 49' 04.8978"	138B	3 year CRP	Backslope
		N 43° 11' 56.2285"			
<u>1A-EM-TM-36</u>		W 94° 49' 10.4718"			
1	1784	N 43° 15' 20.3425"	55	18 year CRP	Footslope
2	1785	W 94° 48' 34.3818"	138D	18 year CRP	Backslope
		N 43° 15' 22.5985"			
3	1786	W 94° 48' 31.1658"	55	18 year CRP	Backslope
		N 43° 15' 24.6925"			
4	1787	W 94° 48' 27.3618"	638D2	18 year CRP	Shoulderslope
		N 43° 15' 36.1524"			

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
		W 94° 48' 25.9038"			
5	1788	N 43° 15' 38.3724"	138C2	18 year CRP	Shoulderslope
		W 94° 48' 31.1838"			
6	1789	N 43° 15' 35.4805"	62E2	18 year CRP	Backslope
		W 94° 48' 36.6018"			
7	1790	N 43° 15' 31.9285"	138C2	18 year CRP	Shoulderslope
		W 94° 48' 39.1698"			
8	1791	N 43° 15' 26.0725"	62E2	18 year CRP	Backslope
		W 94° 48' 38.6718"			
9	1792	N 43° 16' 07.1724"	107	Cropland	Footslope
		W 94° 48' 49.9818"			
10	1793	N 43° 15' 59.6724"	638D2	Cropland	Backslope
		W 94° 48' 49.9998"			
11	1794	N 43° 15' 57.0324"	138B	Cropland	Shoulderslope
		W 94° 48' 50.8998"			
12	1795	N 43° 15' 51.1829"	107	Cropland	Footslope
		W 94° 48' 45.4038"			
13	1796	N 43° 16' 00.2844"	55	Cropland	Backslope
		W 94° 48' 39.6438"			
14	1797	N 43° 16' 03.3684"	55	Cropland	Undulating upland
		W 94° 48' 9858"			
15	1798	N 43° 16' 05.6544"	138B	Cropland	Backslope
		W 94° 48' 40.8378"			
16	1799	N 43° 16' 07.7604"	55	Cropland	Backslope
		W 94° 48' 30.5658"			
17	1800	N 43° 16' 06.0924"	138B	Cropland	Backslope
		W 94° 48' 28.9038"			

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
18	1801	N 43 16' 03.7644" W 94 48' 29.4678"	55	Cropland	Backslope
19	1802	N 43 16' 0.77" W 94 48' 31.58"	138B	Cropland	Backslope
20	1803	N 43 15' 54.64" W 94 48' 26.54"	107	Cropland	Footslope
21	1804	N 43 15' 52.90" W 94 48' 30.22"	138C2	Cropland	Backslope
22	1805	N 43 15' 55.59" W 94 48' 35.35"	138B	Cropland	Shoulderslope
<u>IA-KS-SN-18</u>					
173	1	N 43° 18' 16.8383" W 94° 25' 29.9842"	507	6 year CRP	Backslope
	2	N 43° 18' 15.0623" W 94° 25' 34.3942"	507	6 year CRP	Toeslope
	3	N 43° 18' 19.77" W 94° 25' 42.35"	138B	6 year CRP	Shoulderslope
	4	N 43° 18' 23.1623" W 94° 25' 49.1362"	138B	6 year CRP	Backslope
	5	N 43° 18' 20.2823" W 94° 25' 59.6262"	138C2	6 year CRP	Backslope
	6	N 43° 18' 16.9763" W 94° 25' 55.1662"	507	6 year CRP	Backslope
	7	N 43° 18' 91.0483" W 94° 25' 46.1902"	107	6 year CRP	Undulating Lowland
	8	N 43° 18' 42.8363" W 94° 25' 49.3342"	138B	6 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
9	1814	N 43° 18' 37.5383" W 94° 25' 53.1022"	138B	6 year CRP	Shoulderslope
10	1815	N 43° 18' 32.8283" W 94° 25' 44.5467"	55	6 year CRP	Undulating Lowland
11	1816	N 43° 18' 31.8263" W 94° 25' 27.6202"	138B	6 year CRP	Undulating Lowland
12	1817	N 43° 18' 36.6263" W 94° 25' 32.0842"	138B	6 year CRP	Footslope
13	1818	N 43° 18' 38.9423" W 94° 25' 29.0842"	55	6 year CRP	Backslope
14	1819	N 43° 18' 43.5263" W 94° 25' 37.8142"	95	6 year CRP	Shoulderslope
174	<u>1A-KS-RM-16</u>				
1	1820	N 43° 18' 26.7023" W 94° 09' 07.7724"	507	10 year CRP	Footslope
2	1821	N 43° 18' 32.2223" W 94° 09' 08.1324"	55	10 year CRP	Backslope
3	1822	N 43° 18' 35.1503" W 94° 09' 05.8044"	62C2	10 year CRP	Shoulderslope
4	1823	N 43° 18' 40.7123" W 94° 09' 03.2664"	6	10 year CRP	Footslope
5	1824	N 43° 18' 41.0183" W 94° 08' 55.5384"	55	10 year CRP	Backslope
6	1825	N 43° 18' 45.9803" W 94° 08' 59.5884"	507	10 year CRP	Footslope
7	1826	N 43° 18' 46.3103" W 94° 09' 13.3524"	138B	10 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
8	1827	N 43° 18' 42.1823" W 94° 09' 09.2964"	55	10 year CRP	Undulating upland
9	1828	N 43° 18' 45.6023" W 94° 09' 16.8024"	138B	10 year CRP	Backslope
10	1829	N 43° 18' 42.0083" W 94° 09' 24.2304"	507	11 year CRP	Undulating upland
11	1830	N 43° 18' 46.1903" W 94° 09' 27.7164"	55	11 year CRP	Backslope
12	1831	N 43° 18' 45.4523" W 94° 09' 35.6184"	138B	11 year CRP	Backslope
13	1832	N 43° 18' 25.3343" W 94° 10' 02.6904"	138B	11 year CRP	Backslope
14	1833	N 43° 18' 27.5723" W 94° 10' 02.2224"	55	11 year CRP	Backslope
15	1834	N 43° 18' 29.0123" W 94° 09' 58.7904"	507	11 year CRP	Backslope
16	1835	N 43° 18' 36.5903" W 94° 09' 59.3404"	95	11 year CRP	Shoulderslope
17	1836	N 43° 18' 24.7103" W 94° 09' 57.7824"	507	11 year CRP	Backslope
18	1837	N 43° 18' 22.7183" W 94° 09' 55.4604"	55	11 year CRP	Backslope
19	1838	N 43° 18' 32.8703" W 94° 09' 35.4444"	138B	11 year CRP	Backslope
20	1839	N 43° 18' 34.4303" W 94° 09' 38.4684"	55	11 year CRP	Footslope
21	1840	N 43° 18' 37.6103"	138C2	11 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
22	1841	W 94° 09' 41.9904" N 43° 18' 40.3703"	55	11 year CRP	Backslope
23	1842	W 94° 09' 43.7724" N 43° 09' 49.8624"	95	11 year CRP	Undulating Lowland
24	1843	W 94° 18' 44.1983" N 43° 18' 45.0323" W 94° 10' 02.1804"	507	11 year CRP	Undulating Lowland
<u>IA-KS-GM-8</u>					
1	1844	N 43° 19' 27.5542" W 94° 03' 00.6565"	107	3 year CRP	Undulating upland
2	1845	N 43° 19' 33.6862" W 94° 03' 01.0165"	6	3 year CRP	Undulating upland
3	1846	N 43° 19' 32.8082" W 94° 03' 13.0825"	8	3 year CRP	Undulating upland
4	1847	N 43° 19' 36.6082" W 94° 03' 09.7345"	55	3 year CRP	Backslope
5	1848	N 43° 19' 38.4622" W 94° 03' 30.9626"	138B	Native Grassland	Backslope
6	1849	N 43° 19' 34.1362" W 94° 03' 30.6145"	107	Native Grassland	Footslope
7	1850	N 43° 19' 32.3122" W 94° 03' 29.8405"	138B	Native Grassland	Backslope
8	1851	N 43° 19' 24.8482" W 94° 03' 28.3165"	507	Native Grassland	Undulating Lowland
9	1852	N 43° 19' 17.3302" W 94° 03' 28.5565"	138B	Native Grassland	Shoulderslope
10	1853	N 43° 19' 18.04"	107	Native Grassland	Footslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
		W 94° 03' 23.00"			
11	1854	N 43° 19' 19.7122"	138B	Native Grassland	Shoulderslope
		W 94° 03' 20.8165"			
12	1855	N 43° 19' 36.2902"	55	Native Grassland	Backslope
		W 94° 03' 21.0805"			
13	1856	N 43° 19' 35.45"	55	Native Grassland	Undulating upland
		W 94° 03' 47.24"			
14	1857	N 43° 19' 28.74"	507	Native Grassland	Undulating upland
		W 94° 03' 45.93"			
15	1858	N 43° 19' 27.52"	55	Native Grassland	Undulating upland
		W 94° 03' 43.92"			
16	1859	N 43° 19' 18.4702"	138B	Native Grassland	Backslope
		W 94° 03' 37.5265"			
17	1860	N 43° 19' 22.6462"	55	3 year CRP	Shoulderslope
		W 94° 03' 36.3505"			
18	1861	N 43° 19' 29.3242"	138B	3 year CRP	Backslope
		W 94° 03' 36.8605"			
19	1862	N 43° 19' 32.2582"	507	3 year CRP	Undulating Lowland
		W 94° 03' 37.5565"			
20	1863	N 43° 19' 37.4445"	138B	3 year CRP	Backslope
		W 94° 03' 38.4445"			
<u>IA-KS-SN-20</u>					
1	1864	N 43° 18' 02.2703"	90	Cultivated	Undulating upland
		W 94° 25' 33.9862"			
2	1865	N 43° 18' 02.2523"	90	Cultivated	Undulating upland
		W 94° 25' 37.7302"			
3	1866	N 43° 18' 02.3003"	507	Cultivated	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	1867	W 94° 25' 49.4242"	55	Cultivated	Backslope
		N 43° 18' 00.7703"			
5	1868	W 94° 25' 57.1942"	138B	Cultivated	Backslope
		N 43° 17' 56.0003"			
6	1869	W 94° 25' 49.8042"	507	Cultivated	Backslope
		N 43° 17' 56.81"			
7	1870	W 94° 25' 31.33"	507	Cultivated	Shoulderslope
		N 43° 18' 09.8903"			
8	1871	S 94 25' 29.3002"	62C2	Cultivated	Shoulderslope
		N 43° 18' 09.9203"			
9	1872	S 94 25' 42.6502"	138B	Cultivated	Shoulderslope
		N 43° 18' 11.6082"			
10	1873	S 94 25' 42.6082"	55	Cultivated	Footslope
		N 43° 18' 11.6783"			
11	1874	W 94° 25' 52.1722"	138B	Cultivated	Undulating upland
		N 43° 18' 06.7643"			
12	1875	W 94° 25' 52.6762"	55	Cultivated	Backslope
		N 43° 17' 50.0963"			
13	1876	W 94° 25' 17.6422"	138B	Cultivated	Backslope
		N 43° 17' 50.0483"			
14	1877	W 94° 25' 04.3222"	96	Cultivated	Undulating upland
		N 43° 17' 50.4923"			
15	1878	W 94° 24' 58.8222"	507	Cultivated	Undulating upland
		N 43° 17' 48.1643"			
16	1879	W 94° 24' 55.6762"	138B	Cultivated	Backslope
		N 43° 17' 45.3803"			
		W 94° 24' 58.1242"			

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
17	1880	N 43° 17' 45.3923" W 94° 25' 06.5122"	138C2	Cultivated	Backslope
18	1881	N 43° 17' 45.3563" W 94° 25' 09.2362"	507	Cultivated	Undulating upland
19	1882	N 43° 17' 45.3623" W 94° 25' 15.5122"	138B	Cultivated	Undulating upland
20	1883	N 43° 17' 31.0763" W 94° 25' 13.826"	95	Cultivated	Undulating upland
21	1884	N 43° 17' 31.6136" W 94° 25' 05.9842"	507	Cultivated	Backslope
22	1885	N 43° 17' 31.5023" W 94° 25' 00.9742"	138C2	Cultivated	Backslope
179 23	1886	N 43° 17' 31.5143" W 94° 24' 54.3322"	107	Cultivated	Undulating upland
24	1887	N 43° 17' 35.93" W 94° 25' 0.84"	138B	Cultivated	Shoulderslope
25	1888	N 43° 17' 35.5883" W 94° 24' 59.7742"	55	Cultivated	Undulating upland
26	1889	N 43° 17' 36.1163" W 94° 25' 13.0042"	138B	Cultivated	Shoulderslope
27	1890	N 43° 17' 34.5983" W 94° 25' 21.1402"	138B	Cultivated	Backslope
<u>MN-JK-HL-36</u>					
1	1891	N 43° 40' 31.9343" W 95° 06' 49.9933"	27B	10 year CRP	Undulating upland
2	1892	N 43° 40' 36.5123" W 95° 06' 50.5333"	102B	10 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	1893	N 43° 40' 40.2863" W 94 06' 40.6213"	114	10 year CRP	Toeslope
4	1894	N 43° 40' 37.1903" W 95° 06' 42.5113"	86	14 year CRP	Backslope
5	1895	N 43° 40' 33.3923" W 95° 06' 41.8933"	114	14 year CRP	Undulating upland
6	1896	N 43° 40' 30.5483" W 95° 06' 41.7373"	86	14 year CRP	Backslope
7	1897	N 43° 40' 48.3683" W 95° 06' 43.8253"	27B	10 year CRP	Shoulderslope
8	1898	N 43° 40' 51.0923" W 95° 06' 31.8553"	36	10 year CRP	Backslope
180 9	1899	N 43° 40' 47.2403" W 95° 06' 30.4873"	114	10 year CRP	Footslope
10	1900	N 43° 40' 42.4823" W 95° 06' 23.8333"	36	10 year CRP	Backslope
11	1901	N 43° 40' 47.0548" W 95° 06' 21.3613"	102B2	10 year CRP	Backslope
12	1902	N 43° 40' 48.5243" W 95° 06' 26.0113"	130	10 year CRP	Backslope
<u>MN-JK-HT-34</u>					
1	1903	N 43° 35' 23.0184" W 95° 08' 44.7253"	118	40 year CRP	Footslope
2	1904	N 43° 35' 27.7764" W 95° 08' 43.9213"	102B	40 year CRP	Backslope
3	1905	N 43° 35' 32.9724" W 95° 08' 43.0333"	86	40 year CRP	Undulating Lowland

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	1906	N 43° 35' 36.9144" W 95° 08' 42.4933"	921C2	40 year CRP	Backslope
5	1907	N 43° 35' 37.4424" W 95° 08' 52.2913"	336	40 year CRP	Backslope
6	1908	N 43° 35' 31.3044" W 95° 08' 47.1433"	114	40 year CRP	Backslope
7	1909	N 43° 35' 18.3864" W 95° 08' 49.3753"	86	40 year CRP	Undulating Lowland
8	1910	N 43° 35' 18.4764" W 95° 08' 45.8233"	102B	40 year CRP	Footslope
9	1911	N 43° 35' 25.55" W 95° 09' 00.16"	102B2	40 year CRP	Backslope
181 10	1912	N 43° 35' 33.0324" W 95° 09' 05.6413"	336	40 year CRP	Backslope
11	1913	N 43° 35' 26.0244" W 95° 08' 59.7130"	86	40 year CRP	Toeslope
12	1914	N 43° 35' 23.8284" W 95° 09' 01.8373"	410	40 year CRP	Backslope
13	1915	N 43° 35' 18.6804" W 95° 09' 03.5113"	327B	40 year CRP	Toeslope
14	1916	N 43° 35' 18.6804" W 95° 09' 03.5113"	86	40 year CRP	Toeslope
<u>MN-JK-HT-27</u>					
1	1917	N 43° 36' 09.7763" W 95° 08' 59.1253"	102B	2 year CRP	Backslope
2	1918	N 43° 36' 11.6003" W 95° 08' 59.4493"	27B	2 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
3	1919	N 43° 36' 12.0383" W 95° 09' 04.5973"	102B	2 year CRP	Backslope
4	1920	N 43° 36' 18.7136" W 95° 09' 07.5913"	114	2 year CRP	Toeslope
5	1921	N 43° 36' 23.4263" W 95° 09' 05.1493"	27B	2 year CRP	Backslope
6	1922	N 43° 36' 23.2523" W 95° 09' 10.1173"	27B	2 year CRP	Backslope
7	1923	N 43° 36' 29.9543" W 95° 09' 06.7753"	336	2 year CRP	Footslope
8	1924	N 43° 36' 21.8723" W 95° 08' 49.8853"	41B	2 year CRP	Backslope
182 9	1925	N 43° 36' 26.8043" W 95° 36' 26.8043"	336	2 year CRP	Backslope
10	1926	N 43° 36' 26.3543" W 95° 08' 50.9293"	101B	2 year CRP	Backslope
11	1927	N 43° 36' 27.0143" W 95° 08' 54.3313"	41B	2 year CRP	Backslope
12	1928	N 43° 36' 29.1023" W 95° 09' 03.8953"	130	2 year CRP	Shoulderslope
<u>MN-JK-MN-30</u>					
1	1929	N 43° 31' 14.6544" W 95° 12' 08.4553"	102B	18 year CRP	Backslope
2	1930	N 43° 31' 06.1524" W 95° 12' 07.8553"	327B	18 year CRP	Backslope
3	1931	N 43° 31' 10.1124" W 95° 12' 03.7752"	327B	18 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
4	1932	N 43° 31' 09.8964" W 95° 11' 57.1273"	327B	18 year CRP	Backslope
5	1933	N 43° 31' 14.6064" W 95° 11' 53.3351"	327B	18 year CRP	Backslope
6	1934	N 43° 31' 19.6464" W 95° 11' 57.7993"	392	18 year CRP	Backslope
7	1935	N 43° 31' 13.1424" W 95° 11' 44.4733"	102B	18 year CRP	Backslope
8	1936	N 43° 31' 07.1604" W 95° 11' 44.4853"	102B	18 year CRP	Backslope
9	1937	N 43° 31' 05.7024" W 95° 11' 46.3333"	336	18 year CRP	Backslope
10	1938	N 43° 31' 07.2924" W 95° 11' 49.1353"	102B	18 year CRP	Backslope
11	1939	N 43° 31' 02.6124" W 95° 11' 48.3853"	102B	18 year CRP	Footslope
12	1940	N 43° 30' 57.6324" W 95° 11' 44.7133"	102B	18 year CRP	Footslope
<u>MN-JK-MN-19</u>					
1	1941	N 43° 32' 00.6144" W 95° 11' 43.1713"	130	20 year CRP	Backslope
2	1942	N 43° 32' 02.2884" W 95° 11' 56.7733"	102B	20 year CRP	Backslope
3	1943	N 43° 32' 02.9904" W 95° 12' 02.6353"	102B	20 year CRP	Backslope
4	1944	N 43° 32' 08.8284" W 95° 12' 04.4833"	102B	20 year CRP	Shoulderslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
5	1945	N 43° 32' 09.2844" W 95° 11' 58.9633"	336	20 year CRP	Toeslope
6	1946	N 43° 32' 11.4204" W 95° 11' 55.4413"	102B	20 year CRP	Shoulderslope
7	1947	N 43° 32' 10.1844" W 95° 11' 49.1773"	102B	20 year CRP	Backslope
8	1948	N 43° 32' 05.8344" W 95° 11' 48.8773"	102B	20 year CRP	Backslope
9	1949	N 43° 31' 50.5944" W 95° 11' 43.5193"	102B	18 year CRP	Backslope
10	1950	N 43° 31' 50.2704" W 95° 11' 48.8353"	102B	18 year CRP	Backslope
184 11	1951	N 43° 31' 49.6584" W 95° 11' 55.7293"	336	18 year CRP	Backslope
12	1952	N 43° 31' 49.3524" W 95° 11' 59.4733"	118	18 year CRP	Undulating Lowland
13	1953	N 43° 31' 48.7164" W 95° 12' 02.2513"	114	18 year CRP	Backslope
14	1954	N 43° 31' 54.3564" W 95° 11' 57.6793"	102B	18 year CRP	Shoulderslope
15	1955	N 43° 31' 57.3924" W 95° 11' 54.1213"	102B	18 year CRP	Backslope
16	1956	N 43° 31' 53.5224" W 95° 11' 47.0713"	336	18 year CRP	Shoulderslope
<u>MN-JK-BL-31</u>					
1	1957	N 43° 40' 43.8625" W 95° 05' 36.8293"	327B	25+ Year & 2002 restored [†]	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
2	1958	N 43° 40' 49.8323" W 95° 05' 38.6233"	102B	25+ Year & 2002 restored [†]	Shoulderslope
3	1959	N 43° 40' 49.9043" W 95° 05' 28.7833"	921C2	25+ Year & 2002 restored [†]	Backslope
4	1960	N 43° 40' 42.5063" W 95° 05' 28.9633"	327C	25+ Year & 2002 restored [†]	Backslope
5	1961	N 43° 40' 37.5413" W 95° 05' 24.5413"	327B	25+ Year & 2002 restored [†]	Backslope
6	1962	N 43° 40' 36.9263" W 95° 05' 29.6233"	102B	25+ Year & 2002 restored [†]	foot slope
7	1963	N 43° 40' 38.2883" W 95° 05' 36.4453"	327C	25+ Year & 2002 restored [†]	Backslope
185 8	1964	N 43° 40' 29.1323" W 95° 05' 36.3553"	102B	25+ Year & 2002 restored [†]	Shoulderslope
9	1965	N 43° 40' 31.6223" W 95° 05' 15.6973"	327C	25+ Year & 2002 restored [†]	Backslope
10	1966	N 43° 40' 37.3343" W 95° 05' 15.6313"	101B	25+ Year & 2002 restored [†]	Toeslope
11	1967	N 43° 40' 40.3043" W 95° 05' 18.1513"	101B	25+ Year & 2002 restored [†]	Shoulderslope
12	1968	N 43° 40' 44.7443" W 95° 05' 15.7033"	336	25+ Year & 2002 restored [†]	Undulating Lowland
13	1969	N 43° 40' 45.5003" W 95° 05' 08.5093"	336	25+ Year & 2002 restored [†]	Toeslope
14	1970	N 43° 40' 44.5043" W 95° 05' 07.5553"	327C	25+ Year & 2002 restored [†]	Shoulderslope
15	1971	N 43° 40' 33.2603"	327C	25+ Year & 2002 restored [†]	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position	
		W 95° 05' 08.0933"				
<u>MN-CT-GB-33</u>						
	1	1972	N 43° 51' 23.9422" W 95° 10' 48.3072"	31D	10-14 year CRP	Footslope
	2	1973	N 43° 51' 24.0682" W 95° 10' 42.3972"	484	10-14 year CRP	Backslope
	3	1974	N 43° 51' 22.0102" W 95° 10' 40.6752"	31D	10-14 year CRP	Backslope
	4	1975	N 43° 51' 20.9782" W 95° 10' 33.7992"	31D	10-14 year CRP	Backslope
	5	1976	N 43° 51' 19.3402" W 95° 10' 32.1912"	120B	10-14 year CRP	Shoulderslope
186	6	1977	N 43° 51' 19.6222" W 95° 10' 22.6332"	595B	10-14 year CRP	Backslope
	7	1978	N 43° 51' 29.4052" W 95° 10' 26.1432"	33	10-14 year CRP	Shoulderslope
	8	1979	N 43° 51' 30.2482" W 95° 10' 37.1232"	595B	10-14 year CRP	Backslope
	9	1980	N 43° 51' 28.4482" W 95° 10' 44.0292"	31D	10-14 year CRP	Shoulderslope
	10	1981	N 43° 51' 32.8402" W 95° 10' 46.4832"	102B	10-14 year CRP	Backslope
	11	1982	N 43° 51' 32.0302" W 95° 10' 19.1172"	130	10-14 year CRP	Backslope
	12	1983	N 43° 51' 38.0002" W 95° 10' 20.7072"	31D	10-14 year CRP	Backslope
	13	1984	N 43° 51' 38.1322"	595C	10-14 year CRP	Backslope

Table 38. (continued)

Site	Sample Number	Coordinates	Soil Map Unit	Management	Landscape Position
14	1985	W 95° 10' 30.6132" N 43° 51' 42.0022" W 95° 10' 38.8752"	86	10-14 year CRP	Shoulderslope
<u>MN-JK-BL-6</u>					
1	1986	N 43° 45' 09.9683" W 95° 05' 39.2473"	102B2	Native Grassland	Shoulderslope
2	1987	N 43° 45' 07.6103" W 95° 05' 36.6373"	595F	Native Grassland	Footslope
3	1988	N 43° 45' 02.7683" W 95° 05' 32.9653"	887D	Native Grassland	Shoulderslope
4	1989	N 43° 45' 05.1263" W 95° 05' 29.9053"	887D	Native Grassland	Undulating Upland
187 5	1990	N 43° 18' 06.12" W 94° 25' 36.77"	138B	Cultivated	Backslope

[†]CRP field was planted 25 years previous and replanted again in 2002.

[‡]GPS coordinates were taken from a Garmin 76 or a GlobalSat GPS Compact Flash (model number BC-337).

APPENDIX G. SAMPLE CARBON DATA

Table 39. Northeastern Montana sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1250	0-15	1.09	2.98	0.57	2.41	4.94	0.94	3.99	10.73	5.02	5.71
	15-30	1.26	3.03	2.13	0.90	5.79	4.07	1.72			
1251	0-15	1.37	1.95	0.27	1.68	4.05	0.56	3.49	10.34	5.65	4.70
	15-30	1.32	3.13	2.53	0.60	6.29	5.09	1.21			
1252	0-15	1.34	2.01	0.29	1.72	4.11	0.59	3.52	6.59	0.98	5.61
	15-30	1.34	1.22	0.19	1.03	2.48	0.39	2.09			
1253	0-15	1.37	2.17	0.59	1.58	4.52	1.23	3.29	8.55	3.62	4.93
	15-30	1.30	2.04	1.21	0.83	4.03	2.39	1.64			
1254	0-15	1.20	1.83	0.08	1.75	3.35	0.15	3.20	6.17	1.33	4.84
	15-30	1.26	1.48	0.62	0.86	2.83	1.18	1.64			
1255	0-15	1.41	1.67	0.43	1.24	3.57	0.92	2.65	8.96	5.10	3.86
	15-30	1.42	2.50	1.94	0.56	5.38	4.18	1.21			
1256	0-15	1.33	2.46	0.84	1.62	4.98	1.70	3.28	11.12	5.92	5.21
	15-30	1.38	2.93	2.01	0.92	6.14	4.21	1.93			
1257	0-15	1.13	3.67	2.39	1.28	6.31	4.11	2.20	14.41	11.35	3.06
	15-30	1.32	4.04	3.61	0.43	8.10	7.24	0.86			
1258	0-15	1.16	3.29	1.58	1.71	5.81	2.79	3.02	12.71	8.50	4.21
	15-30	1.36	3.35	2.77	0.58	6.91	5.71	1.20			
1259	0-15	1.20	2.05	0.11	1.94	3.74	0.20	3.54	10.87	6.12	4.75

Table 39. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
	15-30	1.40	3.36	2.79	0.57	7.13	5.92	1.21			
1260	0-15	1.07	3.30	1.03	2.27	5.38	1.68	3.70	14.05	8.57	5.48
	15-30	1.48	3.85	3.06	0.79	8.67	6.89	1.78			
1261	0-15	1.23	1.99	0.18	1.81	3.72	0.34	3.38	6.86	0.80	6.06
	15-30	1.44	1.43	0.21	1.22	3.14	0.46	2.68			
1262	0-15	1.18	2.06	0.00	2.06	3.70	0.00	3.70	7.70	1.18	6.51
	15-30	1.47	1.79	0.53	1.26	4.00	1.18	2.82			
1263	0-15	1.30	2.82	1.39	1.43	5.57	2.74	2.82	13.14	9.12	4.02
	15-30	1.41	3.54	2.98	0.56	7.57	6.37	1.20			
689 1264	0-15	1.31	2.81	1.13	1.68	5.58	2.24	3.33	14.50	7.60	6.90
	15-30	1.40	4.18	2.51	1.67	8.93	5.36	3.57			
1265	0-15	1.20	3.72	0.00	3.72	6.79	0.00	6.79	10.15	0.00	10.15
	15-30	1.31	1.69	0.00	1.69	3.37	0.00	3.37			
1266	0-15	1.20	4.10	0.00	4.10	7.48	0.00	7.48	10.86	0.00	10.86
	15-30	1.23	1.80	0.00	1.80	3.38	0.00	3.38			
1267	0-15	1.04	3.68	0.00	3.68	5.82	0.00	5.82	8.85	0.59	8.26
	15-30	1.33	1.50	0.29	1.21	3.03	0.59	2.45			
1268	0-15	1.27	3.17	1.16	2.01	6.12	2.24	3.88	13.52	9.04	4.48
	15-30	1.36	3.57	3.28	0.29	7.40	6.80	0.60			
1269	0-15	1.20	3.66	0.00	3.66	6.68	0.00	6.68	9.99	0.00	9.99
	15-30	1.28	1.70	0.00	1.70	3.31	0.00	3.31			
1270	0-15	1.12	4.76	4.55	0.21	8.09	7.74	0.36	12.69	9.43	3.26
	15-30	0.99	3.06	1.13	1.93	4.59	1.70	2.90			
1271	0-15	1.11	3.31	1.40	1.91	5.60	2.37	3.23	13.13	9.59	3.54

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	Percent			kg m ⁻²					
		-cm-									
1272	15-30	1.28	3.88	3.72	0.16	7.53	7.22	0.31	7.29	1.51	5.77
	0-15	1.27	2.09	0.08	2.01	4.05	0.15	3.89			
1273	15-30	1.18	1.81	0.76	1.05	3.24	1.36	1.88	9.90	1.36	8.54
	0-15	1.23	2.92	0.23	2.69	5.47	0.43	5.04			
1274	15-30	1.45	2.01	0.42	1.59	4.43	0.92	3.50	14.08	11.12	2.96
	0-15	1.19	3.43	3.34	0.09	6.19	6.02	0.16			
1275	15-30	1.48	3.50	2.26	1.24	7.89	5.10	2.80	11.48	9.23	2.25
	0-15	1.21	2.81	1.90	0.91	5.17	3.50	1.67			
1276	15-30	1.35	3.07	2.79	0.28	6.31	5.74	0.58	10.55	4.34	6.20
	0-15	1.30	2.83	0.65	2.18	5.57	1.28	4.29			
1277	15-30	1.35	2.42	1.49	0.93	4.97	3.06	1.91	6.48	2.60	3.88
	0-15	1.06	1.80	0.24	1.56	2.91	0.39	2.52			
1278	15-30	1.60	1.47	0.91	0.56	3.57	2.21	1.36	12.86	7.91	4.95
	0-15	1.34	2.80	0.63	2.17	5.72	1.29	4.44			
1279	15-30	1.35	3.48	3.23	0.25	7.14	6.62	0.51	6.46	0.80	5.66
	0-15	1.17	2.17	0.33	1.84	3.86	0.59	3.27			
1280	15-30	1.26	1.36	0.11	1.25	2.60	0.21	2.39	6.45	1.79	4.67
	0-15	1.07	2.18	0.09	2.09	3.55	0.15	3.41			
1281	15-30	1.00	1.91	1.08	0.83	2.90	1.64	1.26	7.00	0.27	6.73
	0-15	1.24	2.25	0.00	2.25	4.25	0.00	4.25			
1282	15-30	1.28	1.42	0.14	1.28	2.76	0.27	2.48	-	-	-
	0-15	-	-	-	-	-	-	-			
	15-30	-	-	-	-	-	-	-			

Table 39. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1283	0-15	1.04	3.91	0.94	2.97	6.17	1.48	4.69	12.34	5.95	6.39
	15-30	1.16	3.51	2.54	0.97	6.17	4.46	1.70			
1284	0-15	1.17	2.62	0.48	2.14	4.65	0.85	3.80	11.41	6.71	4.70
	15-30	1.24	3.59	3.11	0.48	6.76	5.86	0.90			
1285	0-15	0.93	3.46	0.00	3.46	4.91	0.00	4.91	11.28	5.53	5.75
	15-30	1.28	3.28	2.85	0.43	6.37	5.53	0.83			
1286	0-15	1.02	3.12	0.43	2.69	4.84	0.67	4.18	12.05	7.12	4.92
	15-30	1.19	3.97	3.56	0.41	7.20	6.46	0.74			
1287	0-15	1.05	3.27	1.09	2.18	5.20	1.73	3.46	11.02	5.87	5.16
	15-30	1.26	3.03	2.15	0.88	5.83	4.13	1.69			
1288	0-15	1.04	3.81	1.88	1.93	6.02	2.97	3.05	12.37	8.37	4.00
	15-30	1.36	3.08	2.62	0.46	6.35	5.40	0.95			
1289	0-15	1.07	4.04	1.92	2.12	6.55	3.11	3.44	13.06	9.25	3.81
	15-30	1.23	3.48	3.28	0.20	6.51	6.13	0.37			
1290	0-15	1.07	3.06	1.05	2.01	4.96	1.70	3.26	11.06	6.68	4.38
	15-30	1.35	2.98	2.43	0.55	6.10	4.97	1.13			
1291	0-15	0.98	3.59	1.19	2.40	5.34	1.77	3.57	11.69	7.20	4.49
	15-30	1.34	3.11	2.66	0.45	6.35	5.43	0.92			
1292	0-15	1.29	1.88	0.18	1.70	3.68	0.35	3.32	7.10	1.86	5.24
	15-30	1.40	1.61	0.71	0.90	3.43	1.51	1.92			
1293	0-15	1.12	4.46	1.76	2.70	7.60	3.00	4.60	17.03	11.82	5.21
	15-30	1.30	4.76	4.45	0.31	9.44	8.82	0.61			
1294	0-15	1.04	3.58	1.52	2.06	5.68	2.41	3.27	12.33	8.61	3.72
	15-30	1.35	3.24	3.02	0.22	6.65	6.20	0.45			
1295	0-15	1.13	4.36	2.59	1.77	7.47	4.44	3.03	14.44	10.64	3.80

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
	15-30	1.29	3.56	3.17	0.39	6.97	6.20	0.76			
1296	0-15	1.30	3.36	0.62	2.74	6.66	1.23	5.43	10.76	1.81	8.95
	15-30	1.40	1.92	0.27	1.65	4.10	0.58	3.52			
1297	0-15	1.01	4.78	2.91	1.87	7.31	4.45	2.86	14.62	11.45	3.17
	15-30	1.34	3.58	3.43	0.15	7.31	7.00	0.31			
1298	0-15	0.97	3.25	0.27	2.98	4.80	0.40	4.40	11.69	6.79	4.90
	15-30	1.16	3.89	3.61	0.28	6.89	6.39	0.50			
1299	0-15	1.16	3.22	0.74	2.48	5.67	1.30	4.37	14.14	9.27	4.87
	15-30	1.22	4.58	4.31	0.27	8.47	7.97	0.50			
1300	0-15	1.02	3.34	1.97	1.37	5.16	3.05	2.12	13.29	7.85	5.44
192	15-30	1.95	2.74	1.62	1.12	8.13	4.81	3.32			
1301	0-15	1.12	2.31	0.26	2.05	3.95	0.44	3.50	11.00	6.96	4.04
	15-30	1.31	3.55	3.28	0.27	7.05	6.52	0.54			
1302	0-15	1.11	2.79	0.19	2.60	4.69	0.32	4.37	9.16	3.25	5.91
	15-30	1.17	2.52	1.65	0.87	4.47	2.93	1.54			
1303	0-15	1.03	2.76	0.00	2.76	4.33	0.00	4.33	12.28	7.60	4.68
	15-30	1.35	3.88	3.71	0.17	7.95	7.60	0.35			
1304	0-15	1.29	3.36	0.00	3.36	6.61	0.00	6.61	11.47	0.63	10.84
	15-30	1.53	2.09	0.27	1.82	4.86	0.63	4.23			
1305	0-15	0.93	2.79	0.00	2.79	3.95	0.00	3.95	7.28	0.52	6.76
	15-30	1.36	1.61	0.25	1.36	3.33	0.52	2.81			
1306	0-15	1.41	4.10	0.00	4.10	8.79	0.00	8.79	15.72	5.84	9.88
	15-30	1.41	3.23	2.72	0.51	6.93	5.84	1.09			
1307	0-15	1.39	3.91	2.16	1.75	8.28	4.57	3.70	11.04	4.57	6.47
	15-30	1.36	1.34	0.00	1.34	2.77	0.00	2.77			

Table 39. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1308	0-15	1.16	3.41	0.00	3.41	6.01	0.00	6.01	8.91	0.00	8.91
	15-30	1.40	1.36	0.00	1.36	2.89	0.00	2.89			
1309	0-15	1.16	3.65	0.00	3.65	6.44	0.00	6.44	10.61	1.64	8.97
	15-30	1.04	2.64	1.04	1.60	4.17	1.64	2.53			
1310	0-15	1.14	3.85	1.72	2.13	6.66	2.97	3.68	13.77	9.85	3.92
	15-30	1.14	4.12	3.98	0.14	7.11	6.87	0.24			
1311	0-15	1.16	5.07	1.43	3.64	8.94	2.52	6.42	15.60	8.95	6.65
	15-30	1.36	3.22	3.11	0.11	6.66	6.43	0.23			
1312	0-15	0.97	1.57	0.22	1.35	2.33	0.33	2.00	5.81	1.38	4.43
	15-30	1.42	1.62	0.49	1.13	3.49	1.05	2.43			
1313	0-15	0.98	1.88	0.00	1.88	2.81	0.00	2.81	5.80	0.00	5.80
	15-30	1.23	1.60	0.00	1.60	2.99	0.00	2.99			
1314	0-15	1.01	1.61	0.11	1.50	2.48	0.17	2.31	4.48	0.40	4.08
	15-30	1.02	1.29	0.15	1.14	2.01	0.23	1.77			
1315	0-15	1.30	1.77	0.44	1.33	3.49	0.87	2.62	7.03	2.85	4.18
	15-30	1.46	1.59	0.89	0.70	3.54	1.98	1.56			
1316	0-15	1.37	1.21	0.50	0.71	2.52	1.04	1.48	5.31	3.19	2.13
	15-30	1.47	1.25	0.96	0.29	2.79	2.15	0.65			
1317	0-15	1.09	2.48	2.21	0.27	4.11	3.67	0.45	9.16	8.27	0.89
	15-30	1.47	2.26	2.06	0.20	5.05	4.60	0.45			
1318	0-15	1.40	1.67	0.65	1.02	3.54	1.38	2.17	7.08	2.91	4.17
	15-30	1.42	1.64	0.71	0.93	3.53	1.53	2.00			
1319	0-15	1.28	1.76	0.26	1.50	3.43	0.51	2.93	6.57	1.99	4.58
	15-30	1.30	1.59	0.75	0.84	3.14	1.48	1.66			
1320	0-15	1.28	1.67	0.69	0.98	3.26	1.35	1.91	7.62	4.32	3.30

Table 39. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1321	15-30	1.36	2.11	1.44	0.67	4.36	2.97	1.38			
	0-15	1.48	1.96	1.10	0.86	4.42	2.48	1.94	9.61	7.26	2.35
1322	15-30	1.42	2.40	2.21	0.19	5.18	4.77	0.41			
	0-15	1.12	2.01	0.45	1.56	3.44	0.77	2.67	7.12	2.68	4.44
1323	15-30	1.18	2.06	1.07	0.99	3.69	1.91	1.77			
	0-15	1.26	1.86	0.77	1.09	3.57	1.48	2.09	6.69	3.03	3.66
1324	15-30	1.27	1.61	0.80	0.81	3.12	1.55	1.57			
	0-15	1.35	1.96	1.10	0.86	4.02	2.26	1.76	7.38	4.48	2.90
1325	15-30	1.18	1.87	1.24	0.63	3.36	2.23	1.13			
	0-15	1.32	1.81	1.24	0.57	3.62	2.48	1.14	7.53	5.67	1.86
1326	15-30	1.40	1.84	1.50	0.34	3.92	3.19	0.72			
	0-15	1.32	2.43	2.06	0.37	4.86	4.12	0.74	9.98	8.81	1.17
1327	15-30	1.45†	2.33†	2.14†	0.20†	5.12†	4.69†	0.43†			
	0-15	1.45	2.08	1.32	0.76	4.58	2.90	1.67	11.05	8.98	2.07
1328	15-30	1.45	2.94	2.76	0.18	6.47	6.07	0.40			
	0-15	1.03	3.56	1.10	2.46	5.59	1.73	3.86	11.86	6.96	4.90
1329	15-30	1.34	3.08	2.57	0.51	6.27	5.23	1.04			
	0-15	0.88	3.59	1.49	2.10	4.82	2.00	2.82	9.29	5.19	4.10
1330	15-30	0.99	2.97	2.12	0.85	4.47	3.19	1.28			
	0-15	1.20	2.95	0.44	2.51	5.37	0.80	4.56	12.90	5.52	7.38
1331	15-30	1.61	3.08	1.93	1.15	7.53	4.72	2.81			
	0-15	1.37	2.31	0.00	2.31	4.82	0.00	4.82	8.86	2.14	6.71
1332	15-30	1.64	1.62	0.86	0.76	4.03	2.14	1.89			
	0-15	0.93	3.67	0.00	3.67	5.19	0.00	5.19	12.54	1.67	10.87
	15-30	1.27	3.79	0.86	2.93	7.34	1.67	5.68			

Table 39. (continued)

Sample Number	Depth	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-		-----Percent-----			-----kg m ⁻² -----					
1333	0-15	1.11	2.21	0.66	1.55	3.74	1.12	2.63	12.10	8.29	3.81
	15-30	1.36	4.03	3.46	0.57	8.36	7.17	1.18			
1334	0-15	1.01	3.27	0.35	2.92	5.00	0.54	4.46	11.04	5.58	5.46
	15-30	1.31	3.04	2.54	0.50	6.04	5.04	0.99			
1335	0-15	1.29	2.87	0.00	2.87	5.61	0.00	5.61	9.49	0.66	8.83
	15-30	1.56	1.64	0.28	1.36	3.88	0.66	3.22			
1336	0-15	1.18	2.71	0.00	2.71	4.85	0.00	4.85	8.93	0.00	8.93
	15-30	1.25	2.14	0.00	2.14	4.08	0.00	4.08			
1337	0-15	1.26	3.71	3.03	0.68	7.10	5.80	1.30	9.67	6.26	3.41
	15-30	1.39	1.22	0.22	1.00	2.58	0.46	2.11			
195 1338	0-15	1.21	2.34	0.00	2.34	4.30	0.00	4.30	6.84	0.62	6.22
	15-30	1.36	1.23	0.30	0.93	2.54	0.62	1.92			
1339	0-15	1.11	3.82	1.68	2.14	6.43	2.83	3.60	12.29	6.42	5.87
	15-30	1.14	3.38	2.07	1.31	5.86	3.59	2.27			
1340	0-15	1.20	2.47	0.00	2.47	4.50	0.00	4.50	7.97	2.01	5.96
	15-30	1.38	1.66	0.96	0.70	3.47	2.01	1.46			
1341	0-15	1.03	4.16	1.58	2.58	6.54	2.48	4.06	13.28	8.48	4.80
	15-30	1.11	4.01	3.57	0.44	6.74	6.00	0.74			
1342	0-15	1.14	2.72	0.00	2.72	4.70	0.00	4.70	8.13	0.00	8.13
	15-30	1.34	1.69	0.00	1.69	3.43	0.00	3.43			
1343	0-15	1.08	3.10	0.00	3.10	5.07	0.00	5.07	8.95	0.50	8.46
	15-30	1.31	1.95	0.25	1.70	3.88	0.50	3.39			
1344	0-15	1.40	0.97	0.00	0.97	2.06	0.00	2.06	3.29	0.00	3.29
	15-30	1.53	0.53	0.00	0.53	1.23	0.00	1.23			

Table 39. (continued)

Sample Number	Depth	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
			-----Percent-----			-----kg m ⁻² -----					
1345	0-15	1.31	2.03	0.38	1.65	4.04	0.76	3.29	9.89	4.53	5.36
	15-30	1.55	2.48	1.60	0.88	5.85	3.77	2.08			
1346	0-15	1.62	1.96	0.76	1.20	4.82	1.87	2.95	11.87	8.47	3.41
	15-30	1.67	2.78	2.60	0.18	7.05	6.60	0.46			
1347	0-15	1.45	3.04	1.98	1.06	6.71	4.37	2.34	14.01	10.01	4.00
	15-30	1.53	3.13	2.42	0.71	7.30	5.64	1.66			
1348	0-15	1.38	1.77	0.24	1.53	3.72	0.50	3.22	6.95	2.51	4.44
	15-30	1.43	1.48	0.92	0.56	3.22	2.00	1.22			
1349	0-15	1.25	3.02	1.61	1.41	5.72	3.05	2.67	7.67	3.25	4.42
	15-30	1.46	0.88	0.09	0.79	1.95	0.20	1.75			
1350	0-15	1.21	2.88	0.97	1.91	5.31	1.79	3.52	11.74	7.24	4.49
	15-30	1.42	2.98	2.53	0.45	6.42	5.45	0.97			
1351	0-15	1.22	2.76	1.42	1.34	5.14	2.64	2.49	9.57	4.92	4.65
	15-30	1.36	2.14	1.10	1.04	4.43	2.28	2.15			
1352	0-15	1.36	3.04	2.08	0.96	6.26	4.28	1.98	12.50	9.96	2.54
	15-30	1.42	2.88	2.62	0.26	6.24	5.67	0.56			
1353	0-15	1.29	2.69	1.66	1.03	5.27	3.26	2.02	14.52	12.16	2.36
	15-30	1.30	4.67	4.50	0.17	9.25	8.91	0.34			
1354	0-15	1.32	2.42	0.98	1.44	4.87	1.97	2.90	11.17	8.15	3.02
	15-30	1.36	3.04	2.98	0.06	6.30	6.18	0.12			
1355	0-15	1.31	2.89	1.45	1.44	5.77	2.89	2.87	9.21	3.14	6.07
	15-30	1.34	1.69	0.12	1.57	3.44	0.24	3.20			
1356	0-15	1.47	0.95	0.00	0.95	2.13	0.00	2.13	3.78	0.34	3.44
	15-30	1.60	0.68	0.14	0.54	1.66	0.34	1.31			

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1357	0-15	1.29	3.40	2.78	0.62	6.68	5.46	1.22	13.40	11.30	2.11
	15-30	1.36	3.25	2.82	0.43	6.73	5.84	0.89			
1358	0-15	1.30	2.11	1.01	1.10	4.18	2.00	2.18	8.71	6.24	2.47
	15-30	1.36	2.19	2.05	0.14	4.53	4.24	0.29			
1359	0-15	1.19	2.59	0.45	2.14	4.67	0.81	3.86	10.74	5.37	5.37
	15-30	1.20	3.33	2.50	0.83	6.07	4.56	1.51			
1360	0-15	1.05	3.84	3.69	0.15	6.11	5.87	0.24	13.99	9.39	4.61
	15-30	1.34	3.88	1.73	2.15	7.88	3.52	4.37			
1361	0-15	1.07	2.90	0.51	2.39	4.74	0.83	3.90	11.52	6.89	4.64
	15-30	1.24	3.60	3.21	0.39	6.79	6.05	0.74			
1362	0-15	0.96	4.40	1.90	2.50	6.41	2.77	3.64	14.15	10.17	3.98
	15-30	1.32	3.86	3.69	0.17	7.74	7.40	0.34			
1363	0-15	1.03	4.26	1.82	2.44	6.65	2.84	3.81	13.99	9.50	4.50
	15-30	1.34	3.62	3.28	0.34	7.35	6.66	0.69			
1364	0-15	1.07	3.95	3.81	0.14	6.40	6.17	0.23	13.09	8.06	5.04
	15-30	1.23	3.59	1.01	2.58	6.69	1.88	4.81			
1365	0-15	1.10	3.51	1.87	1.64	5.87	3.13	2.74	11.36	7.87	3.49
	15-30	1.28	2.81	2.43	0.38	5.49	4.74	0.74			
1366	0-15	1.03	2.86	0.11	2.75	4.47	0.17	4.30	7.53	0.71	6.82
	15-30	1.41	1.43	0.25	1.18	3.06	0.54	2.53			
1367	0-15	1.06	3.88	0.52	3.36	6.23	0.83	5.39	12.12	6.23	5.89
	15-30	1.27	3.06	2.80	0.26	5.90	5.40	0.50			
1368	0-15	1.23	2.64	0.09	2.55	4.92	0.17	4.76	9.16	0.74	8.42
	15-30	1.40	1.99	0.27	1.72	4.24	0.57	3.66			

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1369	0-15	1.18	2.74	0.00	2.74	4.92	0.00	4.92	9.63	2.09	7.54
	15-30	1.31	2.36	1.05	1.31	4.71	2.09	2.61			
1370	0-15	1.09	3.40	0.88	2.52	5.62	1.45	4.17	12.91	8.43	4.48
	15-30	1.31	3.67	3.51	0.16	7.29	6.97	0.32			
1371	0-15	1.17	3.66	1.98	1.68	6.49	3.51	2.98	12.97	8.83	4.14
	15-30	1.41	3.02	2.48	0.54	6.48	5.32	1.16			
1372	0-15	1.05	3.04	1.15	1.89	4.87	1.84	3.03	10.14	5.91	4.23
	15-30	1.23	2.81	2.17	0.64	5.27	4.07	1.20			
1373	0-15	1.25	2.32	0.62	1.70	4.42	1.18	3.24	10.06	6.57	3.49
	15-30	1.35	2.75	2.63	0.12	5.63	5.39	0.25			
1374	0-15	1.13	2.12	0.28	1.84	3.64	0.48	3.16	6.57	1.61	4.96
	15-30	1.43	1.35	0.52	0.83	2.93	1.13	1.80			
1375	0-15	1.08	2.77	0.16	2.61	4.56	0.26	4.30	9.31	2.86	6.45
	15-30	1.32	2.36	1.29	1.07	4.75	2.59	2.15			
1376	0-15	1.36	1.52	0.12	1.40	3.15	0.25	2.90	5.96	1.24	4.72
	15-30	1.48	1.25	0.44	0.81	2.81	0.99	1.82			
1377	0-15	1.45	0.98	0.00	0.98	2.16	0.00	2.16	3.87	0.53	3.33
	15-30	1.60	0.70	0.22	0.48	1.70	0.53	1.17			
1378	0-15	1.49	1.14	0.19	0.95	2.57	0.43	2.15	4.36	0.72	3.64
	15-30	1.61	0.73	0.12	0.61	1.78	0.29	1.49			
1379	0-15	1.28	2.03	0.11	1.92	3.95	0.21	3.73	6.80	0.75	6.05
	15-30	1.41	1.33	0.25	1.08	2.85	0.54	2.32			
1380	0-15	1.30	1.88	0.15	1.73	3.71	0.30	3.41	8.54	3.82	4.72
	15-30	1.30	2.44	1.78	0.66	4.83	3.53	1.31			

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1381	0-15	1.21	2.02	0.00	2.02	3.71	0.00	3.71	6.48	0.00	6.48
	15-30	1.39	1.31	0.00	1.31	2.77	0.00	2.77			
1382	0-15	0.97	2.42	1.43	0.99	3.57	2.11	1.46	7.24	5.12	2.12
	15-30	0.83	2.89	2.37	0.52	3.66	3.01	0.66			
1383	0-15	1.34	3.26	2.72	0.54	6.63	5.53	1.10	14.96	13.49	1.47
	15-30	1.53	3.58	3.42	0.16	8.32	7.95	0.37			
1384	0-15	1.29	2.28	0.00	2.28	4.46	0.00	4.46	6.84	0.78	6.06
	15-30	1.42	1.10	0.36	0.74	2.38	0.78	1.60			
1385	0-15	1.26	3.21	2.11	1.10	6.16	4.05	2.11	12.09	8.44	3.65
	15-30	1.34	2.92	2.16	0.76	5.93	4.39	1.54			
1386	0-15	1.20	2.41	0.18	2.23	4.40	0.33	4.07	9.31	3.84	5.47
	15-30	1.04	3.11	2.22	0.89	4.91	3.51	1.41			
1387	0-15	1.34	2.22	0.12	2.10	4.52	0.24	4.27	7.24	0.92	6.32
	15-30	1.35	1.33	0.33	1.00	2.73	0.68	2.05			
1388	0-15	1.43	1.95	0.83	1.12	4.25	1.81	2.44	11.38	8.66	2.71
	15-30	1.20	3.91	3.76	0.15	7.13	6.86	0.27			
1389	0-15	1.34	1.93	0.17	1.76	3.93	0.35	3.59	8.26	2.98	5.27
	15-30	1.46	1.95	1.19	0.76	4.32	2.64	1.68			
1390	0-15	1.53	1.96	1.06	0.90	4.56	2.47	2.10	9.64	7.17	2.47
	15-30	1.45	2.30	2.13	0.17	5.08	4.71	0.38			
1391	0-15	1.44	2.12	1.06	1.06	4.65	2.33	2.33	10.37	7.77	2.59
	15-30	1.35	2.79	2.66	0.13	5.71	5.45	0.27			
1392	0-15	1.33	2.72	1.71	1.01	5.49	3.45	2.04	9.80	6.14	3.66
	15-30	1.43	1.99	1.24	0.75	4.31	2.69	1.62			

Table 39. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1393	0-15	1.36	2.71	2.20	0.51	5.61	4.56	1.06	12.45	11.12	1.33
	15-30	1.39	3.23	3.10	0.13	6.84	6.56	0.28			
1394	0-15	1.18	3.14	0.00	3.14	5.63	0.00	5.63	10.81	3.45	7.36
	15-30	1.28	2.66	1.77	0.89	5.18	3.45	1.73			
1395	0-15	1.16	2.02	0.00	2.02	3.56	0.00	3.56	7.82	3.83	3.99
	15-30	1.25	2.25	2.02	0.23	4.26	3.83	0.44			
1396	0-15	1.04	3.64	0.71	2.93	5.74	1.12	4.62	19.09	14.12	4.97
	15-30	1.21	7.29	7.10	0.19	13.35	13.00	0.35			
1397	0-15	1.07	3.71	0.00	3.71	6.02	0.00	6.02	9.03	0.41	8.62
	15-30	1.00	1.97	0.27	1.70	3.01	0.41	2.59			
1398	0-15	1.07	3.53	0.49	3.04	5.75	0.80	4.95	15.95	10.82	5.13
	15-30	1.18	5.67	5.57	0.10	10.20	10.02	0.18			
1399	0-15	1.17	3.15	0.00	3.15	5.59	0.00	5.59	11.05	3.07	7.98
	15-30	1.38	2.60	1.46	1.14	5.46	3.07	2.40			
1400	0-15	1.15	3.15	0.16	2.99	5.50	0.28	5.22	11.77	5.34	6.43
	15-30	1.37	3.01	2.43	0.58	6.27	5.06	1.21			
1401	0-15	1.13	3.17	0.14	3.03	5.44	0.24	5.20	11.88	6.37	5.50
	15-30	1.18	3.60	3.43	0.17	6.44	6.13	0.30			
1402	0-15	1.17	3.45	0.09	3.36	6.12	0.16	5.96	10.86	3.35	7.51
	15-30	1.13	2.76	1.86	0.90	4.73	3.19	1.54			
1403	0-15	0.92	3.04	0.00	3.04	4.27	0.00	4.27	7.24	0.97	6.27
	15-30	1.33	1.47	0.48	0.99	2.98	0.97	2.00			
1404	0-15	0.94	3.61	0.00	3.61	5.14	0.00	5.14	9.35	0.90	8.45
	15-30	1.32	2.10	0.45	1.65	4.21	0.90	3.31			

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1405	0-15	1.05	3.79	0.00	3.79	6.04	0.00	6.04	9.22	0.49	8.73
	15-30	1.40	1.49	0.23	1.26	3.18	0.49	2.69			
1406	0-15	1.13	3.23	0.24	2.99	5.53	0.41	5.12	11.97	4.75	7.22
	15-30	1.26	3.35	2.26	1.09	6.43	4.34	2.09			
1407	0-15	0.85	5.29	0.00	5.29	6.79	0.00	6.79	11.57	0.00	11.57
	15-30	1.19	2.64	0.00	2.64	4.78	0.00	4.78			
1408	0-15	1.00	3.63	0.00	3.63	5.50	0.00	5.50	8.76	0.46	8.30
	15-30	1.37	1.57	0.22	1.35	3.26	0.46	2.80			
1409	0-15	1.22	2.73	0.00	2.73	5.04	0.00	5.04	13.00	7.67	5.33
	15-30	1.28	4.10	3.95	0.15	7.96	7.67	0.29			
201 1410	0-15	1.21	2.52	0.90	1.62	4.62	1.65	2.97	11.06	7.28	3.78
	15-30	1.41	3.01	2.63	0.38	6.44	5.63	0.81			
1411	0-15	1.27	2.33	1.06	1.27	4.51	2.05	2.46	7.14	2.24	4.90
	15-30	1.54	1.12	0.08	1.04	2.62	0.19	2.44			
1412	0-15	1.41	3.22	2.23	0.99	6.92	4.79	2.13	11.21	5.70	5.51
	15-30	1.03	2.74	0.58	2.16	4.29	0.91	3.38			
1413	0-15	1.33	3.04	2.68	0.36	6.13	5.41	0.73	13.54	12.58	0.96
	15-30	1.37	3.55	3.44	0.11	7.40	7.17	0.23			
1414	0-15	1.33	2.15	0.54	1.61	4.36	1.09	3.26	9.06	4.50	4.55
	15-30	1.33	2.33	1.69	0.64	4.70	3.41	1.29			
1415	0-15	1.28	2.30	0.26	2.04	4.48	0.51	3.97	8.15	3.86	4.29
	15-30	1.31	1.85	1.69	0.16	3.67	3.36	0.32			
1416	0-15	1.73	3.10	2.52	0.58	8.14	6.62	1.52	12.83	10.45	2.38
	15-30	1.11	2.78	2.27	0.51	4.69	3.83	0.86			

Table 39. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1417	0-15	1.26	2.01	0.25	1.76	3.84	0.48	3.36	8.32	2.91	5.41
	15-30	1.43	2.06	1.12	0.94	4.48	2.44	2.05			
1418	0-15	1.06	2.45	1.33	1.12	3.95	2.14	1.80	9.51	7.25	2.26
	15-30	1.14	3.20	2.94	0.26	5.56	5.11	0.45			
1419	0-15	1.34	1.75	0.08	1.67	3.58	0.16	3.41	5.91	0.42	5.49
	15-30	1.42	1.08	0.12	0.96	2.33	0.26	2.07			
1420	0-15	1.42	1.17	0.18	0.99	2.53	0.39	2.14	8.36	4.87	3.49
	15-30	1.45	2.64	2.03	0.61	5.83	4.48	1.35			
1421	0-15	1.35	2.54	0.97	1.57	5.22	1.99	3.23	10.09	5.13	4.96
	15-30	1.37	2.33	1.50	0.83	4.87	3.13	1.73			
1422	0-15	1.41	1.72	0.83	0.89	3.68	1.78	1.90	6.29	3.00	3.29
	15-30	1.49	1.15	0.54	0.61	2.61	1.22	1.38			
1423	0-15	1.43	3.34	2.50	0.84	7.28	5.45	1.83	13.35	10.46	2.89
	15-30	1.26	3.16	2.61	0.55	6.06	5.01	1.06			
1424	0-15	1.59	1.15	0.19	0.96	2.77	0.46	2.32	5.21	1.44	3.77
	15-30	1.57	1.02	0.41	0.61	2.43	0.98	1.45			

Table 40. Sheridan County, North Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1	0-15	1.49	2.26	0.22	2.04	5.12	0.5	4.62	8.65	1.59	7.06
	15-30	1.46	1.59	0.49	1.1	3.53	1.09	2.44			
2	0-15	1.31	1.62	0	1.62	3.23	0	3.23	5.58	0	5.58
	15-30	1.49	1.04	0	1.04	2.36	0	2.36			
3	0-15	1.28	2.04	0	2.04	3.97	0	3.97	7.02	0	7.02
	15-30	1.51	1.33	0	1.33	3.05	0	3.05			
4	0-15	1.29	1.78	0	1.78	3.49	0	3.49	5.92	0	5.92
	15-30	1.44	1.11	0	1.11	2.43	0	2.43			
5	0-15	1.29	2.1	0	2.1	4.12	0	4.12	7.32	0	7.32
	15-30	1.37	1.54	0	1.54	3.21	0	3.21			
6	0-15	1.36	1.67	0	1.67	3.45	0	3.45	5.86	0.39	5.47
	15-30	1.43	1.11	0.18	0.93	2.41	0.39	2.02			
7	0-15	1.24	2.19	0	2.19	4.13	0	4.13	6.93	0	6.93
	15-30	1.51	1.22	0	1.22	2.8	0	2.8			
8	0-15	1.21	2.12	0	2.12	3.9	0	3.9	7.74	0.6	7.14
	15-30	1.42	1.78	0.28	1.5	3.84	0.6	3.24			
9	0-15	1.36	1.82	0	1.82	3.76	0	3.76	6.2	0	6.2
	15-30	1.5	1.07	0	1.07	2.44	0	2.44			
10	0-15	1.32	1.39	0	1.39	2.79	0	2.79	5.65	0.46	5.19
	15-30	1.45	1.3	0.21	1.09	2.87	0.46	2.4			
11	0-15	1.16	2.46	0	2.46	4.34	0	4.34	8.88	0	8.88

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass						
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC	
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----						
		-cm-										
	12	15-30	1.37	2.18	0	2.18	4.54	0	4.54			
		0-15	1.36	1.73	0	1.73	3.58	0	3.58	6.19	0	6.19
		15-30	1.52	1.13	0	1.13	2.61	0	2.61			
	13	0-15	1.41	1.91	0.86	1.05	4.09	1.84	2.25	10.83	8.02	2.81
		15-30	1.42	3.12	2.86	0.26	6.73	6.17	0.56			
	14	0-15	1.39	1.91	0.27	1.64	4.04	0.57	3.46	7.54	1.73	5.81
		15-30	1.47	1.57	0.52	1.05	3.51	1.16	2.35			
	15	0-15	1.34	2.04	0.00	2.04	4.16	0.00	4.16	6.89	0.00	6.89
		15-30	1.44	1.25	0.00	1.25	2.74	0.00	2.74			
204	16	0-15	1.37	1.47	0.15	1.32	3.06	0.31	2.75	6.68	2.05	4.62
		15-30	1.45	1.64	0.79	0.85	3.61	1.74	1.87			
	17	0-15	1.36	1.69	0.00	1.69	3.49	0.00	3.49	6.09	0.00	6.09
		15-30	1.47	1.16	0.00	1.16	2.59	0.00	2.59			
	18	0-15	1.36	1.67	0.00	1.67	3.45	0.00	3.45	5.83	0.00	5.83
		15-30	1.49	1.05	0.00	1.05	2.38	0.00	2.38			
	19	0-15	1.23	1.74	0.00	1.74	3.25	0.00	3.25	7.09	0.00	7.09
		15-30	1.55	1.63	0.00	1.63	3.84	0.00	3.84			
	20	0-15	1.38	1.73	0.11	1.62	3.63	0.23	3.40	7.44	0.94	6.50
		15-30	1.66	1.51	0.28	1.23	3.81	0.71	3.10			
	21	0-15	1.13	5.71	2.28	3.43	9.81	3.92	5.89	25.89	16.84	9.05
		15-30	1.54	6.87	5.52	1.35	16.08	12.92	3.16			
	22	0-15	1.38	1.75	0.13	1.62	3.67	0.27	3.40	6.94	0.64	6.30
		15-30	1.63	1.32	0.15	1.17	3.27	0.37	2.90			
	23	0-15	1.26	2.77	0.00	2.77	5.31	0.00	5.31	8.11	0.65	7.46
		15-30	1.22	1.51	0.35	1.16	2.80	0.65	2.15			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
24	0-15	1.19	3.28	0.00	3.28	5.93	0.00	5.93	8.64	0.00	8.64
	15-30	1.15	1.55	0.00	1.55	2.71	0.00	2.71			
25	0-15	1.05	2.87	0.00	2.87	4.58	0.00	4.58	8.12	0.00	8.12
	15-30	1.31	1.78	0.00	1.78	3.54	0.00	3.54			
26	0-15	1.18	3.11	0.00	3.11	5.58	0.00	5.58	9.04	0.00	9.04
	15-30	1.46	1.56	0.00	1.56	3.46	0.00	3.46			
27	0-15	1.08	3.71	0.00	3.71	6.09	0.00	6.09	10.32	0.00	10.32
	15-30	1.27	2.19	0.00	2.19	4.23	0.00	4.23			
28	0-15	0.93	3.05	0.00	3.05	4.31	0.00	4.31	7.06	0.00	7.06
	15-30	1.11	1.63	0.00	1.63	2.75	0.00	2.75			
29	0-15	0.96	3.81	0.00	3.81	5.56	0.00	5.56	9.40	0.00	9.40
	15-30	1.31	1.93	0.00	1.93	3.84	0.00	3.84			
30	0-15	1.09	2.66	0.00	2.66	4.41	0.00	4.41	7.71	0.87	6.83
	15-30	1.40	1.55	0.41	1.14	3.30	0.87	2.43			
31	0-15	1.09	2.84	0.00	2.84	4.71	0.00	4.71	7.87	0.00	7.87
	15-30	1.38	1.51	0.00	1.51	3.17	0.00	3.17			
32	0-15	0.99	3.75	0.00	3.75	5.64	0.00	5.64	10.75	0.00	10.75
	15-30	1.18	2.85	0.00	2.85	5.11	0.00	5.11			
33	0-15	1.01	3.20	0.00	3.20	4.91	0.00	4.91	7.89	7.89	4.91
	15-30	1.28	1.53	0.00	1.53	2.98	0.00	2.98			
34	0-15	1.06	3.14	0.00	3.14	5.06	0.00	5.06	9.40	1.92	7.48
	15-30	1.36	2.10	0.93	1.17	4.34	1.92	2.42			
35	0-15	1.18	3.15	0.00	3.15	5.65	0.00	5.65	9.63	1.29	8.34
	15-30	1.35	1.94	0.63	1.31	3.98	1.29	2.69			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass						
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC	
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----						
206	36	0-15	1.69	2.82	0.00	2.82	7.24	0.00	7.24	11.76	0.00	11.76
		15-30	1.53	1.94	0.00	1.94	4.51	0.00	4.51			
	37	0-15	1.30	1.93	0.28	1.65	3.81	0.55	3.26	7.76	3.02	4.74
		15-30	1.45	1.79	1.12	0.67	3.95	2.47	1.48			
	38	0-15	1.46	2.55	0.99	1.56	5.66	2.20	3.46	10.34	5.50	4.84
		15-30	1.46	2.11	1.49	0.62	4.68	3.31	1.38			
	39	0-15	1.53	1.20	0.37	0.83	2.79	0.86	1.93	6.35	3.24	3.11
		15-30	1.55	1.51	1.01	0.50	3.56	2.38	1.18			
	40	0-15	1.35	2.24	0.14	2.10	4.60	0.29	4.31	8.54	0.72	7.82
		15-30	1.51	1.72	0.19	1.53	3.95	0.44	3.51			
	41	0-15	1.43	1.88	0.00	1.88	4.09	0.00	4.09	7.33	0.00	7.33
		15-30	1.45	1.47	0.00	1.47	3.24	0.00	3.24			
	42	0-15	1.39	1.77	0.09	1.68	3.74	0.19	3.55	3.74	0.64	5.15
		15-30	0.96	1.41	0.31	1.10	2.06	0.45	1.61			
	43	0-15	1.05	4.12	0.00	4.12	6.58	0.00	6.58	11.97	0.00	11.97
		15-30	1.13	3.14	0.00	3.14	5.39	0.00	5.39			
	44	0-15	1.32	2.38	0.93	1.45	4.78	1.87	2.91	10.22	5.25	4.97
		15-30	1.40	2.56	1.59	0.97	5.45	3.38	2.06			
45	0-15	1.11	2.03	0.00	2.03	3.43	0.00	3.43	6.83	0.37	6.46	
	15-30	1.85	1.21	0.13	1.08	3.40	0.37	3.04				
46	0-15	1.42	2.12	0.23	1.89	4.58	0.50	4.08	8.69	1.26	7.43	
	15-30	1.47	1.84	0.34	1.50	4.11	0.76	3.35				
47	0-15	1.28	2.65	1.03	1.62	5.16	2.00	3.15	12.02	8.65	3.37	
	15-30	1.42	3.18	3.08	0.10	6.86	6.65	0.22				

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
48	0-15	1.13	2.90	0.07	2.83	4.98	0.12	4.86	8.53	0.31	8.22
	15-30	1.38	1.69	0.09	1.60	3.54	0.19	3.36			
49	0-15	1.34	1.97	0.00	1.97	4.01	0.00	4.01	6.85	0.00	6.85
	15-30	1.46	1.28	0.00	1.28	2.84	0.00	2.84			
50	0-15	1.27	2.47	0.52	1.95	4.77	1.00	3.76	9.25	2.40	6.85
	15-30	1.46	2.02	0.63	1.39	4.48	1.40	3.08			
51	0-15	1.15	2.69	0.00	2.69	2.69	0.00	2.69	4.75	1.86	3.89
	15-30	1.42	2.06	0.86	1.20	2.06	1.86	1.20			
52	0-15	1.19	2.75	0.77	1.98	2.75	1.39	1.98	4.91	3.39	3.24
	15-30	1.46	2.16	0.90	1.26	2.16	2.00	1.26			
53	0-15	0.96	3.63	0.00	3.63	5.30	0.00	5.30	10.76	0.00	10.76
	15-30	1.16	3.10	0.00	3.10	5.47	0.00	5.47			
54	0-15	1.21	1.96	0.00	1.96	3.60	0.00	3.60	8.20	2.29	5.91
	15-30	1.46	2.07	1.03	1.04	4.59	2.29	2.31			
55	0-15	1.28	1.58	0.00	1.58	3.07	0.00	3.07	4.33	0.00	4.33
	15-30	0.94	0.88	0.00	0.88	1.26	0.00	1.26			
56	0-15	1.18	1.97	0.00	1.97	3.53	0.00	3.53	7.31	0.71	6.60
	15-30	1.42	1.75	0.33	1.42	3.78	0.71	3.06			
57	0-15	1.14	2.52	0.00	2.52	4.37	0.00	4.37	7.89	0.00	7.89
	15-30	1.44	1.61	0.00	1.61	3.52	0.00	3.52			
58	0-15	1.27	1.68	0.00	1.68	3.24	0.00	3.24	6.26	0.50	5.76
	15-30	1.43	1.39	0.23	1.16	3.02	0.50	2.52			
59	0-15	0.99	3.46	0.00	3.46	5.21	0.00	5.21	9.66	0.00	9.66
	15-30	1.19	2.46	0.00	2.46	4.45	0.00	4.45			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
60	0-15	1.00	3.87	0.00	3.87	5.88	0.00	5.88	9.85	0.95	8.89
	15-30	1.23	2.12	0.51	1.61	3.96	0.95	3.01			
61	0-15	0.92	5.74	0.00	5.74	8.03	0.00	8.03	12.57	0.00	12.57
	15-30	1.22	2.45	0.00	2.45	4.54	0.00	4.54			
62	0-15	1.04	3.81	0.25	3.56	6.02	0.40	5.63	11.35	3.29	8.06
	15-30	1.23	2.85	1.55	1.30	5.33	2.90	2.43			
63	0-15	1.08	3.68	0.00	3.68	6.04	0.00	6.04	6.04	0.00	6.04
	15-30	-	-	-	-	-	-	-			
64	0-15	1.08	5.01	1.26	3.75	8.22	2.07	6.16	8.22	2.07	6.16
	15-30	-	-	-	-	-	-	-			
65	0-15	1.05	4.06	0.00	4.06	6.48	0.00	6.48	6.48	0.00	6.48
	15-30	-	-	-	-	-	-	-			
66	0-15	0.99	4.61	0.00	4.61	6.94	0.00	6.94	11.72	0.37	11.35
	15-30	1.43	2.20	0.17	2.03	4.78	0.37	4.41			
67	0-15	1.07	3.46	0.26	3.20	5.63	0.42	5.20	12.43	4.72	7.71
	15-30	1.23	3.64	2.30	1.34	6.81	4.30	2.51			
68	0-15	0.85	3.40	0.13	3.27	4.39	0.17	4.22	9.29	2.46	6.83
	15-30	1.01	3.19	1.49	1.70	4.90	2.29	2.61			
69	0-15	0.92	4.22	0.43	3.79	5.90	0.60	5.30	12.84	4.93	7.92
	15-30	1.09	4.19	2.61	1.58	6.94	4.32	2.62			
70	0-15	0.95	4.56	0.00	4.56	6.58	0.00	6.58	11.20	0.46	10.74
	15-30	1.22	2.49	0.25	2.24	4.62	0.46	4.15			
71	0-15	1.26	3.24	0.81	2.43	6.21	1.55	4.65	11.24	3.57	7.67
	15-30	1.38	2.40	0.96	1.44	5.03	2.01	3.02			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
72	0-15	1.15	2.56	0.98	1.58	4.47	1.71	2.76	9.38	5.46	3.92
	15-30	1.27	2.54	1.94	0.60	4.90	3.74	1.16			
73	0-15	1.11	2.71	0.80	1.91	4.57	1.35	3.22	10.34	6.97	3.37
	15-30	1.34	2.83	2.76	0.07	5.76	5.62	0.14			
74	0-15	1.02	4.01	0.00	4.01	6.22	0.00	6.22	10.42	0.82	9.60
	15-30	1.25	2.21	0.43	1.78	4.20	0.82	3.38			
75	0-15	1.22	3.23	0.85	2.38	5.99	1.58	4.41	12.19	5.65	6.55
	15-30	1.3	3.14	2.06	1.08	6.20	4.07	2.13			
76	0-15	1.08	3.01	0.54	2.47	4.94	0.89	4.05	10.09	2.95	7.18
	15-30	1.18	2.87	1.13	1.74	5.15	2.07	3.12			
77	0-15	1.00	3.82	0.27	3.55	5.81	0.41	5.40	12.05	1.02	11.03
	15-30	1.30	3.16	0.31	2.85	6.24	0.61	5.63			
78	0-15	1.09	2.83	0.50	2.33	4.69	0.83	3.86	10.65	4.21	6.44
	15-30	1.38	2.84	1.61	1.23	5.96	3.38	2.58			
79	0-15	1.12	3.45	1.30	2.15	5.87	2.21	3.66	13.18	7.98	5.20
	15-30	1.37	3.51	2.77	0.74	7.31	5.77	1.54			
80	0-15	0.98	3.61	0.19	3.42	5.38	0.28	5.09	11.23	0.75	10.48
	15-30	1.06	3.63	0.29	3.34	5.85	0.47	5.38			
81	0-15	1.10	3.33	0.11	3.22	5.57	0.18	5.38	10.66	0.60	10.07
	15-30	1.18	2.84	0.23	2.61	5.09	0.41	4.68			
82	0-15	1.04	3.75	0.00	3.75	5.93	0.00	5.93	10.21	0.00	10.21
	15-30	1.19	2.37	0.00	2.37	4.29	0.00	4.29			
83	0-15	1.12	2.99	0.55	2.44	5.09	0.94	4.15	9.84	1.89	7.95
	15-30	1.23	2.54	0.51	2.03	4.75	0.95	3.80			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
84	0-15	1.08	3.18	0.19	2.99	5.22	0.31	4.91	10.90	3.26	7.64
	15-30	1.19	3.14	1.63	1.51	5.68	2.95	2.73			
85	0-15	1.40	2.94	0.55	2.39	6.26	1.17	5.09	11.04	1.17	9.87
	15-30	1.63	1.93	0.00	1.93	4.78	0.00	4.78			
86	0-15	1.11	3.16	0.11	3.05	5.33	0.19	5.15	10.69	2.11	8.57
	15-30	1.35	2.61	0.94	1.67	5.36	1.93	3.43			
87	0-15	1.08	3.75	1.76	1.99	6.16	2.89	3.27	12.06	6.75	5.31
	15-30	1.29	3.01	1.97	1.04	5.90	3.86	2.04			
88	0-15	1.10	3.27	0.83	2.44	5.47	1.39	4.08	13.29	9.01	4.27
	15-30	1.28	4.02	3.92	0.10	7.82	7.63	0.19			
89	0-15	0.99	3.95	0.37	3.58	5.94	0.56	5.39	11.70	3.53	8.17
	15-30	1.18	3.21	1.66	1.55	5.76	2.98	2.78			
90	0-15	0.88	5.18	0.00	5.18	6.93	0.00	6.93	11.34	0.00	11.34
	15-30	1.22	2.38	0.00	2.38	4.41	0.00	4.41			
91	0-15	1.07	3.62	0.20	3.42	5.89	0.33	5.56	12.18	3.65	8.53
	15-30	1.17	3.54	1.87	1.67	6.30	3.33	2.97			
92	0-15	1.05	3.92	0.00	3.92	6.26	0.00	6.26	11.55	1.70	9.85
	15-30	1.27	2.74	0.88	1.86	5.29	1.70	3.59			
93	0-15	1.01	3.60	0.00	3.60	5.53	0.00	5.53	10.37	2.27	8.10
	15-30	1.29	2.47	1.16	1.31	4.84	2.27	2.57			
94	0-15	0.89	4.49	0.00	4.49	6.07	0.00	6.07	12.52	3.40	9.12
	15-30	1.09	3.89	2.05	1.84	6.44	3.40	3.05			
95	0-15	1.16	3.02	0.00	3.02	5.32	0.00	5.32	9.84	1.27	8.57
	15-30	1.31	2.27	0.64	1.63	4.52	1.27	3.25			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
96	0-15	1.11	4.47	0.00	4.47	7.54	0.00	7.54	13.41	2.43	10.98
	15-30	1.48	2.61	1.08	1.53	5.87	2.43	3.44			
97	0-15	1.34	1.93	0.00	1.93	3.93	0.00	3.93	6.32	0.00	6.32
	15-30	1.48	1.06	0.00	1.06	2.38	0.00	2.38			
98	0-15	1.22	2.17	0.00	2.17	4.02	0.00	4.02	7.49	0.00	7.49
	15-30	1.35	1.69	0.00	1.69	3.47	0.00	3.47			
99	0-15	1.37	2.02	0.00	2.02	4.21	0.00	4.21	7.14	0.00	7.14
	15-30	1.45	1.33	0.00	1.33	2.93	0.00	2.93			
100	0-15	1.32	2.15	0.00	2.15	4.31	0.00	4.31	8.17	1.13	7.04
	15-30	1.35	1.88	0.55	1.33	3.86	1.13	2.73			
101	0-15	1.28	2.87	1.10	1.77	5.58	2.14	3.44	11.89	7.09	4.80
	15-30	1.46	2.84	2.23	0.61	6.30	4.95	1.35			
102	0-15	1.41	2.88	0.00	2.88	6.17	0.00	6.17	10.91	0.00	10.91
	15-30	1.47	2.12	0.00	2.12	4.74	0.00	4.74			
103	0-15	1.19	2.54	0.39	2.15	4.59	0.71	3.89	9.20	2.66	6.54
	15-30	1.30	2.33	0.99	1.34	4.60	1.96	2.65			
104	0-15	1.04	3.38	0.00	3.38	5.34	0.00	5.34	9.16	0.00	9.16
	15-30	1.42	1.77	0.00	1.77	3.82	0.00	3.82			
105	0-15	1.26	2.43	0.00	2.43	4.65	0.00	4.65	8.91	1.24	7.66
	15-30	1.32	2.12	0.62	1.50	4.25	1.24	3.01			
106	0-15	1.29	2.65	0.27	2.38	5.20	0.53	4.67	10.74	2.56	8.18
	15-30	1.36	2.68	0.98	1.70	5.54	2.03	3.51			
107	0-15	1.33	2.26	0.00	2.26	4.57	0.00	4.57	7.81	0.00	7.81
	15-30	1.41	1.51	0.00	1.51	3.24	0.00	3.24			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
108	0-15	1.09	2.86	0.00	2.86	4.74	0.00	4.74	8.98	0.00	8.98
	15-30	1.38	2.02	0.00	2.02	4.24	0.00	4.24			
109	0-15	1.16	2.77	0.00	2.77	4.88	0.00	4.88	10.46	1.76	8.70
	15-30	1.38	2.66	0.84	1.82	5.58	1.76	3.82			
110	0-15	1.14	2.68	0.00	2.68	4.64	0.00	4.64	9.71	2.03	7.69
	15-30	1.39	2.40	0.96	1.44	5.07	2.03	3.04			
111	0-15	1.11	2.82	0.00	2.82	4.76	0.00	4.76	10.37	1.90	8.47
	15-30	1.30	2.84	0.96	1.88	5.61	1.90	3.71			
112	0-15	1.15	2.73	0.00	2.73	4.77	0.00	4.77	10.09	2.28	7.81
	15-30	1.34	2.61	1.12	1.49	5.32	2.28	3.03			
113	0-15	1.20	2.64	0.51	2.13	4.82	0.93	3.89	10.79	5.61	5.19
	15-30	1.32	2.98	2.33	0.65	5.98	4.67	1.30			
114	0-15	1.12	2.94	0.21	2.73	5.01	0.36	4.65	9.09	0.36	8.73
	15-30	1.37	1.96	0.00	1.96	4.08	0.00	4.08			
115	0-15	1.26	2.50	0.00	2.50	4.79	0.00	4.79	8.20	0.00	8.20
	15-30	1.41	1.59	0.00	1.59	3.41	0.00	3.41			
116	0-15	1.28	2.63	0.66	1.97	5.12	1.28	3.83	10.80	5.76	5.04
	15-30	1.37	2.73	2.15	0.58	5.68	4.48	1.21			
117	0-15	1.30	3.01	1.87	1.14	5.95	3.70	2.25	11.71	9.29	2.42
	15-30	1.40	2.71	2.63	0.08	5.77	5.60	0.17			
118	0-15	1.36	1.92	0.15	1.77	3.97	0.31	3.66	7.72	0.67	7.05
	15-30	1.32	1.87	0.18	1.69	3.75	0.36	3.39			
119	0-15	1.28	2.47	0.00	2.47	4.81	0.00	4.81	10.65	4.37	6.28
	15-30	1.33	2.89	2.16	0.73	5.84	4.37	1.48			

Table 40. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
120	0-15	1.29	2.59	0.47	2.12	5.08	0.92	4.16	9.65	3.26	6.39
	15-30	1.36	2.21	1.13	1.08	4.57	2.34	2.23			
121	0-15	1.37	2.45	0.12	2.33	5.10	0.25	4.85	7.83	0.66	7.17
	15-30	1.34	1.34	0.20	1.14	2.73	0.41	2.32			
122	0-15	0.99	2.46	0.34	2.12	3.70	0.51	3.19	8.94	4.65	4.29
	15-30	1.06	3.25	2.57	0.68	5.24	4.14	1.10			
123	0-15	1.27	2.30	0.23	2.07	4.44	0.44	4.00	10.02	3.78	6.24
	15-30	1.38	2.66	1.59	1.07	5.58	3.34	2.24			
124	0-15	1.38	2.13	0.00	2.13	4.47	0.00	4.47	7.73	0.35	7.38
	15-30	1.45	1.48	0.16	1.32	3.26	0.35	2.91			
125	0-15	1.32	2.42	0.00	2.42	4.86	0.00	4.86	6.60	0.00	6.60
	15-30	0.85	1.35	0.00	1.35	1.74	0.00	1.74			
126	0-15	1.26	2.42	0.10	2.32	4.63	0.19	4.44	8.25	2.45	5.80
	15-30	1.04	2.29	1.43	0.86	3.62	2.26	1.36			
127	0-15	1.34	2.05	0.00	2.05	4.18	0.00	4.18	9.73	3.24	6.49
	15-30	1.30	2.81	1.64	1.17	5.55	3.24	2.31			
128	0-15	1.33	2.58	0.12	2.46	5.22	0.24	4.97	9.21	1.28	7.93
	15-30	1.52	1.73	0.45	1.28	4.00	1.04	2.96			
129	0-15	1.39	2.20	0.30	1.90	4.65	0.63	4.01	8.83	1.86	6.97
	15-30	1.39	1.98	0.58	1.40	4.18	1.23	2.96			
130	0-15	1.42	1.72	0.28	1.44	3.71	0.60	3.11	8.00	0.86	7.14
	15-30	1.55	1.82	0.11	1.71	4.29	0.26	4.03			
131	0-15	1.26	2.07	0.00	2.07	3.96	0.00	3.96	6.64	0.56	6.08
	15-30	1.42	1.24	0.26	0.98	2.68	0.56	2.12			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
132	0-15	1.38	2.46	0.74	1.72	5.16	1.55	3.61	12.31	6.94	5.37
	15-30	1.68	2.80	2.11	0.69	7.15	5.39	1.76			
133	0-15	1.44	2.06	0.32	1.74	4.51	0.70	3.81	9.25	4.23	5.02
	15-30	1.50	2.08	1.55	0.53	4.74	3.53	1.21			
134	0-15	1.30	2.10	0.00	2.10	4.15	0.00	4.15	6.90	0.31	6.59
	15-30	1.47	1.23	0.14	1.09	2.75	0.31	2.44			
135	0-15	1.23	2.80	0.32	2.48	5.23	0.60	4.64	11.53	4.61	6.92
	15-30	1.34	3.09	1.97	1.12	6.29	4.01	2.28			
136	0-15	1.23	3.05	1.04	2.01	5.70	1.94	3.76	11.88	11.88	6.09
	15-30	1.36	2.99	1.86	1.13	6.18	3.84	2.34			
137	0-15	1.35	1.74	0.09	1.65	3.57	0.18	3.39	5.33	5.33	4.94
	15-30	0.92	1.26	0.15	1.11	1.76	0.21	1.55			
138	0-15	1.13	2.95	0.00	2.95	5.07	0.00	5.07	10.58	0.00	10.58
	15-30	1.29	2.81	0.00	2.81	5.51	0.00	5.51			
139	0-15	1.21	2.73	0.00	2.73	5.02	0.00	5.02	8.48	8.48	8.48
	15-30	1.45	1.57	0.00	1.57	3.46	0.00	3.46			
140	0-15	1.39	2.07	0.18	1.89	4.37	0.38	3.99	7.12	1.07	6.05
	15-30	1.57	1.15	0.29	0.86	2.74	0.69	2.05			
141	0-15	1.34	2.89	1.61	1.28	5.89	3.28	2.61	13.01	8.96	4.04
	15-30	1.39	3.37	2.69	0.68	7.12	5.68	1.44			
142	0-15	1.36	2.29	0.00	2.29	4.73	0.00	4.73	7.69	0.33	7.36
	15-30	1.37	1.42	0.16	1.26	2.96	0.33	2.62			
143	0-15	1.39	2.08	0.00	2.08	4.39	0.00	4.39	7.63	0.55	7.08
	15-30	1.39	1.53	0.26	1.27	3.23	0.55	2.68			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
144	0-15	1.28	2.22	0.00	2.22	4.32	0.00	4.32	8.58	1.04	7.53
	15-30	1.40	2.00	0.49	1.51	4.26	1.04	3.21			
145	0-15	1.40	1.85	0.00	1.85	3.94	0.00	3.94	8.52	2.42	6.10
	15-30	1.41	2.14	1.13	1.01	4.59	2.42	2.16			
146	0-15	1.32	3.01	0.00	3.01	6.04	0.00	6.04	11.98	0.00	11.98
	15-30	1.33	2.94	0.00	2.94	5.94	0.00	5.94			
147	0-15	1.56	2.22	0.36	1.86	5.26	0.85	4.41	11.06	4.86	6.20
	15-30	1.55	2.46	1.70	0.76	5.80	4.01	1.79			
148	0-15	1.42	1.92	0.00	1.92	4.14	0.00	4.14	8.48	1.77	6.70
	15-30	1.39	2.05	0.84	1.21	4.33	1.77	2.56			
149	0-15	1.39	2.18	0.13	2.05	4.61	0.27	4.33	7.49	7.49	7.21
	15-30	1.48	1.28	0.00	1.28	2.88	0.00	2.88			
150	0-15	1.57	2.46	0.00	2.46	5.87	0.00	5.87	10.42	0.39	10.03
	15-30	1.71	1.75	0.15	1.60	4.55	0.39	4.16			
151	0-15	1.33	2.33	0.37	1.96	4.71	0.75	3.96	11.88	6.40	5.48
	15-30	1.31	3.60	2.84	0.76	7.17	5.66	1.51			
152	0-15	1.22	2.66	0.19	2.47	4.93	0.35	4.58	8.80	0.65	8.15
	15-30	1.39	1.83	0.14	1.69	3.87	0.30	3.57			
153	0-15	1.38	1.93	0.18	1.75	4.05	0.38	3.67	9.15	3.91	5.24
	15-30	1.36	2.47	1.71	0.76	5.11	3.53	1.57			
154	0-15	1.21	3.04	0.75	2.29	5.59	1.38	4.21	11.39	5.25	6.14
	15-30	1.32	2.89	1.93	0.96	5.80	3.87	1.93			
155	0-15	1.38	2.61	0.90	1.71	5.47	1.89	3.59	10.09	5.68	4.41
	15-30	1.59	1.91	1.57	0.34	4.62	3.79	0.82			

Table 40. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
156	0-15	1.43	1.67	0.13	1.54	3.63	0.28	3.35	5.49	0.28	5.21
	15-30	1.59	0.77	0.00	0.77	1.86	0.00	1.86			
157	0-15	1.34	2.86	1.28	1.58	5.83	2.61	3.22	12.74	7.99	4.75
	15-30	1.40	3.25	2.53	0.72	6.92	5.38	1.53			
158	0-15	1.23	2.65	0.10	2.55	4.95	0.19	4.77	8.13	0.19	7.94
	15-30	1.41	1.48	0.00	1.48	3.17	0.00	3.17			
159	0-15	1.30	3.06	1.36	1.70	6.05	2.69	3.36	12.43	7.78	4.65
	15-30	1.39	3.02	2.41	0.61	6.38	5.09	1.29			
160	0-15	1.31	3.01	0.19	2.82	5.99	0.38	5.62	10.50	2.17	8.34
	15-30	1.40	2.12	0.84	1.28	4.51	1.79	2.72			
161	0-15	1.16	2.71	0.07	2.64	4.78	0.12	4.65	7.89	0.62	7.26
	15-30	1.43	1.43	0.23	1.20	3.11	0.50	2.61			
162	0-15	1.26	2.95	0.00	2.95	5.65	0.00	5.65	9.85	0.00	9.85
	15-30	1.25	2.21	0.00	2.21	4.20	0.00	4.20			
163	0-15	1.02	2.77	0.23	2.54	4.29	0.36	3.94	7.86	1.22	6.64
	15-30	1.07	2.19	0.53	1.66	3.56	0.86	2.70			
164	0-15	1.20	2.72	0.62	2.10	4.96	1.13	3.83	12.12	6.44	5.68
	15-30	1.37	3.44	2.55	0.89	7.16	5.31	1.85			
165	0-15	1.34	2.50	0.59	1.91	5.09	1.20	3.89	9.82	3.88	5.93
	15-30	1.40	2.22	1.26	0.96	4.72	2.68	2.04			
166	0-15	1.16	3.20	1.44	1.76	5.64	2.54	3.10	13.36	10.20	3.16
	15-30	1.33	3.82	3.79	0.03	7.72	7.66	0.06			
164	0-15	1.23	2.61	0.56	2.05	4.88	1.05	3.83	9.12	3.13	5.98
	15-30	1.43	1.95	0.96	0.99	4.24	2.09	2.15			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
168	0-15	1.37	2.18	0.23	1.95	4.54	0.48	4.06	8.73	2.68	6.05
	15-30	1.38	2.00	1.05	0.95	4.20	2.20	1.99			
169	0-15	1.36	3.40	2.23	1.17	7.03	4.61	2.42	14.28	11.16	3.12
	15-30	1.39	3.43	3.10	0.33	7.25	6.55	0.70			
170	0-15	1.16	3.68	0.43	3.25	6.49	0.76	5.73	12.40	3.87	8.52
	15-30	1.34	2.90	1.53	1.37	5.91	3.12	2.79			
171	0-15	1.30	2.10	0.15	1.95	4.15	0.30	3.85	7.98	0.91	7.07
	15-30	1.40	1.80	0.29	1.51	3.83	0.62	3.21			
172	0-15	1.07	3.53	0.00	3.53	5.74	0.00	5.74	10.51	0.37	10.14
	15-30	1.22	2.57	0.20	2.37	4.77	0.37	4.39			
173	0-15	1.21	2.76	0.07	2.69	5.08	0.13	4.95	8.61	0.73	7.88
	15-30	1.27	1.83	0.31	1.52	3.53	0.60	2.93			
174	0-15	1.28	2.51	0.24	2.27	4.88	0.47	4.42	10.02	2.91	7.11
	15-30	1.42	2.38	1.13	1.25	5.14	2.44	2.70			
175	0-15	1.19	2.40	0.18	2.22	4.34	0.33	4.02	8.51	0.87	7.63
	15-30	1.33	2.06	0.27	1.79	4.16	0.55	3.62			
176	0-15	1.66	2.42	0.18	2.24	6.11	0.45	5.65	11.66	3.16	8.50
	15-30	1.32	2.77	1.35	1.42	5.56	2.71	2.85			
177	0-15	1.40	2.90	0.00	2.90	6.17	0.00	6.17	10.06	0.27	9.79
	15-30	1.61	1.59	0.11	1.48	3.89	0.27	3.62			
178	0-15	1.47	1.45	0.19	1.26	3.24	0.42	2.82	7.56	2.41	5.15
	15-30	1.52	1.87	0.86	1.01	4.32	1.99	2.33			
179	0-15	1.39	2.24	0.00	2.24	4.73	0.00	4.73	8.42	0.00	8.42
	15-30	1.47	1.65	0.00	1.65	3.69	0.00	3.69			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
180	0-15	1.40	1.75	0.18	1.57	3.72	0.38	3.34	7.35	1.99	5.36
	15-30	1.53	1.56	0.69	0.87	3.63	1.60	2.02			
181	0-15	1.36	2.01	0.00	2.01	4.16	0.00	4.16	7.64	0.00	7.64
	15-30	1.52	1.51	0.00	1.51	3.49	0.00	3.49			
182	0-15	1.56	1.94	0.73	1.21	4.60	1.73	2.87	8.67	3.93	4.74
	15-30	1.54	1.74	0.94	0.80	4.07	2.20	1.87			
183	0-15	1.52	1.53	0.00	1.53	3.53	0.00	3.53	6.02	0.19	5.83
	15-30	1.59	1.03	0.08	0.95	2.49	0.19	2.30			
184	0-15	1.55	1.53	0.00	1.53	3.60	0.00	3.60	6.82	1.31	5.51
	15-30	1.51	1.40	0.57	0.83	3.21	1.31	1.91			
185	0-15	1.44	1.51	0.00	1.51	3.31	0.00	3.31	5.99	0.00	5.99
	15-30	1.55	1.14	0.00	1.14	2.69	0.00	2.69			
186	0-15	1.51	1.45	0.00	1.45	3.33	0.00	3.33	5.85	0.00	5.85
	15-30	1.55	1.07	0.00	1.07	2.52	0.00	2.52			
187	0-15	1.33	2.92	0.00	2.92	5.90	0.00	5.90	11.51	0.00	11.51
	15-30	1.43	2.58	0.00	2.58	5.61	0.00	5.61			
188	0-15	1.39	1.79	0.53	1.26	3.78	1.12	2.66	6.35	1.40	4.94
	15-30	1.43	1.18	0.13	1.05	2.56	0.28	2.28			
189	0-15	1.46	1.78	0.00	1.78	3.95	0.00	3.95	6.73	0.00	6.73
	15-30	1.55	1.18	0.00	1.18	2.78	0.00	2.78			
190	0-15	1.31	2.74	1.04	1.70	5.46	2.07	3.39	5.80	2.68	3.12
	15-30	1.37	2.95	1.58	1.37	6.14	3.29	2.85			
191	0-15	1.37	2.97	1.81	1.16	6.18	3.77	2.42	6.18	4.00	2.18
	15-30	1.42	2.86	1.96	0.90	6.17	4.23	1.94			

Table 40. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm^{-3}	-----Percent-----			----- kg m^{-2} -----					
192	0-15	1.39	2.74	1.75	0.99	5.79	3.70	2.09	6.39	4.65	1.74
	15-30	1.45	3.17	2.54	0.63	6.99	5.60	1.39			
193	0-15	1.35	2.68	1.40	1.28	5.50	2.87	2.63	5.90	3.60	2.30
	15-30	1.49	2.78	1.91	0.87	6.30	4.33	1.97			
194	0-15	1.21	2.94	0.37	2.57	5.41	0.68	4.73	5.24	0.44	4.80
	15-30	1.40	2.38	0.09	2.29	5.06	0.19	4.87			
195	0-15	1.31	2.61	0.28	2.33	5.20	0.56	4.64	4.84	1.21	3.63
	15-30	1.41	2.09	0.87	1.22	4.48	1.86	2.61			
196	0-15	1.14	3.37	0.25	3.12	5.84	0.43	5.41	6.28	1.93	4.35
	15-30	1.18	3.75	1.91	1.84	6.73	3.43	3.30			
197	0-15	1.41	2.71	1.05	1.66	5.81	2.25	3.56	6.54	4.16	2.38
	15-30	1.45	3.30	2.75	0.55	7.27	6.06	1.21			
198	0-15	1.26	2.80	0.22	2.58	5.36	0.42	4.94	5.27	1.71	3.56
	15-30	1.32	2.58	1.49	1.09	5.18	2.99	2.19			
199	0-15	1.31	2.68	0.89	1.79	5.34	1.77	3.56	4.93	2.05	2.88
	15-30	1.36	2.19	1.13	1.06	4.53	2.34	2.19			

Table 41. Northeastern North Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1500	0-15	1.28	2.98	1.29	1.69	5.79	2.51	3.29	13.22	9.23	3.99
	15-30	1.49	3.28	2.97	0.31	7.42	6.72	0.70			
1501	0-15	1.09	3.09	0.67	2.42	5.11	1.11	4.00	8.84	2.56	6.28
	15-30	1.26	1.95	0.76	1.19	3.73	1.45	2.28			
1502	0-15	1.19	3.15	0.68	2.47	5.72	1.23	4.49	10.63	4.23	6.40
	15-30	1.31	2.46	1.50	0.96	4.91	2.99	1.91			
1503	0-15	1.01	2.97	0.37	2.60	4.55	0.57	3.98	10.75	4.63	6.11
	15-30	1.48	2.76	1.81	0.95	6.20	4.07	2.13			
1504	0-15	1.21	3.34	1.27	2.07	6.13	2.33	3.80	10.44	5.29	5.15
	15-30	1.29	2.20	1.51	0.69	4.31	2.96	1.35			
1505	0-15	1.32	3.18	1.48	1.70	6.37	2.97	3.41	12.93	8.99	3.94
	15-30	1.35	3.20	2.94	0.26	6.56	6.02	0.53			
1506	0-15	1.28	3.22	0.89	2.33	6.24	1.73	4.52	13.61	8.09	5.52
	15-30	1.25	3.89	3.36	0.53	7.37	6.37	1.00			
1507	0-15	1.18	3.49	0.58	2.91	6.26	1.04	5.22	11.57	3.42	8.16
	15-30	1.23	2.84	1.27	1.57	5.31	2.38	2.94			
1508	0-15	1.21	3.02	0.73	2.29	5.54	1.34	4.20	10.08	3.98	6.09
	15-30	1.07	2.78	1.62	1.16	4.53	2.64	1.89			
1509	0-15	1.14	3.55	0.69	2.86	6.17	1.20	4.97	11.70	3.71	8.00
	15-30	1.25	2.91	1.32	1.59	5.53	2.51	3.02			
1510	0-15	1.10	2.79	0.08	2.71	4.68	0.13	4.55	7.98	0.13	7.85

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
	-cm-										
	15-30	1.26	1.72	0.00	1.72	3.30	0.00	3.30			
1511	0-15	1.10	3.61	0.51	3.10	6.03	0.85	5.18	11.12	1.57	9.54
	15-30	1.18	2.83	0.40	2.43	5.08	0.72	4.36			
1512	0-15	1.20	3.47	1.25	2.22	6.31	2.27	4.04	12.57	7.06	5.50
	15-30	1.24	3.33	2.55	0.78	6.25	4.79	1.46			
1513	0-15	1.23	2.75	0.72	2.03	5.12	1.34	3.78	9.68	4.37	5.31
	15-30	1.34	2.24	1.49	0.75	4.55	3.03	1.53			
1514	0-15	0.94	4.46	0.00	4.46	6.35	0.00	6.35	10.66	0.00	10.66
	15-30	1.17	2.43	0.00	2.43	4.30	0.00	4.30			
1515	0-15	1.17	2.89	0.10	2.79	5.15	0.18	4.98	10.67	2.65	8.02
	15-30	1.35	2.68	1.20	1.48	5.52	2.47	3.05			
1516	0-15	1.27	3.49	1.91	1.58	6.72	3.68	3.04	14.55	11.04	3.51
	15-30	1.24	4.16	3.91	0.25	7.84	7.36	0.47			
1517	0-15	1.33	2.21	0.49	1.72	4.48	0.99	3.48	11.66	7.99	3.67
	15-30	1.24	3.80	3.70	0.10	7.18	7.00	0.19			
1518	0-15	1.16	3.36	1.51	1.85	5.94	2.67	3.27	12.64	7.52	5.12
	15-30	1.17	3.76	2.72	1.04	6.70	4.85	1.85			
1519	0-15	1.15	3.17	0.08	3.09	5.53	0.14	5.39	11.39	4.15	7.24
	15-30	1.24	3.11	2.13	0.98	5.86	4.01	1.85			
1520	0-15	1.16	2.72	0.00	2.72	4.79	0.00	4.79	7.74	0.50	7.24
	15-30	1.27	1.53	0.26	1.27	2.95	0.50	2.45			
1521	0-15	1.17	3.01	1.33	1.68	5.33	2.36	2.98	11.70	8.55	3.15
	15-30	1.25	3.34	3.25	0.09	6.37	6.20	0.17			
1522	0-15	1.18	3.63	2.23	1.40	6.49	3.99	2.50	15.01	12.31	2.70
	15-30	1.29	4.33	4.23	0.10	8.51	8.32	0.20			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1523	0-15	1.27	2.70	0.47	2.23	5.23	0.91	4.32	8.65	3.14	5.51
	15-30	1.07	2.10	1.37	0.73	3.42	2.23	1.19			
1524	0-15	1.21	2.57	0.00	2.57	4.73	0.00	4.73	7.62	0.53	7.09
	15-30	1.29	1.47	0.27	1.20	2.89	0.53	2.36			
1525	0-15	1.19	3.29	1.62	1.67	5.94	2.93	3.02	15.71	12.50	3.22
	15-30	1.20	5.35	5.24	0.11	9.77	9.57	0.20			
1526	0-15	1.30	3.95	2.94	1.01	7.82	5.82	2.00	15.50	13.34	2.16
	15-30	1.30	3.90	3.82	0.08	7.68	7.52	0.16			
1527	0-15	1.27	2.60	0.19	2.41	5.01	0.37	4.64	11.99	5.43	6.56
	15-30	1.23	3.74	2.71	1.03	6.99	5.06	1.92			
1528	0-15	1.20	2.95	0.75	2.20	5.37	1.37	4.01	13.98	9.64	4.34
	15-30	1.17	4.84	4.65	0.19	8.61	8.27	0.34			
1529	0-15	1.31	2.16	0.21	1.95	4.30	0.42	3.89	8.96	3.33	5.64
	15-30	1.34	2.29	1.43	0.86	4.66	2.91	1.75			
1530	0-15	1.20	3.19	0.72	2.47	5.84	1.32	4.52	11.16	5.04	6.12
	15-30	1.30	2.70	1.89	0.81	5.32	3.72	1.60			
1531	0-15	1.24	3.39	2.12	1.27	6.37	3.99	2.39	12.67	9.20	3.47
	15-30	1.23	3.37	2.79	0.58	6.30	5.22	1.08			
1532	0-15	1.22	3.69	2.41	1.28	6.86	4.48	2.38	15.46	12.82	2.64
	15-30	1.32	4.28	4.15	0.13	8.60	8.34	0.26			
1533	0-15	1.07	2.77	0.64	2.13	4.50	1.04	3.46	9.40	4.73	4.68
	15-30	1.36	2.38	1.79	0.59	4.90	3.69	1.22			
1534	0-15	1.28	2.67	0.00	2.67	5.18	0.00	5.18	9.60	1.71	7.89
	15-30	1.34	2.17	0.84	1.33	4.41	1.71	2.70			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1535	0-15	1.07	4.82	0.50	4.32	7.84	0.81	7.03	14.62	5.72	8.90
	15-30	1.08	4.13	2.99	1.14	6.78	4.91	1.87			
1536	0-15	1.02	3.17	0.44	2.73	4.89	0.68	4.21	7.86	0.87	6.98
	15-30	1.41	1.38	0.09	1.29	2.96	0.19	2.77			
1537	0-15	1.26	1.83	0.00	1.83	3.52	0.00	3.52	5.95	0.00	5.95
	15-30	1.27	1.26	0.00	1.26	2.44	0.00	2.44			
1538	0-15	1.05	3.28	0.74	2.54	5.22	1.18	4.04	10.09	4.00	6.09
	15-30	1.16	2.76	1.60	1.16	4.87	2.82	2.05			
1539	0-15	1.03	3.30	1.07	2.23	5.19	1.68	3.51	9.65	4.60	5.05
	15-30	1.22	2.40	1.57	0.83	4.46	2.92	1.54			
1540	0-15	1.17	3.40	2.09	1.31	6.04	3.71	2.33	12.77	9.69	3.07
	15-30	1.32	3.34	2.97	0.37	6.72	5.98	0.74			
1541	0-15	1.05	4.37	2.12	2.25	6.99	3.39	3.60	13.56	7.84	5.73
	15-30	1.23	3.52	2.38	1.14	6.57	4.45	2.13			
1542	0-15	1.04	3.61	1.98	1.63	5.72	3.14	2.58	11.64	8.55	3.09
	15-30	1.15	3.38	3.09	0.29	5.91	5.41	0.51			
1543	0-15	1.00	3.51	1.18	2.33	5.36	1.80	3.56	10.74	6.03	4.71
	15-30	1.05	3.36	2.64	0.72	5.38	4.22	1.15			
1544	0-15	1.04	4.02	2.61	1.41	6.33	4.11	2.22	12.59	9.26	3.33
	15-30	1.12	3.68	3.03	0.65	6.26	5.15	1.11			
1545	0-15	1.07	4.37	1.36	3.01	7.11	2.21	4.90	13.52	5.68	7.84
	15-30	1.24	3.40	1.84	1.56	6.41	3.47	2.94			
1546	0-15	1.14	2.68	0.28	2.40	4.66	0.49	4.17	9.99	2.64	7.36
	15-30	1.63	2.16	0.87	1.29	5.34	2.15	3.19			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1547	0-15	1.05	2.73	0.09	2.64	4.34	0.14	4.20	8.75	1.68	7.07
	15-30	1.42	2.04	0.71	1.33	4.41	1.53	2.87			
1548	0-15	1.23	3.40	2.21	1.19	6.36	4.14	2.23	12.86	10.01	2.85
	15-30	1.36	3.14	2.84	0.30	6.49	5.87	0.62			
1549	0-15	1.13	3.80	1.85	1.95	6.52	3.18	3.35	12.56	7.11	5.45
	15-30	1.16	3.44	2.24	1.20	6.04	3.93	2.11			
1550	0-15	1.20	2.20	0.08	2.12	4.01	0.15	3.87	6.92	0.40	6.53
	15-30	1.38	1.39	0.12	1.27	2.91	0.25	2.66			
1551	0-15	1.14	2.34	0.09	2.25	4.05	0.16	3.89	7.51	0.57	6.94
	15-30	1.30	1.75	0.21	1.54	3.46	0.42	3.04			
1552	0-15	1.13	2.93	0.50	2.43	5.05	0.86	4.19	9.14	3.81	5.33
	15-30	1.23	2.19	1.58	0.61	4.09	2.95	1.14			
1553	0-15	1.31	1.59	0.24	1.35	3.15	0.48	2.68	5.72	1.32	4.41
	15-30	1.42	1.19	0.39	0.80	2.57	0.84	1.73			
1554	0-15	1.20	3.04	0.95	2.09	5.55	1.74	3.82	12.02	7.21	4.81
	15-30	1.16	3.66	3.10	0.56	6.47	5.48	0.99			
1555	0-15	1.18	2.71	0.92	1.79	4.88	1.66	3.22	10.43	5.49	4.94
	15-30	1.17	3.13	2.16	0.97	5.55	3.83	1.72			
1556	0-15	1.15	3.60	1.96	1.64	6.32	3.44	2.88	13.98	11.11	2.88
	15-30	1.19	4.23	4.23	0.00	7.67	7.67	0.00			
1557	0-15	1.23	2.71	0.82	1.89	5.06	1.53	3.53	12.80	9.04	3.76
	15-30	1.27	4.02	3.90	0.12	7.74	7.51	0.23			
1558	0-15	1.24	2.97	1.43	1.54	5.58	2.69	2.89	10.99	7.68	3.32
	15-30	1.32	2.69	2.48	0.21	5.42	4.99	0.42			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1559	0-15	1.15	3.98	2.48	1.50	6.95	4.33	2.62	13.26	10.54	2.72
	15-30	1.32	3.15	3.10	0.05	6.31	6.21	0.10			
1560	0-15	1.14	2.73	0.56	2.17	4.75	0.97	3.78	9.59	4.64	4.95
	15-30	1.15	2.77	2.10	0.67	4.84	3.67	1.17			
1561	0-15	1.27	2.64	0.08	2.56	5.09	0.15	4.94	9.09	0.95	8.14
	15-30	1.28	2.05	0.41	1.64	4.00	0.80	3.20			
1562	0-15	0.95	2.87	1.58	1.29	4.13	2.27	1.86	9.91	6.18	3.73
	15-30	1.16	3.27	2.21	1.06	5.79	3.91	1.88			
1563	0-15	1.27	2.37	0.09	2.28	4.58	0.17	4.41	8.68	1.90	6.79
	15-30	1.30	2.07	0.87	1.20	4.10	1.72	2.38			
1564	0-15	1.28	3.84	2.60	1.24	7.47	5.06	2.41	19.40	16.72	2.69
	15-30	1.40	5.62	5.49	0.13	11.94	11.66	0.28			
1565	0-15	1.09	4.08	1.54	2.54	6.79	2.56	4.23	14.10	8.91	5.20
	15-30	1.16	4.15	3.60	0.55	7.31	6.34	0.97			
1566	0-15	1.05	2.98	0.64	2.34	4.73	1.02	3.72	11.31	6.36	4.95
	15-30	1.21	3.58	2.91	0.67	6.58	5.35	1.23			
1567	0-15	1.10	2.74	0.00	2.74	4.57	0.00	4.57	8.77	0.44	8.33
	15-30	1.26	2.19	0.23	1.96	4.20	0.44	3.76			
1568	0-15	1.08	4.29	2.75	1.54	7.05	4.52	2.53	16.36	13.63	2.73
	15-30	1.18	5.18	5.07	0.11	9.31	9.11	0.20			
1569	0-15	1.27	2.54	0.00	2.54	4.90	0.00	4.90	9.21	1.93	7.28
	15-30	1.23	2.30	1.03	1.27	4.31	1.93	2.38			
1570	0-15	1.18	2.74	0.54	2.20	4.93	0.97	3.95	8.59	3.56	5.03
	15-30	1.33	1.81	1.28	0.53	3.66	2.59	1.07			

Table 41. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1571	0-15	0.67	5.85	3.30	2.55	5.96	3.36	2.60	12.82	8.66	4.17
	15-30	1.03	4.38	3.38	1.00	6.87	5.30	1.57			
1572	0-15	0.78	5.25	2.03	3.22	6.25	2.42	3.83	11.74†	5.30†	6.45†
	15-30	1.14	3.17†	1.66†	1.51†	5.50†	2.88†	2.62†			
1573	0-15	0.69	2.87	0.49	2.38	3.01	0.51	2.50	8.63	3.57	5.06
	15-30	1.04	3.55	1.93	1.62	5.61	3.05	2.56			
1574	0-15	0.86	4.27	0.00	4.27	5.59	0.00	5.59	9.82	1.30	8.52
	15-30	1.17	2.37	0.73	1.64	4.23	1.30	2.92			
1575	0-15	0.75	4.94	0.30	4.64	5.63	0.34	5.29	11.18	3.33	7.84
	15-30	1.12	3.26	1.76	1.50	5.54	2.99	2.55			
1576	0-15	0.71	5.94	0.00	5.94	6.39	0.00	6.39	11.11	0.00	11.11
	15-30	1.22	2.54	0.00	2.54	4.72	0.00	4.72			
1577	0-15	0.84	4.35	0.11	4.24	5.52	0.14	5.38	11.04	4.22	6.83
	15-30	1.25	2.91	2.15	0.76	5.52	4.08	1.44			
1578	0-15	0.84	4.56	0.00	4.56	5.84	0.00	5.84	11.27	2.86	8.41
	15-30	1.12	3.19	1.68	1.51	5.42	2.86	2.57			
1579	0-15	0.79	4.69	0.00	4.69	5.61	0.00	5.61	10.24	0.00	10.24
	15-30	1.20	2.53	0.00	2.53	4.63	0.00	4.63			
1580	0-15	0.76	5.53	0.00	5.53	6.41	0.00	6.41	12.12	0.84	11.28
	15-30	0.97	3.88	0.57	3.31	5.72	0.84	4.88			
1581	0-15	1.07	3.86	0.00	3.86	6.26	0.00	6.26	10.86	0.15	10.71
	15-30	1.22	2.48	0.08	2.40	4.59	0.15	4.44			
1582	0-15	0.85	4.62	0.00	4.62	5.98	0.00	5.98	12.30	4.16	8.14
	15-30	1.06	3.92	2.58	1.34	6.32	4.16	2.16			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1583	0-15	0.67	4.81	0.00	4.81	4.88	0.00	4.88	8.40	0.73	7.67
	15-30	0.98	2.36	0.49	1.87	3.52	0.73	2.79			
1584	0-15	0.90	3.14	0.00	3.14	4.27	0.00	4.27	7.73	0.00	7.73
	15-30	1.18	1.92	0.00	1.92	3.45	0.00	3.45			
1585	0-15	0.84	3.52	0.00	3.52	4.47	0.00	4.47	9.91	0.00	9.91
	15-30	1.43	2.50	0.00	2.50	5.45	0.00	5.45			
1586	0-15	0.76	4.29	0.00	4.29	4.96	0.00	4.96	8.77	0.00	8.77
	15-30	1.11	2.26	0.00	2.26	3.80	0.00	3.80			
1587	0-15	0.69	4.56	0.00	4.56	4.80	0.00	4.80	10.34	0.00	10.34
	15-30	1.06	3.43	0.00	3.43	5.54	0.00	5.54			
1588	0-15	0.78	4.05	0.00	4.05	4.81	0.00	4.81	8.94	0.00	8.94
	15-30	1.15	2.37	0.00	2.37	4.13	0.00	4.13			
1589	0-15	0.75	2.94	0.00	2.94	3.36	0.00	3.36	6.06	0.00	6.06
	15-30	1.04	1.70	0.00	1.70	2.70	0.00	2.70			
1590	0-15	0.88	3.21	0.36	2.85	4.32	0.48	3.83	8.29	2.61	5.68
	15-30	1.09	2.39	1.28	1.11	3.97	2.13	1.85			
1591	0-15	1.38	2.29	0.00	2.29	4.81	0.00	4.81	7.41	0.18	7.22
	15-30	1.34	1.27	0.09	1.18	2.59	0.18	2.41			
1592	0-15	1.32	2.53	0.00	2.53	5.08	0.00	5.08	8.85	0.00	8.85
	15-30	1.31	1.89	0.00	1.89	3.78	0.00	3.78			
1593	0-15	1.44	2.17	0.00	2.17	4.75	0.00	4.75	9.09	0.00	9.09
	15-30	1.39	2.06	0.00	2.06	4.34	0.00	4.34			
1594	0-15	1.21	3.22	0.00	3.22	5.94	0.00	5.94	10.72	0.45	10.28
	15-30	1.33	2.36	0.22	2.14	4.78	0.45	4.33			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1595	0-15	1.17	3.02	0.00	3.02	5.36	0.00	5.36	10.28	0.00	10.28
	15-30	1.29	2.50	0.00	2.50	4.92	0.00	4.92			
1596	0-15	1.31	2.72	0.00	2.72	5.40	0.00	5.40	8.51	0.22	8.30
	15-30	1.42	1.44	0.10	1.34	3.11	0.22	2.90			
1597	0-15	1.10	3.43	0.00	3.43	5.72	0.00	5.72	10.76	0.00	10.76
	15-30	1.20	2.75	0.00	2.75	5.03	0.00	5.03			
1598	0-15	1.27	2.21	0.00	2.21	4.27	0.00	4.27	8.79	0.00	8.79
	15-30	1.31	2.27	0.00	2.27	4.52	0.00	4.52			
1599	0-15	1.30	1.24	0.00	1.24	2.46	0.00	2.46	5.19	0.00	5.19
	15-30	1.49	1.21	0.00	1.21	2.74	0.00	2.74			
1600	0-15	1.39	1.18	0.07	1.11	2.49	0.15	2.34	5.79	0.98	4.81
	15-30	1.52	1.43	0.36	1.07	3.30	0.83	2.47			
1601	0-15	1.04	5.33	2.75	2.58	8.43	4.35	4.08	20.33	14.02	6.31
	15-30	1.36	5.76	4.68	1.08	11.91	9.67	2.23			
1602	0-15	1.16	2.77	0.00	2.77	4.87	0.00	4.87	9.25	0.17	9.07
	15-30	1.26	2.28	0.09	2.19	4.38	0.17	4.21			
1603	0-15	1.08	2.97	0.88	2.09	4.89	1.45	3.44	10.05	3.74	6.31
	15-30	1.19	2.84	1.26	1.58	5.16	2.29	2.87			
1604	0-15	1.04	2.78	0.28	2.50	4.41	0.44	3.96	8.84	2.29	6.55
	15-30	1.18	2.47	1.03	1.44	4.43	1.85	2.58			
1605	0-15	1.04	2.96	1.73	1.23	4.69	2.74	1.95	9.99	4.16	5.83
	15-30	1.18	2.95	0.79	2.16	5.30	1.42	3.88			
1606	0-15	1.25	3.03	0.36	2.67	5.78	0.69	5.09	13.91	8.46	5.45
	15-30	1.47	3.63	3.47	0.16	8.13	7.77	0.36			

Table 41. (continued)

Sample Number	Depth	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
			-----Percent-----			-----kg m ⁻² -----					
1607	0-15	1.06	3.05	0.63	2.42	4.93	1.02	3.92	10.69	4.55	6.13
	15-30	1.24	3.06	1.88	1.18	5.75	3.54	2.22			
1608	0-15	1.21	2.59	0.13	2.46	4.78	0.24	4.54	8.70	1.33	7.38
	15-30	1.40	1.84	0.51	1.33	3.92	1.09	2.83			
1609	0-15	1.20	2.99	0.66	2.33	5.45	1.20	4.25	11.03	2.20	8.83
	15-30	1.40	2.63	0.47	2.16	5.59	1.00	4.59			
1610	0-15	1.17	3.21	2.52	0.69	5.69	4.46	1.22	11.63	8.80	2.83
	15-30	1.23	3.18	2.32	0.86	5.94	4.33	1.61			
1611	0-15	1.26	2.48	0.16	2.32	4.76	0.31	4.45	9.90	2.26	7.64
	15-30	1.31	2.58	0.98	1.60	5.14	1.95	3.19			
1612	0-15	1.27	2.34	0.08	2.26	4.51	0.15	4.35	9.23	1.77	7.47
	15-30	1.43	2.17	0.74	1.43	4.73	1.61	3.12			
1613	0-15	1.10	2.95	0.00	2.95	4.95	0.00	4.95	8.81	0.00	8.81
	15-30	1.28	1.99	0.00	1.99	3.86	0.00	3.86			
1614	0-15	1.11	2.99	0.10	2.89	5.05	0.17	4.88	9.79	1.57	8.22
	15-30	1.18	2.64	0.78	1.86	4.74	1.40	3.34			
1615	0-15	1.12	2.84	0.38	2.46	4.85	0.65	4.20	9.19	1.25	7.93
	15-30	1.25	2.29	0.32	1.97	4.34	0.61	3.73			
1616	0-15	1.23	2.47	0.00	2.47	4.63	0.00	4.63	7.07	0.24	6.83
	15-30	1.29	1.24	0.12	1.12	2.43	0.24	2.20			
1617	0-15	1.15	2.74	0.15	2.59	4.79	0.26	4.52	9.67	2.89	6.78
	15-30	1.28	2.51	1.35	1.16	4.89	2.63	2.26			
1618	0-15	1.09	3.02	0.11	2.91	4.98	0.18	4.80	10.37	3.54	6.83
	15-30	1.15	3.08	1.92	1.16	5.39	3.36	2.03			

Table 41. (continued)

Sample Number	Depth	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
			-----Percent-----			-----kg m ⁻² -----					
1619	0-15	1.01	2.86	0.29	2.57	4.41	0.45	3.96	10.39	4.19	6.19
	15-30	1.24	3.16	1.98	1.18	5.98	3.75	2.23			
1620	0-15	1.03	2.87	0.13	2.74	4.51	0.20	4.31	9.44	1.93	7.51
	15-30	1.22	2.66	0.93	1.73	4.93	1.72	3.21			
1621	0-15	1.25	2.95	0.64	2.31	5.60	1.21	4.39	10.52	4.36	6.15
	15-30	1.28	2.53	1.62	0.91	4.92	3.15	1.77			
1622	0-15	1.04	2.89	0.00	2.89	4.57	0.00	4.57	8.81	1.03	7.78
	15-30	1.13	2.46	0.60	1.86	4.24	1.03	3.21			
1623	0-15	1.16	3.07	0.11	2.96	5.40	0.19	5.21	10.36	2.26	8.09
	15-30	1.27	2.56	1.07	1.49	4.95	2.07	2.88			
1624	0-15	1.22	2.74	0.00	2.74	5.08	0.00	5.08	9.57	1.73	7.83
	15-30	1.31	2.25	0.87	1.38	4.48	1.73	2.75			
1625	0-15	1.15	3.03	0.00	3.03	5.29	0.00	5.29	9.53	0.60	8.93
	15-30	1.36	2.05	0.29	1.76	4.25	0.60	3.65			
1626	0-15	1.16	2.83	0.00	2.83	4.98	0.00	4.98	9.07	0.98	8.09
	15-30	1.31	2.05	0.49	1.56	4.09	0.98	3.12			
1627	0-15	1.36	2.46	0.67	1.79	5.07	1.38	3.69	10.72	6.41	4.30
	15-30	1.39	2.67	2.38	0.29	5.65	5.04	0.61			
1628	0-15	1.20	2.51	0.00	2.51	4.58	0.00	4.58	7.89	0.51	7.38
	15-30	1.40	1.56	0.24	1.32	3.31	0.51	2.80			
1629	0-15	1.17	2.61	0.09	2.52	4.63	0.16	4.47	10.15	2.98	7.17
	15-30	1.21	2.99	1.53	1.46	5.52	2.82	2.69			
1630	0-15	1.30	2.15	0.07	2.08	4.25	0.14	4.11	7.16	0.60	6.56
	15-30	1.45	1.32	0.21	1.11	2.91	0.46	2.45			

Table 41. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm^{-3}	-----Percent-----			----- kg m^{-2} -----					
1631	0-15	1.22	2.51	0.00	2.51	4.67	0.00	4.67	9.03	0.00	9.03
	15-30	1.32	2.18	0.00	2.18	4.36	0.00	4.36			
1632	0-15	1.36	1.84	0.00	1.84	3.81	0.00	3.81	7.15	0.00	7.15
	15-30	1.37	1.61	0.00	1.61	3.34	0.00	3.34			
1633	0-15	1.52	0.96	0.00	0.96	2.22	0.00	2.22	4.22	0.80	3.42
	15-30	1.65	0.80	0.32	0.48	2.00	0.80	1.20			
1634	0-15	1.39	1.83	0.09	1.74	3.86	0.19	3.67	7.27	0.80	6.47
	15-30	1.49	1.51	0.27	1.24	3.41	0.61	2.80			
1635	0-15	1.34	2.02	0.00	2.02	4.11	0.00	4.11	8.22	2.20	6.02
	15-30	1.41	1.92	1.03	0.89	4.11	2.20	1.90			
1636	0-15	1.28	2.01	0.00	2.01	3.92	0.00	3.92	6.86	0.00	6.86
	15-30	1.45	1.33	0.00	1.33	2.93	0.00	2.93			
1637	0-15	1.22	2.41	0.00	2.41	4.48	0.00	4.48	8.51	0.00	8.51
	15-30	1.35	1.96	0.00	1.96	4.03	0.00	4.03			
1638	0-15	1.24	2.39	0.00	2.39	4.50	0.00	4.50	8.11	0.00	8.11
	15-30	1.40	1.70	0.00	1.70	3.61	0.00	3.61			

Table 42. North central South Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
500	0-15	1.34	2.03	0.00	2.03	4.12	0.00	4.12	6.95	0.00	6.95
	15-30	1.41	1.32	0.00	1.32	2.82	0.00	2.82			
501	0-15	1.25	2.42	0.00	2.42	4.61	0.00	4.61	8.07	0.00	8.07
	15-30	1.22	1.87	0.00	1.87	3.46	0.00	3.46			
502	0-15	1.17	2.37	0.00	2.37	4.22	0.00	4.22	7.04	0.00	7.04
	15-30	1.33	1.40	0.00	1.40	2.83	0.00	2.83			
503	0-15	1.38	2.32	0.00	2.32	4.87	0.00	4.87	4.87	0.00	7.90
	15-30	-	-	-	-	-	-	3.03†			
504	0-15	1.39	2.20	0.00	2.20	4.66	0.00	4.66	8.99	1.01	7.99
	15-30	1.52	1.87	0.43	1.44	4.32	1.01	3.33			
505	0-15	1.29	1.96	0.00	1.96	3.83	0.00	3.83	5.85	0.00	5.85
	15-30	1.00	1.33	0.00	1.33	2.02	0.00	2.02			
506	0-15	1.28	2.28	0.00	2.28	4.42	0.00	4.42	7.35	0.00	7.35
	15-30	1.15	1.68	0.00	1.68	2.93	0.00	2.93			
507	0-15	1.39	1.98	0.00	1.98	4.18	0.00	4.18	4.18	0.00	6.94
	15-30	-	-	-	-	-	-	2.76†			
508	0-15	1.37	2.41	0.26	2.15	5.04	0.55	4.49	9.42	1.83	7.62
	15-30	1.50	1.92	0.55	1.37	4.38	1.28	3.13			
509	0-15	1.36	2.49	0.27	2.22	5.15	0.57	4.59	5.15	0.57	7.49
	15-30	-	-	-	-	-	-	2.90†			
510	0-15	1.19	2.16	0.26	1.90	3.89	0.48	3.42	6.78	0.62	6.16

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
	15-30	1.04	1.82	0.09	1.73	2.88	0.15	2.74			
511	0-15	1.37	2.09	0.00	2.09	4.34	0.00	4.34	7.19	0.00	7.19
	15-30	1.41	1.33	0.00	1.33	2.85	0.00	2.85			
512	0-15	1.38	3.40	0.29	3.11	7.12	0.62	6.51	7.12	0.62	9.15
	15-30	-	-	-	-	-	-	2.64†			
513	0-15	1.21	2.13	0.00	2.13	3.92	0.00	3.92	6.88	0.41	6.47
	15-30	1.32	1.47	0.20	1.27	2.96	0.41	2.56			
514	0-15	1.25	1.95	0.00	1.95	3.70	0.00	3.70	6.71	0.40	6.32
	15-30	1.35	1.47	0.19	1.28	3.02	0.40	2.63			
515	0-15	1.03	2.94	0.00	2.94	4.58	0.00	4.58	7.71	0.00	7.71
	15-30	1.24	1.66	0.00	1.66	3.12	0.00	3.12			
516	0-15	1.27	2.47	0.20	2.27	4.75	0.39	4.37	8.87	1.51	7.40
	15-30	1.47	1.85	0.49	1.36	4.12	1.11	3.03			
517	0-15	1.27	1.96	0.00	1.96	3.77	0.00	3.77	6.41	0.00	6.41
	15-30	1.40	1.24	0.00	1.24	2.64	0.00	2.64			
518	0-15	1.42	1.70	0.00	1.70	3.68	0.00	3.68	5.69	0.00	5.69
	15-30	1.49	0.89	0.00	0.89	2.02	0.00	2.02			
519	0-15	1.21	2.80	0.14	2.66	5.15	0.26	4.89	8.21	0.26	7.95
	15-30	1.24	1.62	0.00	1.62	3.06	0.00	3.06			
520	0-15	1.32	1.88	0.00	1.88	3.78	0.00	3.78	6.30	0.44	5.87
	15-30	1.29	1.29	0.22	1.07	2.53	0.44	2.09			
521	0-15	1.25	3.28	0.25	3.03	6.26	0.49	5.78	6.26	0.49	8.67
	15-30							2.89†			
522	0-15	1.25	1.95	0.00	1.95	3.71	0.00	3.71	7.27	0.24	7.04
	15-30	1.39	1.69	0.11	1.58	3.56	0.24	3.33			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm^{-3}	-----Percent-----			----- kg m^{-2} -----					
523	0-15	1.19	2.53	0.00	2.53	4.56	0.00	4.56	7.36	0.00	7.36
	15-30	1.40	1.32	0.00	1.32	2.80	0.00	2.80			
524	0-15	1.20	2.39	0.00	2.39	4.36	0.00	4.36	7.14	0.00	7.14
	15-30	1.23	1.48	0.00	1.48	2.78	0.00	2.78			
525	0-15	1.18	2.62	0.00	2.62	4.68	0.00	4.68	7.81	0.00	7.81
	15-30	1.29	1.59	0.00	1.59	3.12	0.00	3.12			
526	0-15	1.24	2.06	0.00	2.06	3.87	0.00	3.87	6.95	0.00	6.95
	15-30	1.40	1.45	0.00	1.45	3.07	0.00	3.07			
527	0-15	1.14	2.93	0.00	2.93	5.09	0.00	5.09	8.89	0.00	8.89
	15-30	1.26	1.98	0.00	1.98	3.80	0.00	3.80			
528	0-15	1.29	2.06	0.00	2.06	4.05	0.00	4.05	6.59	0.00	6.59
	15-30	1.37	1.22	0.00	1.22	2.53	0.00	2.53			
529	0-15	1.10	2.52	0.00	2.52	4.21	0.00	4.21	7.45	0.00	7.45
	15-30	1.31	1.63	0.00	1.63	3.24	0.00	3.24			
530	0-15	1.22	2.09	0.00	2.09	3.87	0.00	3.87	6.80	0.00	6.80
	15-30	1.32	1.46	0.00	1.46	2.92	0.00	2.92			
531	0-15	1.36	1.71	0.00	1.71	3.53	0.00	3.53	6.56	0.81	5.76
	15-30	1.38	1.44	0.38	1.06	3.03	0.81	2.23			
532	0-15	1.30	1.96	0.11	1.85	3.88	0.22	3.66	5.87	0.22	5.65
	15-30	1.56	0.84	0.00	0.84	1.99	0.00	1.99			
533	0-15	1.11	3.13	0.53	2.6	5.26	0.91	4.37	11.87	5.39	6.58
	15-30	1.27	3.43	2.28	1.15	6.61	4.48	2.22			
534	0-15	1.05	3.23	0.00	3.23	5.18	0.00	5.18	9.97	0.00	9.97
	15-30	1.08	2.91	0.00	2.91	4.80	0.00	4.80			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm^{-3}	-----Percent-----			----- kg m^{-2} -----					
535	0-15	1.20	2.11	0.00	2.11	3.86	0.00	3.86	7.68	0.82	6.88
	15-30	1.29	1.95	0.41	1.54	3.83	0.82	3.02			
536	0-15	1.27	2.28	0.00	2.28	4.41	0.00	4.41	7.66	0.27	7.40
	15-30	1.44	1.48	0.12	1.36	3.25	0.27	2.98			
537	0-15	1.08	3.16	0.11	3.05	5.17	0.18	4.99	9.56	1.71	7.89
	15-30	1.26	2.29	0.78	1.51	4.39	1.52	2.89			
538	0-15	1.23	2.36	0.00	2.36	4.40	0.00	4.40	10.64	4.32	6.40
	15-30	1.35	3.03	2.06	0.97	6.23	4.32	2.00			
539	0-15	1.16	2.66	0.14	2.52	4.68	0.25	4.43	9.53	3.29	6.30
	15-30	1.36	2.34	1.44	0.9	4.85	3.04	1.87			
540	0-15	1.11	2.44	0.1	2.34	4.13	0.17	3.96	9.55	3.97	5.65
	15-30	1.28	2.79	1.92	0.87	5.41	3.80	1.69			
541	0-15	1.07	2.61	0.15	2.46	4.23	0.25	3.99	7.47	0.25	7.23
	15-30	1.39	1.53	0.00	1.53	3.24	0.00	3.24			
542	0-15	1.21	2.67	0.29	2.38	4.91	0.54	4.37	7.66	1.07	6.61
	15-30	1.36	1.33	0.25	1.08	2.76	0.53	2.24			
543	0-15	1.24	2.18	0.00	2.18	4.12	0.00	4.12	7.18	0.00	7.18
	15-30	1.50	1.35	0.00	1.35	3.07	0.00	3.07			
544	0-15	1.31	2.21	0.00	2.21	4.40	0.00	4.40	7.70	0.00	7.70
	15-30	1.40	1.55	0.00	1.55	3.30	0.00	3.30			
545	0-15	1.16	3.01	0.00	3.01	5.30	0.00	5.30	9.01	0.00	9.01
	15-30	1.34	1.82	0.00	1.82	3.70	0.00	3.70			
546	0-15	1.24	2.72	0.00	2.72	5.13	0.00	5.13	8.38	0.00	8.38
	15-30	1.42	1.51	0.00	1.51	3.25	0.00	3.25			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
547	0-15	1.21	2.49	0.00	2.49	4.58	0.00	4.58	8.06	0.00	8.06
	15-30	1.39	1.65	0.00	1.65	3.48	0.00	3.48			
548	0-15	1.45	1.89	0.00	1.89	4.16	0.00	4.16	6.48	0.22	6.27
	15-30	1.57	0.97	0.09	0.88	2.32	0.22	2.10			
549	0-15	1.27	2.52	0.00	2.52	4.87	0.00	4.87	10.26	3.26	7.06
	15-30	1.34	2.65	1.57	1.08	5.39	3.26	2.20			
550	0-15	1.30	2.49	0.00	2.49	4.94	0.00	4.94	8.01	0.00	8.01
	15-30	1.39	1.46	0.00	1.46	3.07	0.00	3.07			
551	0-15	1.20	2.33	0.00	2.33	4.25	0.00	4.25	8.79	0	8.79
	15-30	1.32	2.27	0.00	2.27	4.54	0.00	4.54			
552	0-15	1.12	2.81	0.00	2.81	4.80	0.00	4.80	7.49	0	7.49
	15-30	1.27	1.39	0.00	1.39	2.69	0.00	2.69			
553	0-15	1.29	2.35	0.00	2.35	4.59	0.00	4.59	8.11	0	8.11
	15-30	1.41	1.64	0.00	1.64	3.51	0.00	3.51			
554	0-15	1.24	2.62	0.00	2.62	4.94	0.00	4.94	8.81	0.86	7.96
	15-30	1.32	1.92	0.42	1.50	3.87	0.86	3.02			
555	0-15	1.39	2.01	0.00	2.01	4.24	0.00	4.24	7.50	0	7.50
	15-30	1.51	1.42	0.00	1.42	3.27	0.00	3.27			
556	0-15	1.32	2.06	0.00	2.06	4.14	0.00	4.14	7.39	0.57	6.83
	15-30	1.47	1.45	0.25	1.20	3.25	0.57	2.69			
557	0-15	1.28	2.02	0.00	2.02	3.93	0.00	3.93	6.81	0	6.81
	15-30	1.36	1.39	0.00	1.39	2.88	0.00	2.88			
558	0-15	1.15	2.74	0.00	2.74	4.80	0.00	4.80	8.61	0	8.61
	15-30	1.35	1.86	0.00	1.86	3.81	0.00	3.81			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm^{-3}	-----Percent-----			----- kg m^{-2} -----					
559	0-15	1.26	2.59	0.00	2.59	4.97	0.00	4.97	7.96	0.00	7.96
	15-30	1.44	1.36	0.00	1.36	2.99	0.00	2.99			
560	0-15	1.18	2.43	0.00	2.43	4.37	0.00	4.37	8.72	1.85	6.90
	15-30	1.34	2.13	0.89	1.24	4.35	1.85	2.53			
561	0-15	1.17	2.55	0.00	2.55	4.52	0.00	4.52	7.48	0.00	7.48
	15-30	1.35	1.45	0.00	1.45	2.97	0.00	2.97			
562	0-15	1.08	3.02	0.00	3.02	4.97	0.00	4.97	8.54	0.00	8.54
	15-30	1.36	1.73	0.00	1.73	3.57	0.00	3.57			
563	0-15	1.17	2.64	0.00	2.64	4.71	0.00	4.71	8.05	0.27	7.79
	15-30	1.36	1.62	0.13	1.49	3.34	0.27	3.07			
564	0-15	1.13	2.69	0.00	2.69	4.63	0.00	4.63	7.49	0.00	7.49
	15-30	1.34	1.41	0.00	1.41	2.86	0.00	2.86			
565	0-15	1.21	2.75	0.00	2.75	5.07	0.00	5.07	7.87	0.00	7.87
	15-30	1.33	1.38	0.00	1.38	2.80	0.00	2.80			
566	0-15	1.26	1.95	0.23	1.72	3.74	0.45	3.30	8.68	3.72	5.04
	15-30	1.30	2.50	1.62	0.88	4.95	3.27	1.74			
567	0-15	1.30	2.47	0.00	2.47	4.89	0.00	4.89	7.85	0.00	7.85
	15-30	1.57	1.24	0.00	1.24	2.97	0.00	2.97			
568	0-15	1.13	2.36	0.00	2.36	4.06	0.00	4.06	6.76	0.00	6.76
	15-30	1.30	1.36	0.00	1.36	2.70	0.00	2.70			
569	0-15	1.06	2.77	0.00	2.77	4.45	0.00	4.45	7.34	0.00	7.34
	15-30	1.35	1.41	0.00	1.41	2.89	0.00	2.89			
570	0-15	1.29	2.44	0.20	2.24	4.79	0.40	4.40	12.09	5.80	6.40
	15-30	1.34	3.57	2.59	0.98	7.30	5.40	2.00			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
571	0-15	1.14	2.68	0.00	2.68	4.63	0.00	4.63	8.05	0.41	7.65
	15-30	1.38	1.63	0.19	1.44	3.42	0.41	3.02			
572	0-15	1.30	2.18	0.00	2.18	4.31	0.00	4.31	6.90	0.00	6.90
	15-30	1.47	1.16	0.00	1.16	2.59	0.00	2.59			
573	0-15	1.27	2.41	0.00	2.41	4.66	0.00	4.66	8.78	0.57	8.22
	15-30	1.37	1.98	0.27	1.71	4.12	0.57	3.56			
574	0-15	1.26	2.57	0.67	1.90	4.94	1.31	3.65	11.27	6.69	4.71
	15-30	1.33	3.12	2.60	0.52	6.33	5.38	1.05			
575	0-15	1.14	3.10	0.46	2.64	5.39	0.82	4.59	11.41	5.20	6.31
	15-30	1.33	2.98	2.13	0.85	6.02	4.38	1.72			
576	0-15	1.05	3.49	0.00	3.49	5.56	0.00	5.56	9.89	0.00	9.89
	15-30	1.16	2.45	0.00	2.45	4.33	0.00	4.33			
577	0-15	1.20	3.38	1.12	2.26	6.17	2.08	4.12	13.25	8.61	4.80
	15-30	1.40	3.34	3.02	0.32	7.08	6.53	0.68			
578	0-15	1.32	2.29	0.14	2.15	4.60	0.29	4.32	8.11	0.81	7.32
	15-30	1.40	1.65	0.24	1.41	3.51	0.52	3.00			
579	0-15	0.94	3.39	0.20	3.19	4.83	0.29	4.55	9.56	0.68	8.89
	15-30	1.10	2.82	0.23	2.59	4.73	0.39	4.34			
580	0-15	1.06	2.68	0.29	2.39	4.33	0.48	3.87	9.97	4.36	5.69
	15-30	1.18	3.15	2.13	1.02	5.64	3.89	1.83			
581	0-15	1.01	3.36	0.71	2.65	5.14	1.11	4.06	11.27	5.64	5.75
	15-30	1.12	3.59	2.60	0.99	6.13	4.53	1.69			
582	0-15	1.02	3.36	0.79	2.57	5.20	1.25	3.98	9.86	2.34	7.56
	15-30	1.05	2.91	0.67	2.24	4.66	1.09	3.59			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
583	0-15	1.17	2.58	0.42	2.16	4.58	0.76	3.83	7.12	1.25	5.90
	15-30	0.99	1.70	0.32	1.38	2.55	0.49	2.07			
584	0-15	1.21	3.02	1.34	1.68	5.55	2.51	3.09	8.33	2.82	5.57
	15-30	1.33	1.38	0.15	1.23	2.78	0.31	2.48			
585	0-15	1.39	2.57	0.64	1.93	5.41	1.37	4.06	12.08	6.55	5.66
	15-30	1.38	3.18	2.42	0.76	6.66	5.17	1.59			
586	0-15	1.23	2.88	0.00	2.88	5.37	0.00	5.37	9.79	0.44	9.36
	15-30	1.19	2.44	0.24	2.20	4.42	0.44	3.99			
587	0-15	1.24	2.66	0.22	2.44	5.02	0.42	4.60	8.63	0.42	8.21
	15-30	1.30	1.82	0.00	1.82	3.61	0.00	3.61			
588	0-15	1.29	2.27	0.00	2.27	4.46	0.00	4.46	8.23	0.00	8.23
	15-30	1.36	1.82	0.00	1.82	3.77	0.00	3.77			
589	0-15	1.17	2.93	0.00	2.93	5.23	0.00	5.23	9.71	0.45	9.27
	15-30	1.25	2.35	0.23	2.12	4.48	0.45	4.04			
590	0-15	1.08	2.97	0.18	2.79	4.90	0.30	4.60	9.27	0.48	8.80
	15-30	1.12	2.56	0.10	2.46	4.37	0.17	4.20			
591	0-15	1.25	2.55	0.57	1.98	4.83	1.10	3.75	7.51	1.29	6.25
	15-30	1.33	1.32	0.09	1.23	2.68	0.19	2.49			
592	0-15	1.20	2.63	0.51	2.12	4.81	0.95	3.88	11.06	6.20	4.98
	15-30	1.31	3.13	2.58	0.55	6.25	5.25	1.10			
593	0-15	1.29	1.84	0.08	1.76	3.60	0.16	3.44	6.25	0.61	5.65
	15-30	1.40	1.25	0.21	1.04	2.65	0.45	2.21			
594	0-15	1.18	2.51	0.70	1.81	4.50	1.28	3.24	10.49	5.69	4.91
	15-30	1.29	3.06	2.21	0.85	5.99	4.41	1.66			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
595	0-15	1.16	2.96	0.00	2.96	5.24	0.00	5.24	8.66	0.00	8.66
	15-30	1.36	1.65	0.00	1.65	3.42	0.00	3.42			
596	0-15	1.29	2.23	0.00	2.23	4.37	0.00	4.37	7.48	0.61	6.88
	15-30	1.40	1.46	0.28	1.18	3.11	0.61	2.52			
597	0-15	1.14	3.3	0.00	3.3	5.73	0.00	5.73	9.46	0.54	8.93
	15-30	1.30	1.89	0.27	1.62	3.73	0.54	3.20			
598	0-15	1.28	2.33	0.00	2.33	4.53	0.00	4.53	8.56	1.57	7.02
	15-30	1.35	1.96	0.75	1.21	4.02	1.57	2.48			
599	0-15	1.22	2.38	0.00	2.38	4.42	0.00	4.42	6.90	0.00	6.90
	15-30	1.42	1.15	0.00	1.15	2.49	0.00	2.49			
600	0-15	1.24	2.35	0.00	2.35	4.45	0.00	4.45	7.79	0.82	6.98
	15-30	1.44	1.53	0.37	1.16	3.34	0.82	2.54			
601	0-15	1.18	2.86	0.00	2.86	5.12	0.00	5.12	8.68	0.00	8.68
	15-30	1.34	1.75	0.00	1.75	3.57	0.00	3.57			
602	0-15	1.16	3.02	0.00	3.02	5.33	0.00	5.33	9.08	0.00	9.08
	15-30	1.27	1.95	0.00	1.95	3.76	0.00	3.76			
603	0-15	1.09	2.56	0.00	2.56	4.24	0.00	4.24	6.80	0.00	6.80
	15-30	1.26	1.34	0.00	1.34	2.56	0.00	2.56			
604	0-15	1.06	3.05	0.00	3.05	4.90	0.00	4.90	8.54	0.00	8.54
	15-30	1.14	2.1	0.00	2.1	3.64	0.00	3.64			
605	0-15	1.15	2.03	0.00	2.03	3.55	0.00	3.55	7.83	1.88	5.99
	15-30	1.25	2.25	0.97	1.28	4.27	1.88	2.43			
606	0-15	1.25	1.98	0.00	1.98	3.77	0.00	3.77	9.33	3.83	5.57
	15-30	1.25	2.93	1.98	0.95	5.56	3.83	1.80			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
607	0-15	1.20	2.37	0.46	1.91	4.32	0.86	3.48	10.59	6.14	4.57
	15-30	1.28	3.23	2.67	0.56	6.27	5.28	1.09			
608	0-15	1.16	2.24	0.00	2.24	3.97	0.00	3.97	6.68	0.00	6.68
	15-30	1.29	1.38	0.00	1.38	2.71	0.00	2.71			
609	0-15	1.24	2.44	0.45	1.99	4.59	0.86	3.74	9.49	3.88	5.69
	15-30	1.31	2.47	1.49	0.98	4.90	3.02	1.94			
610	0-15	1.18	2.12	0.00	2.12	3.79	0.00	3.79	8.41	2.71	5.75
	15-30	1.22	2.48	1.43	1.05	4.62	2.71	1.95			
611	0-15	1.15	2.16	0.00	2.16	3.78	0.00	3.78	6.57	0.27	6.30
	15-30	1.26	1.46	0.14	1.32	2.79	0.27	2.52			
612	0-15	1.24	1.74	0.00	1.74	3.27	0.00	3.27	5.71	0.00	5.71
	15-30	1.38	1.16	0.00	1.16	2.43	0.00	2.43			
613	0-15	1.14	2.50	0.00	2.50	4.32	0.00	4.32	7.10	0.00	7.10
	15-30	1.31	1.40	0.00	1.40	2.78	0.00	2.78			
614	0-15	1.16	1.98	0.00	1.98	3.50	0.00	3.50	5.93	0.22	5.71
	15-30	1.30	1.23	0.11	1.12	2.43	0.22	2.21			
615	0-15	1.18	2.20	0.29	1.91	3.96	0.53	3.44	9.95	4.82	5.22
	15-30	1.22	3.22	2.26	0.96	5.99	4.29	1.79			
616	0-15	1.25	2.03	0.00	2.03	3.87	0.00	3.87	6.15	0.00	6.15
	15-30	1.36	1.10	0.00	1.10	2.28	0.00	2.28			
617	0-15	1.23	2.31	0.00	2.31	4.33	0.00	4.33	7.15	0.00	7.15
	15-30	1.38	1.34	0.00	1.34	2.81	0.00	2.81			
618	0-15	1.29	2.23	0.00	2.23	4.37	0.00	4.37	10.09	4.23	5.94
	15-30	1.36	2.77	2.01	0.76	5.72	4.23	1.57			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
619	0-15	1.26	2.37	0.00	2.37	4.52	0.00	4.52	7.06	0.00	7.06
	15-30	1.47	1.14	0.00	1.14	2.54	0.00	2.54			
620	0-15	1.21	2.56	0.00	2.56	4.73	0.00	4.73	7.82	0.00	7.82
	15-30	1.39	1.46	0.00	1.46	3.09	0.00	3.09			
621	0-15	1.62	2.29	0.00	2.29	5.64	0.00	5.64	8.39	0.00	8.39
	15-30	1.73	1.05	0.00	1.05	2.75	0.00	2.75			
622	0-15	1.23	2.18	0.00	2.18	4.07	0.00	4.07	6.70	0.00	6.70
	15-30	1.48	1.17	0.00	1.17	2.63	0.00	2.63			
623	0-15	1.29	1.99	0.00	1.99	3.90	0.00	3.90	6.51	0.00	6.51
	15-30	1.60	1.07	0.00	1.07	2.60	0.00	2.60			
624	0-15	1.41	2.59	0.68	1.91	5.55	1.49	4.09	11.72	5.75	6.09
	15-30	1.41	2.88	1.95	0.93	6.17	4.26	1.99			
625	0-15	1.05	4.49	0.00	4.49	7.18	0.00	7.18	10.55	0.00	10.55
	15-30	1.35	1.64	0.00	1.64	3.37	0.00	3.37			
626	0-15	1.07	3.74	0.00	3.74	6.11	0.00	6.11	9.09	0.00	9.09
	15-30	1.24	1.58	0.00	1.58	2.98	0.00	2.98			
627	0-15	1.35	2.99	0.00	2.99	6.14	0.00	6.14	9.69	0.19	9.50
	15-30	1.54	1.51	0.08	1.43	3.54	0.19	3.36			
628	0-15	1.23	4.25	0.00	4.25	7.95	0.00	7.95	12.23	0.00	12.23
	15-30	1.43	1.97	0.00	1.97	4.28	0.00	4.28			
629	0-15	1.06	3.64	0.00	3.64	5.89	0.00	5.89	8.77	0.00	8.77
	15-30	1.26	1.50	0.00	1.50	2.88	0.00	2.88			
630	0-15	1.13	3.47	0.00	3.47	5.96	0.00	5.96	8.94	0.00	8.94
	15-30	1.34	1.47	0.00	1.47	2.99	0.00	2.99			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
631	-cm-										
	0-15	1.12	3.49	0.00	3.49	5.92	0.00	5.92	9.05	0.00	9.05
	15-30	1.30	1.58	0.00	1.58	3.13	0.00	3.13			
632	0-15	1.12	3.38	0.00	3.38	5.76	0.00	5.76	9.65	1.20	8.48
	15-30	1.25	2.06	0.62	1.44	3.90	1.20	2.73			
633	0-15	1.18	3.63	0.00	3.63	6.50	0.00	6.50	9.37	0.00	9.37
	15-30	1.19	1.59	0.00	1.59	2.87	0.00	2.87			
634	0-15	1.04	3.35	0.00	3.35	5.29	0.00	5.29	7.87	0.00	7.87
	15-30	1.25	1.35	0.00	1.35	2.57	0.00	2.57			
635	0-15	1.01	3.33	0.00	3.33	5.10	0.00	5.10	9.21	1.09	8.13
	15-30	1.18	2.30	0.60	1.70	4.11	1.09	3.04			
243 636	0-15	1.02	3.48	0.00	3.48	5.39	0.00	5.39	7.99	0.00	7.99
	15-30	1.20	1.43	0.00	1.43	2.60	0.00	2.60			
637	0-15	1.03	3.39	0.00	3.39	5.33	0.00	5.33	8.72	0.59	8.14
	15-30	1.19	1.88	0.32	1.56	3.40	0.59	2.82			
638	0-15	1.15	4.01	0.00	4.01	7.03	0.00	7.03	11.58	1.52	10.09
	15-30	1.10	2.71	0.89	1.82	4.55	1.52	3.06			
639	0-15	1.09	3.98	0.00	3.98	6.60	0.00	6.60	10.06	0.00	10.06
	15-30	1.08	2.11	0.00	2.11	3.46	0.00	3.46			
640	0-15	1.22	3.50	0.00	3.50	6.51	0.00	6.51	9.50	0.00	9.50
	15-30	1.14	1.72	0.00	1.72	2.99	0.00	2.99			
641	0-15	1.39	2.31	0.00	2.31	4.90	0.00	4.90	8.40	0.00	8.40
	15-30	1.37	1.68	0.00	1.68	3.50	0.00	3.50			
642	0-15	1.29	2.65	0.00	2.65	5.21	0.00	5.21	8.95	0.00	8.95
	15-30	1.36	1.81	0.00	1.81	3.75	0.00	3.75			

Table 42. (continued)

Sample Number	Depth	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-		-----Percent-----			-----kg m ⁻² -----					
643	0-15	1.47	1.71	0.00	1.71	3.83	0.00	3.83	6.68	0.52	6.17
	15-30	1.41	1.33	0.24	1.09	2.85	0.52	2.34			
644	0-15	1.33	2.45	0.00	2.45	4.95	0.00	4.95	8.13	0.00	8.13
	15-30	1.35	1.55	0.00	1.55	3.19	0.00	3.19			
645	0-15	1.40	1.77	0.00	1.77	3.77	0.00	3.77	5.81	0.00	5.81
	15-30	1.51	0.89	0.00	0.89	2.04	0.00	2.04			
646	0-15	1.25	2.61	0.00	2.61	4.97	0.00	4.97	8.47	0.53	7.95
	15-30	1.22	1.89	0.28	1.61	3.50	0.53	2.98			
647	0-15	1.39	1.63	0.09	1.54	3.45	0.19	3.26	5.65	0.67	4.99
	15-30	1.46	0.99	0.21	0.78	2.19	0.47	1.73			
244 648	0-15	1.31	2.22	0.00	2.22	4.42	0.00	4.42	7.19	0.00	7.19
	15-30	1.30	1.4	0.00	1.4	2.77	0.00	2.77			
649	0-15	1.38	2.23	0.08	2.15	4.67	0.17	4.50	7.84	1.41	6.47
	15-30	1.42	1.47	0.56	0.91	3.18	1.23	1.97			
650	0-15	1.20	2.73	0.00	2.73	4.98	0.00	4.98	8.44	0.00	8.44
	15-30	1.37	1.66	0.00	1.66	3.46	0.00	3.46			
651	0-15	1.26	2.46	0.00	2.46	4.70	0.00	4.70	9.74	2.43	7.36
	15-30	1.18	2.81	1.33	1.48	5.03	2.43	2.65			
652	0-15	1.33	2.41	0.10	2.31	4.86	0.21	4.66	7.75	0.21	7.55
	15-30	1.50	1.27	0.00	1.27	2.89	0.00	2.89			
653	0-15	1.16	3.51	0.00	3.51	6.19	0.00	6.19	10.83	0.00	10.83
	15-30	1.23	2.49	0.00	2.49	4.64	0.00	4.64			
654	0-15	1.16	3.19	0.00	3.19	5.63	0.00	5.63	9.29	0.00	9.29
	15-30	1.38	1.75	0.00	1.75	3.66	0.00	3.66			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
655	0-15	1.24	3.04	0.00	3.04	5.74	0.00	5.74	8.93	0.27	8.67
	15-30	1.45	1.45	0.12	1.33	3.19	0.27	2.92			
656	0-15	1.12	3.33	0.00	3.33	5.69	0.00	5.69	10.08	0.00	10.08
	15-30	1.45	1.99	0.00	1.99	4.39	0.00	4.39			
657	0-15	1.26	2.41	0.00	2.41	4.61	0.00	4.61	10.03	3.57	6.53
	15-30	1.23	2.91	1.88	1.03	5.42	3.57	1.92			
658	0-15	1.19	2.92	0.00	2.92	5.27	0.00	5.27	9.51	0.00	9.51
	15-30	1.19	2.35	0.00	2.35	4.24	0.00	4.24			
659	0-15	1.14	2.99	0.00	2.99	5.16	0.00	5.16	9.38	0.00	9.38
	15-30	1.19	2.33	0.00	2.33	4.22	0.00	4.22			
245 660	0-15	1.09	3.73	0.00	3.73	6.17	0.00	6.17	11.42	0.00	11.42
	15-30	1.08	3.20	0.00	3.20	5.25	0.00	5.25			
661	0-15	1.30	2.89	0.27	2.62	5.71	0.54	5.18	11.90	3.69	8.28
	15-30	1.38	2.95	1.47	1.48	6.19	3.15	3.11			
662	0-15	1.29	2.39	0.00	2.39	4.69	0.00	4.69	8.12	0.46	7.67
	15-30	1.41	1.60	0.21	1.39	3.42	0.46	2.97			
663	0-15	1.33	2.38	0.00	2.38	4.83	0.00	4.83	8.07	0.00	8.07
	15-30	1.42	1.50	0.00	1.50	3.24	0.00	3.24			
664	0-15	1.22	2.96	0.00	2.96	5.50	0.00	5.50	8.98	0.00	8.98
	15-30	1.35	1.70	0.00	1.70	3.48	0.00	3.48			
665	0-15	1.33	2.91	0.00	2.91	5.90	0.00	5.90	9.85	0.58	9.29
	15-30	1.44	1.81	0.26	1.55	3.96	0.58	3.39			
666	0-15	1.20	2.93	0.00	2.93	5.34	0.00	5.34	9.42	0.62	8.81
	15-30	1.37	1.95	0.29	1.66	4.08	0.62	3.47			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
667	0-15	1.24	2.99	0.00	2.99	5.63	0.00	5.63	9.69	0.00	9.69
	15-30	1.32	2.02	0.00	2.02	4.05	0.00	4.05			
668	0-15	1.33	2.34	0.00	2.34	4.73	0.00	4.73	7.93	0.25	7.69
	15-30	1.44	1.46	0.11	1.35	3.20	0.25	2.96			
669	0-15	1.18	2.71	0.00	2.71	4.86	0.00	4.86	8.85	0.00	8.85
	15-30	1.34	1.97	0.00	1.97	4.00	0.00	4.00			
670	0-15	1.44	2.77	0.00	2.77	6.08	0.00	6.08	8.94	0.46	8.49
	15-30	1.09	1.72	0.27	1.45	2.85	0.46	2.41			
671	0-15	1.31	2.57	0.00	2.57	5.12	0.00	5.12	8.93	0.00	8.93
	15-30	1.40	1.79	0.00	1.79	3.81	0.00	3.81			
246 672	0-15	1.16	4.59	0.00	4.59	8.11	0.00	8.11	15.17	0.00	15.17
	15-30	1.62	2.87	0.00	2.87	7.06	0.00	7.06			
673	0-15	1.16	4.31	0.00	4.31	7.60	0.00	7.60	10.39	0.00	10.39
	15-30	1.37	1.34	0.00	1.34	2.79	0.00	2.79			
674	0-15	1.27	4.04	0.00	4.04	7.79	0.00	7.79	11.43	0.00	11.43
	15-30	1.48	1.62	0.00	1.62	3.64	0.00	3.64			
675	0-15	1.17	3.86	0.00	3.86	6.84	0.00	6.84	12.87	2.65	10.28
	15-30	1.36	2.93	1.26	1.67	6.04	2.65	3.44			
676	0-15	1.18	4.31	0.00	4.31	7.72	0.00	7.72	14.33	0.00	14.33
	15-30	1.38	3.16	0.00	3.16	6.60	0.00	6.60			
677	0-15	1.04	3.43	0.00	3.43	5.41	0.00	5.41	8.60	0.00	8.60
	15-30	1.28	1.64	0.00	1.64	3.19	0.00	3.19			
678	0-15	1.06	3.63	0.00	3.63	5.83	0.00	5.83	9.86	0.78	9.09
	15-30	1.23	2.16	0.41	1.75	4.03	0.78	3.27			

Table 42. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
679	0-15	1.04	4.01	0.00	4.01	6.31	0.00	6.31	11.35	2.01	9.38
	15-30	1.20	2.76	1.08	1.68	5.03	2.01	3.06			
680	0-15	1.03	4.68	0.00	4.68	7.31	0.00	7.31	13.67	0.00	13.67
	15-30	1.38	3.04	0.00	3.04	6.36	0.00	6.36			
681	0-15	0.95	3.64	0.00	3.64	5.25	0.00	5.25	9.22	0.18	9.05
	15-30	1.16	2.25	0.10	2.15	3.97	0.18	3.80			
682	0-15	1.02	2.42	0.00	2.42	3.77	0.00	3.77	6.13	0.00	6.13
	15-30	1.19	1.31	0.00	1.31	2.36	0.00	2.36			
683	0-15	1.05	2.49	0.00	2.49	3.97	0.00	3.97	6.30	0.00	6.30
	15-30	1.23	1.25	0.00	1.25	2.33	0.00	2.33			
684	0-15	1.05	3.65	0.00	3.65	5.80	0.00	5.80	9.75	0.00	9.75
	15-30	1.28	2.03	0.00	2.03	3.95	0.00	3.95			
685	0-15	0.91	3.43	0.00	3.43	4.75	0.00	4.75	8.59	0.19	8.40
	15-30	1.04	2.42	0.12	2.30	3.84	0.19	3.65			
686	0-15	1.10	3.15	0.00	3.15	5.28	0.00	5.28	7.66	0.00	7.66
	15-30	1.37	1.14	0.00	1.14	2.37	0.00	2.37			
687	0-15	0.93	3.47	0.49	2.98	4.92	0.71	4.23	10.00	4.07	6.01
	15-30	1.10	3.05	1.98	1.07	5.08	3.36	1.78			
688	0-15	1.19	3.20	0.19	3.01	5.80	0.35	5.46	9.92	2.14	7.83
	15-30	1.23	2.21	0.94	1.27	4.12	1.79	2.37			
689	0-15	1.17	3.14	0.00	3.14	5.56	0.00	5.56	9.79	0.72	9.09
	15-30	1.29	2.16	0.36	1.80	4.23	0.72	3.53			
690	0-15	1.29	3.04	1.49	1.55	5.96	2.98	3.04	12.81	9.53	3.47
	15-30	1.35	3.33	3.12	0.21	6.85	6.55	0.43			

Table 42. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	-cm-	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
691	0-15	1.25	2.36	0.00	2.36	4.48	0.00	4.48	6.97	0.19	6.78
	15-30	1.39	1.18	0.09	1.09	2.49	0.19	2.30			

†Entire sample was not collectable due to unfavorable sampling conditions. The reported value was calculated from averages within the same field.

Table 43. Central South Dakota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
750	0-15	1.09	3.32	0.00	3.32	5.51	0.00	5.51	8.17	0.00	8.17
	15-30	1.27	1.38	0.00	1.38	2.66	0.00	2.66			
751	0-15	1.18	3.19	0.00	3.19	5.71	0.00	5.71	10.20	1.65	8.57
	15-30	1.30	2.27	0.82	1.45	4.49	1.65	2.87			
752	0-15	1.17	3.59	0.00	3.59	6.41	0.00	6.41	10.25	0.86	9.41
	15-30	1.32	1.92	0.42	1.50	3.84	0.86	3.00			
753	0-15	1.12	3.54	0.00	3.54	6.01	0.00	6.01	9.74	0.27	9.47
	15-30	1.44	1.70	0.12	1.58	3.73	0.27	3.46			
754	0-15	1.04	4.04	0.00	4.04	6.36	0.00	6.36	9.77	0.00	9.77
	15-30	1.21	1.85	0.00	1.85	3.40	0.00	3.40			
755	0-15	1.23	4.07	0.00	4.07	7.63	0.00	7.63	10.93	0.00	10.93
	15-30	1.08	2.01	0.00	2.01	3.30	0.00	3.30			
756	0-15	1.04	3.68	0.00	3.68	5.81	0.00	5.81	9.07	0.00	9.07
	15-30	1.17	1.84	0.00	1.84	3.27	0.00	3.27			
757	0-15	1.12	3.69	0.00	3.69	6.31	0.00	6.31	9.87	0.00	9.87
	15-30	1.36	1.72	0.00	1.72	3.56	0.00	3.56			
758	0-15	1.03	3.33	0.00	3.33	5.22	0.00	5.22	8.36	0.00	8.36
	15-30	1.19	1.74	0.00	1.74	3.14	0.00	3.14			
759	0-15	1.31	3.16	0.00	3.16	6.31	0.00	6.31	9.38	0.00	9.38
	15-30	1.44	1.40	0.00	1.40	3.07	0.00	3.07			
760	0-15	1.04	3.86	0.00	3.86	6.10	0.00	6.10	9.33	0.00	9.33

Table 43. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
761	15-30	1.13	1.89	0.00	1.89	3.24	0.00	3.24	8.24	0.00	8.24
	0-15	1.02	3.57	0.00	3.57	5.53	0.00	5.53			
762	15-30	1.14	1.57	0.00	1.57	2.72	0.00	2.72	8.88	0.00	8.88
	0-15	0.94	3.96	0.00	3.96	5.67	0.00	5.67			
763	15-30	1.14	1.86	0.00	1.86	3.21	0.00	3.21	8.68	0.00	8.68
	0-15	1.13	3.48	0.00	3.48	5.95	0.00	5.95			
764	15-30	1.04	1.72	0.00	1.72	2.73	0.00	2.73	9.19	0.00	9.19
	0-15	0.92	4.12	0.00	4.12	5.78	0.00	5.78			
765	15-30	1.10	2.03	0.00	2.03	3.41	0.00	3.41	10.23	0.00	10.23
	0-15	1.03	4.11	0.00	4.11	6.44	0.00	6.44			
766	15-30	1.11	2.24	0.00	2.24	3.79	0.00	3.79	8.75	0.00	8.75
	0-15	1.20	3.26	0.00	3.26	5.92	0.00	5.92			
767	15-30	1.27	1.47	0.00	1.47	2.83	0.00	2.83	8.65	0.00	8.65
	0-15	1.13	3.24	0.00	3.24	5.59	0.00	5.59			
768	15-30	1.30	1.55	0.00	1.55	3.06	0.00	3.06	8.31	0.00	8.31
	0-15	1.12	3.28	0.00	3.28	5.56	0.00	5.56			
769	15-30	1.31	1.38	0.00	1.38	2.75	0.00	2.75	9.63	0.00	9.63
	0-15	1.07	3.88	0.00	3.88	6.29	0.00	6.29			
770	15-30	1.22	1.80	0.00	1.80	3.35	0.00	3.35	9.01	0.00	9.01
	0-15	1.08	3.64	0.00	3.64	5.95	0.00	5.95			
771	15-30	1.18	1.70	0.00	1.70	3.06	0.00	3.06	8.98	0.39	8.60
	0-15	1.05	3.70	0.00	3.70	5.93	0.00	5.93			
772	15-30	1.20	1.68	0.21	1.47	3.05	0.39	2.67	8.13	0.00	8.13
	0-15	1.13	3.12	0.00	3.12	5.37	0.00	5.37			
	15-30	1.22	1.49	0.00	1.49	2.76	0.00	2.76			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
773	0-15	1.03	3.30	0.00	3.30	5.16	0.00	5.16	8.07	0.00	8.07
	15-30	1.12	1.71	0.00	1.71	2.91	0.00	2.91			
774	0-15	0.99	3.73	0.00	3.73	5.64	0.00	5.64	9.07	0.00	9.07
	15-30	1.14	1.99	0.00	1.99	3.43	0.00	3.43			
775	0-15	1.02	3.66	0.00	3.66	5.68	0.00	5.68	8.58	0.00	8.58
	15-30	1.08	1.77	0.00	1.77	2.89	0.00	2.89			
776	0-15	0.99	3.76	0.00	3.76	5.69	0.00	5.69	8.88	0.00	8.88
	15-30	1.03	2.03	0.00	2.03	3.19	0.00	3.19			
777	0-15	1.00	3.87	0.00	3.87	5.91	0.00	5.91	9.02	0.00	9.02
	15-30	1.08	1.89	0.00	1.89	3.11	0.00	3.11			
778	0-15	1.04	3.07	0.00	3.07	4.83	0.00	4.83	7.19	0.00	7.19
	15-30	1.12	1.38	0.00	1.38	2.36	0.00	2.36			
779	0-15	0.95	3.88	0.00	3.88	5.58	0.00	5.58	8.80	0.00	8.80
	15-30	1.02	2.07	0.00	2.07	3.22	0.00	3.22			
780	0-15	1.03	4.16	0.00	4.16	6.52	0.00	6.52	10.56	0.00	10.56
	15-30	1.20	2.22	0.00	2.22	4.03	0.00	4.03			
781	0-15	1.13	3.30	0.00	3.30	5.66	0.00	5.66	8.33	0.00	8.33
	15-30	1.27	1.39	0.00	1.39	2.67	0.00	2.67			
782	0-15	1.23	3.02	0.00	3.02	5.65	0.00	5.65	8.35	0.00	8.35
	15-30	1.35	1.31	0.00	1.31	2.69	0.00	2.69			
783	0-15	1.18	3.60	0.00	3.60	6.46	0.00	6.46	9.58	0.00	9.58
	15-30	1.26	1.63	0.00	1.63	3.12	0.00	3.12			
784	0-15	1.15	3.61	0.00	3.61	6.33	0.00	6.33	9.50	0.00	9.50
	15-30	1.21	1.73	0.00	1.73	3.17	0.00	3.17			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
785	0-15	1.18	3.31	0.00	3.31	5.92	0.00	5.92	8.77	0.00	8.77
	15-30	1.29	1.45	0.00	1.45	2.85	0.00	2.85			
786	0-15	1.11	3.31	0.00	3.31	5.57	0.00	5.57	8.62	0.00	8.62
	15-30	1.28	1.57	0.00	1.57	3.05	0.00	3.05			
787	0-15	0.97	2.92	0.00	2.92	4.29	0.00	4.29	6.87	0.00	6.87
	15-30	1.22	1.39	0.00	1.39	2.58	0.00	2.58			
788	0-15	1.07	3.26	0.00	3.26	5.29	0.00	5.29	7.88	0.00	7.88
	15-30	1.20	1.43	0.00	1.43	2.60	0.00	2.60			
789	0-15	0.94	3.43	0.00	3.43	4.91	0.00	4.91	7.91	0.00	7.91
	15-30	1.18	1.67	0.00	1.67	3.00	0.00	3.00			
790	0-15	1.05	3.36	0.00	3.36	5.35	0.00	5.35	7.77	0.00	7.77
	15-30	1.14	1.39	0.00	1.39	2.42	0.00	2.42			
791	0-15	0.97	3.65	0.00	3.65	5.36	0.00	5.36	8.02	0.00	8.02
	15-30	1.05	1.66	0.00	1.66	2.66	0.00	2.66			
792	0-15	1.00	3.29	0.00	3.29	5.02	0.00	5.02	7.53	0.00	7.53
	15-30	1.07	1.54	0.00	1.54	2.51	0.00	2.51			
793	0-15	0.97	3.17	0.00	3.17	4.70	0.00	4.70	7.08	0.00	7.08
	15-30	1.14	1.38	0.00	1.38	2.39	0.00	2.39			
794	0-15	1.15	3.53	0.00	3.53	6.15	0.00	6.15	9.01	0.00	9.01
	15-30	1.31	1.44	0.00	1.44	2.86	0.00	2.86			
795	0-15	1.12	3.40	0.00	3.40	5.76	0.00	5.76	8.90	0.00	8.90
	15-30	1.29	1.60	0.00	1.60	3.13	0.00	3.13			
796	0-15	1.11	3.59	0.00	3.59	6.05	0.00	6.05	9.55	0.00	9.55
	15-30	1.25	1.85	0.00	1.85	3.50	0.00	3.50			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
797	0-15	1.05	3.81	0.00	3.81	6.07	0.00	6.07	9.46	0.00	9.46
	15-30	1.23	1.81	0.00	1.81	3.39	0.00	3.39			
798	0-15	1.13	3.50	0.00	3.50	6.03	0.00	6.03	9.27	0.00	9.27
	15-30	1.31	1.63	0.00	1.63	3.24	0.00	3.24			
799	0-15	1.03	4.08	0.00	4.08	6.39	0.00	6.39	9.75	0.00	9.75
	15-30	1.26	1.75	0.00	1.75	3.35	0.00	3.35			
800	0-15	1.04	3.50	0.00	3.50	5.51	0.00	5.51	8.83	0.00	8.83
	15-30	1.16	1.89	0.00	1.89	3.32	0.00	3.32			
801	0-15	0.92	3.55	0.00	3.55	4.96	0.00	4.96	7.96	0.00	7.96
	15-30	1.03	1.91	0.00	1.91	2.99	0.00	2.99			
802	0-15	1.00	3.11	0.00	3.11	4.72	0.00	4.72	7.97	0.60	7.38
	15-30	1.14	1.87	0.34	1.53	3.25	0.60	2.66			
803	0-15	0.98	3.44	0.00	3.44	5.10	0.00	5.10	7.86	0.00	7.86
	15-30	1.16	1.56	0.00	1.56	2.76	0.00	2.76			
804	0-15	0.99	3.45	0.00	3.45	5.21	0.00	5.21	7.96	0.00	7.96
	15-30	1.15	1.57	0.00	1.57	2.75	0.00	2.75			
805	0-15	0.95	3.77	0.00	3.77	5.47	0.00	5.47	7.93	0.00	7.93
	15-30	1.15	1.41	0.00	1.41	2.46	0.00	2.46			
806	0-15	0.98	4.04	0.00	4.04	5.99	0.00	5.99	8.69	0.00	8.69
	15-30	1.15	1.55	0.00	1.55	2.70	0.00	2.70			
807	0-15	0.95	3.74	0.00	3.74	5.41	0.00	5.41	8.63	0.00	8.63
	15-30	1.10	1.93	0.00	1.93	3.23	0.00	3.23			
808	0-15	1.18	2.30	0.00	2.30	4.12	0.00	4.12	7.54	0.00	7.54
	15-30	1.38	1.63	0.00	1.63	3.42	0.00	3.42			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
809	0-15	1.16	3.01	0.00	3.01	5.32	0.00	5.32	7.86	0.00	7.86
	15-30	1.26	1.32	0.00	1.32	2.53	0.00	2.53			
810	0-15	1.16	3.26	0.00	3.26	5.75	0.00	5.75	8.90	0.00	8.90
	15-30	1.26	1.65	0.00	1.65	3.15	0.00	3.15			
811	0-15	1.18	3.06	0.00	3.06	5.47	0.00	5.47	8.21	0.00	8.21
	15-30	1.33	1.35	0.00	1.35	2.74	0.00	2.74			
812	0-15	1.18	2.91	0.00	2.91	5.24	0.00	5.24	8.18	0.00	8.18
	15-30	1.37	1.41	0.00	1.41	2.94	0.00	2.94			
813	0-15	1.43	3.94	0.00	3.94	8.57	0.00	8.57	12.27	0.00	12.27
	15-30	1.34	1.82	0.00	1.82	3.70	0.00	3.70			
814	0-15	1.01	3.85	0.00	3.85	5.94	0.00	5.94	9.60	0.00	9.60
	15-30	1.24	1.94	0.00	1.94	3.66	0.00	3.66			
815	0-15	0.99	3.36	0.00	3.36	5.06	0.00	5.06	5.06	0.00	5.06
	15-30	1.20	1.63	0.00	1.63	2.98	0.00	2.98			
816	0-15	0.91	3.83	0.00	3.83	5.32	0.00	5.32	8.80	0.00	8.80
	15-30	1.10	2.08	0.00	2.08	3.48	0.00	3.48			
817	0-15	0.93	3.37	0.00	3.37	4.78	0.00	4.78	7.50	0.00	7.50
	15-30	1.07	1.67	0.00	1.67	2.72	0.00	2.72			
818	0-15	0.92	3.66	0.00	3.66	5.12	0.00	5.12	7.93	0.00	7.93
	15-30	1.03	1.80	0.00	1.80	2.81	0.00	2.81			
819	0-15	1.04	3.04	0.00	3.04	4.80	0.00	4.80	7.10	0.00	7.10
	15-30	1.13	1.34	0.00	1.34	2.30	0.00	2.30			
820	0-15	1.04	2.99	0.00	2.99	4.71	0.00	4.71	7.43	0.00	7.43
	15-30	1.17	1.53	0.00	1.53	2.71	0.00	2.71			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
821	0-15	1.01	2.97	0.00	2.97	4.55	0.00	4.55	9.28	1.75	7.57
	15-30	1.17	2.65	0.96	1.69	4.73	1.75	3.01			
822	0-15	1.02	3.44	0.00	3.44	5.34	0.00	5.34	8.65	0.00	8.65
	15-30	1.29	1.69	0.00	1.69	3.32	0.00	3.32			
823	0-15	0.83	3.29	0.00	3.29	4.13	0.00	4.13	7.83	0.00	7.83
	15-30	1.26	1.93	0.00	1.93	3.70	0.00	3.70			
824	0-15	1.18	2.88	0.00	2.88	5.18	0.00	5.18	7.92	0.00	7.92
	15-30	1.45	1.24	0.00	1.24	2.74	0.00	2.74			
825	0-15	1.16	3.09	0.00	3.09	5.47	0.00	5.47	8.64	0.00	8.64
	15-30	1.40	1.49	0.00	1.49	3.17	0.00	3.17			
826	0-15	1.10	1.99	0.00	1.99	3.32	0.00	3.32	5.68	0.34	5.35
	15-30	1.15	1.35	0.19	1.16	2.36	0.34	2.03			
827	0-15	1.00	3.57	0.00	3.57	5.44	0.00	5.44	8.57	0.00	8.57
	15-30	1.17	1.76	0.00	1.76	3.14	0.00	3.14			
828	0-15	1.11	2.43	0.00	2.43	4.09	0.00	4.09	6.61	0.00	6.61
	15-30	1.18	1.40	0.00	1.40	2.52	0.00	2.52			
829	0-15	1.17	2.21	0.00	2.21	3.92	0.00	3.92	6.20	0.00	6.20
	15-30	1.30	1.15	0.00	1.15	2.28	0.00	2.28			
830	0-15	1.05	2.65	0.00	2.65	4.24	0.00	4.24	7.29	0.00	7.29
	15-30	1.26	1.59	0.00	1.59	3.05	0.00	3.05			
831	0-15	1.08	2.86	0.00	2.86	4.68	0.00	4.68	7.86	0.00	7.86
	15-30	1.24	1.69	0.00	1.69	3.18	0.00	3.18			
832	0-15	1.23	2.81	0.00	2.81	5.24	0.00	5.24	8.70	0.00	8.70
	15-30	1.38	1.64	0.00	1.64	3.45	0.00	3.45			

Table 43. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
833	0-15	1.22	3.06	0.00	3.06	5.67	0.00	5.67	8.96	0.00	8.96
	15-30	1.39	1.56	0.00	1.56	3.30	0.00	3.30			
834	0-15	1.36	2.37	0.25	2.12	4.91	0.53	4.39	10.18	2.88	7.36
	15-30	1.37	2.54	1.11	1.43	5.27	2.35	2.97			
835	0-15	1.19	2.28	0.00	2.28	4.12	0.00	4.12	6.54	0.00	6.54
	15-30	1.31	1.22	0.00	1.22	2.42	0.00	2.42			
836	0-15	1.07	2.85	0.00	2.85	4.61	0.00	4.61	7.46	0.00	7.46
	15-30	1.27	1.47	0.00	1.47	2.85	0.00	2.85			
837	0-15	1.11	2.55	0.00	2.55	4.30	0.00	4.30	7.85	0.81	7.06
	15-30	1.16	2.01	0.45	1.56	3.55	0.81	2.75			
838	0-15	1.00	3.39	0.00	3.39	5.18	0.00	5.18	8.67	0.00	8.67
	15-30	1.14	2.01	0.00	2.01	3.49	0.00	3.49			
839	0-15	1.31	2.26	0.00	2.26	4.51	0.00	4.51	7.04	0.00	7.04
	15-30	1.42	1.17	0.00	1.17	2.53	0.00	2.53			
840	0-15	1.30	2.47	0.00	2.47	4.87	0.00	4.87	8.08	0.00	8.08
	15-30	1.40	1.51	0.00	1.51	3.21	0.00	3.21			
841	0-15	1.29	1.99	0.00	1.99	3.91	0.00	3.91	9.14	2.49	6.70
	15-30	1.43	2.40	1.12	1.28	5.23	2.49	2.79			
842	0-15	1.39	2.06	0.00	2.06	4.35	0.00	4.35	6.84	0.00	6.84
	15-30	1.49	1.10	0.00	1.10	2.50	0.00	2.50			
843	0-15	1.41	1.73	0.00	1.73	3.71	0.00	3.71	8.72	2.52	6.25
	15-30	1.48	2.23	1.10	1.13	5.01	2.52	2.54			
844	0-15	1.30	2.07	0.00	2.07	4.10	0.00	4.10	6.87	0.00	6.87
	15-30	1.45	1.26	0.00	1.26	2.77	0.00	2.77			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
845	0-15	1.38	2.03	0.00	2.03	4.26	0.00	4.26	7.11	0.00	7.11
	15-30	1.49	1.26	0.00	1.26	2.86	0.00	2.86			
846	0-15	1.35	2.02	0.00	2.02	4.15	0.00	4.15	6.93	0.00	6.93
	15-30	1.44	1.27	0.00	1.27	2.77	0.00	2.77			
847	0-15	1.11	2.54	0.00	2.54	4.29	0.00	4.29	7.47	0.00	7.47
	15-30	1.28	1.63	0.00	1.63	3.18	0.00	3.18			
848	0-15	1.10	2.67	0.00	2.67	4.47	0.00	4.47	4.47	0.00	4.47
	15-30	1.23	2.08	0.00	2.08	3.90	0.00	3.90			
849	0-15	1.59	1.79	0.00	1.79	4.34	0.00	4.34	8.50	1.55	6.99
	15-30	1.47	1.87	0.68	1.19	4.17	1.55	2.65			
850	0-15	1.19	2.23	0.00	2.23	4.03	0.00	4.03	6.92	0.00	6.92
	15-30	1.27	1.50	0.00	1.50	2.88	0.00	2.88			
851	0-15	1.26	1.83	0.00	1.83	3.50	0.00	3.50	5.73	0.00	5.73
	15-30	1.37	1.07	0.00	1.07	2.23	0.00	2.23			
852	0-15	1.21	3.14	1.39	1.75	5.78	2.61	3.22	14.02	10.14	4.08
	15-30	1.31	4.14	3.71	0.43	8.24	7.53	0.86			
853	0-15	1.17	2.66	0.00	2.66	4.74	0.00	4.74	8.05	0.00	8.05
	15-30	1.37	1.59	0.00	1.59	3.30	0.00	3.30			
854	0-15	1.36	1.82	0.00	1.82	3.76	0.00	3.76	5.91	0.00	5.91
	15-30	1.43	0.99	0.00	0.99	2.15	0.00	2.15			
855	0-15	1.24	2.27	0.00	2.27	4.28	0.00	4.28	6.80	0.00	6.80
	15-30	1.44	1.15	0.00	1.15	2.51	0.00	2.51			
856	0-15	1.16	2.69	0.00	2.69	4.75	0.00	4.75	8.13	0.00	8.13
	15-30	1.33	1.67	0.00	1.67	3.38	0.00	3.38			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
857	0-15	1.31	2.14	0.00	2.14	4.28	0.00	4.28	6.95	0.00	6.95
	15-30	1.51	1.16	0.00	1.16	2.67	0.00	2.67			
858	0-15	1.18	2.59	0.00	2.59	4.66	0.00	4.66	8.66	0.00	8.66
	15-30	1.23	2.14	0.00	2.14	4.00	0.00	4.00			
859	0-15	1.34	2.51	0.76	1.75	5.11	1.58	3.56	13.50	8.19	5.47
	15-30	1.41	3.91	3.02	0.89	8.39	6.61	1.91			
860	0-15	1.23	2.79	0.00	2.79	5.23	0.00	5.23	9.74	0.00	9.74
	15-30	1.38	2.15	0.00	2.15	4.51	0.00	4.51			
861	0-15	1.24	1.81	0.00	1.81	3.40	0.00	3.40	8.08	2.13	5.99
	15-30	1.32	2.33	1.04	1.29	4.68	2.13	2.59			
862	0-15	1.16	2.47	0.00	2.47	4.34	0.00	4.34	6.75	0.00	6.75
	15-30	1.33	1.19	0.00	1.19	2.40	0.00	2.40			
863	0-15	1.21	2.05	0.00	2.05	3.76	0.00	3.76	6.06	0.00	6.06
	15-30	1.33	1.14	0.00	1.14	2.30	0.00	2.30			
864	0-15	1.04	2.56	0.00	2.56	4.05	0.00	4.05	7.12	0.00	7.12
	15-30	1.25	1.62	0.00	1.62	3.07	0.00	3.07			
865	0-15	1.15	2.39	0.00	2.39	4.17	0.00	4.17	6.70	0.00	6.70
	15-30	1.28	1.30	0.00	1.30	2.53	0.00	2.53			
866	0-15	1.22	2.32	0.00	2.32	4.31	0.00	4.31	7.82	0.00	7.82
	15-30	1.26	1.83	0.00	1.83	3.51	0.00	3.51			
867	0-15	1.07	2.57	0.00	2.57	4.17	0.00	4.17	7.83	0.00	7.83
	15-30	1.18	2.04	0.00	2.04	3.66	0.00	3.66			
868	0-15	1.22	1.75	0.00	1.75	3.26	0.00	3.26	5.74	0.19	5.56
	15-30	1.34	1.22	0.09	1.13	2.48	0.19	2.30			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
869	0-15	1.09	3.86	0.00	3.86	6.37	0.00	6.37	11.85	0.00	11.85
	15-30	1.11	3.26	0.00	3.26	5.48	0.00	5.48			
870	0-15	1.17	3.11	0.00	3.11	5.53	0.00	5.53	9.30	0.43	8.87
	15-30	1.40	1.77	0.20	1.57	3.77	0.43	3.34			
871	0-15	1.17	2.84	0.00	2.84	5.07	0.00	5.07	8.59	0.00	8.59
	15-30	1.35	1.72	0.00	1.72	3.52	0.00	3.52			
872	0-15	1.27	2.31	0.00	2.31	4.47	0.00	4.47	7.26	0.00	7.26
	15-30	1.40	1.31	0.00	1.31	2.80	0.00	2.80			
873	0-15	1.22	2.58	0.00	2.58	4.80	0.00	4.80	7.94	0.00	7.94
	15-30	1.39	1.49	0.00	1.49	3.14	0.00	3.14			
874	0-15	1.31	2.64	0.72	1.92	5.26	1.46	3.82	10.35	4.49	5.95
	15-30	1.21	2.78	1.62	1.16	5.09	3.03	2.13			
875	0-15	1.22	2.39	0.00	2.39	4.44	0.00	4.44	8.00	0.80	7.22
	15-30	1.43	1.64	0.36	1.28	3.56	0.80	2.78			
876	0-15	1.07	2.50	0.29	2.21	4.06	0.48	3.59	9.56	4.31	5.34
	15-30	1.21	2.99	2.04	0.95	5.50	3.83	1.75			
877	0-15	1.03	2.74	0.00	2.74	4.30	0.00	4.30	8.60	0.74	7.87
	15-30	1.14	2.48	0.42	2.06	4.31	0.74	3.58			
878	0-15	1.00	2.39	0.00	2.39	3.62	0.00	3.62	9.25	4.47	4.87
	15-30	1.23	3.02	2.35	0.67	5.63	4.47	1.25			
879	0-15	1.04	3.01	0.00	3.01	4.78	0.00	4.78	8.05	0.00	8.05
	15-30	1.20	1.79	0.00	1.79	3.27	0.00	3.27			
880	0-15	1.08	2.90	0.00	2.90	4.76	0.00	4.76	7.91	0.00	7.91
	15-30	1.20	1.72	0.00	1.72	3.15	0.00	3.15			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
881	0-15	1.06	2.51	0.00	2.51	3.26	0.97	4.05	7.31	0.97	6.36
	15-30	1.22	1.75	0.51	1.24	4.05	0.00	2.31			
882	0-15	1.05	2.31	0.00	2.31	3.69	0.00	3.69	8.11	0.00	8.11
	15-30	1.12	2.60	0.00	2.60	4.42	0.00	4.42			
883	0-15	1.22	2.42	0.00	2.42	4.48	0.00	4.48	7.54	0.00	7.54
	15-30	1.25	1.61	0.00	1.61	3.06	0.00	3.06			
884	0-15	1.18	3.24	0.00	3.24	5.82	0.00	5.82	9.92	0.00	9.92
	15-30	1.26	2.13	0.00	2.13	4.09	0.00	4.09			
885	0-15	1.24	2.89	0.00	2.89	5.43	0.00	5.43	11.07	3.74	7.40
	15-30	1.14	3.24	2.11	1.13	5.64	3.74	1.97			
886	0-15	1.34	2.24	0.00	2.24	4.55	0.00	4.55	9.50	3.42	6.15
	15-30	1.33	2.45	1.66	0.79	4.95	3.42	1.60			
887	0-15	1.24	2.50	0.00	2.50	4.70	0.00	4.70	7.49	0.00	7.49
	15-30	1.34	1.37	0.00	1.37	2.79	0.00	2.79			
888	0-15	1.12	2.55	0.00	2.55	4.35	0.00	4.35	7.38	0.00	7.38
	15-30	1.26	1.58	0.00	1.58	3.02	0.00	3.02			
889	0-15	1.32	2.31	0.00	2.31	4.65	0.00	4.65	8.21	0.70	7.52
	15-30	1.37	1.71	0.33	1.38	3.56	0.70	2.87			
890	0-15	1.14	2.90	0.00	2.90	5.05	0.00	5.05	8.77	0.00	8.77
	15-30	1.26	1.94	0.00	1.94	3.72	0.00	3.72			
891	0-15	1.15	2.29	0.00	2.29	4.01	0.00	4.01	6.42	0.00	6.42
	15-30	1.26	1.26	0.00	1.26	2.40	0.00	2.40			
892	0-15	1.19	2.25	0.34	1.91	4.08	0.63	3.47	8.15	1.79	6.39
	15-30	1.09	2.46	0.69	1.77	4.07	1.16	2.93			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
893	0-15	1.02	2.69	0.00	2.69	4.16	0.00	4.16	7.35	0.00	7.35
	15-30	1.15	1.83	0.00	1.83	3.19	0.00	3.19			
894	0-15	1.07	2.73	0.00	2.73	4.44	0.00	4.44	8.08	0.30	7.79
	15-30	1.13	2.12	0.17	1.95	3.64	0.30	3.35			
895	0-15	1.05	2.31	0.00	2.31	3.68	0.00	3.68	6.62	0.48	6.14
	15-30	1.19	1.62	0.26	1.36	2.94	0.48	2.47			
896	0-15	1.00	1.90	0.00	1.90	2.88	0.00	2.88	6.90	0.00	6.90
	15-30	1.19	2.22	0.00	2.22	4.02	0.00	4.02			
897	0-15	1.13	2.08	0.00	2.08	3.57	0.00	3.57	7.55	1.96	5.62
	15-30	1.22	2.15	1.04	1.11	3.97	1.96	2.05			
898	0-15	1.12	1.75	0.00	1.75	2.99	0.00	2.99	6.84	0.00	6.84
	15-30	1.30	1.95	0.00	1.95	3.85	0.00	3.85			
899	0-15	1.26	2.98	0.00	2.98	5.71	0.00	5.71	9.42	0.00	9.42
	15-30	1.36	1.80	0.00	1.80	3.71	0.00	3.71			
900	0-15	1.15	3.25	0.00	3.25	5.66	0.00	5.66	9.68	0.00	9.68
	15-30	1.25	2.12	0.00	2.12	4.02	0.00	4.02			
901	0-15	1.14	3.03	0.00	3.03	5.25	0.00	5.25	8.71	0.00	8.71
	15-30	1.24	1.84	0.00	1.84	3.46	0.00	3.46			
902	0-15	1.24	3.06	0.00	3.06	5.79	0.00	5.79	9.43	0.00	9.43
	15-30	1.41	1.70	0.00	1.70	3.64	0.00	3.64			
903	0-15	1.23	2.47	0.00	2.47	4.61	0.00	4.61	9.27	2.45	6.86
	15-30	1.28	2.40	1.24	1.16	4.66	2.45	2.25			
904	0-15	1.12	3.42	0.00	3.42	5.83	0.00	5.83	10.04	0.00	10.04
	15-30	1.23	2.25	0.00	2.25	4.21	0.00	4.21			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
905	0-15	1.47	2.77	0.00	2.77	6.17	0.00	6.17	9.17	0.45	8.73
	15-30	1.03	1.91	0.28	1.63	3.00	0.45	2.56			
906	0-15	1.21	2.67	0.00	2.67	4.91	0.00	4.91	7.96	0.00	7.96
	15-30	1.27	1.58	0.00	1.58	3.05	0.00	3.05			
907	0-15	1.17	2.19	0.00	2.19	3.90	0.00	3.90	7.76	1.74	6.05
	15-30	1.19	2.13	0.94	1.19	3.86	1.74	2.16			
908	0-15	1.16	2.33	0.00	2.33	4.09	0.00	4.09	8.48	2.93	5.61
	15-30	1.22	2.37	1.55	0.82	4.39	2.93	1.52			
909	0-15	1.11	2.49	0.00	2.49	4.20	0.00	4.20	7.89	1.23	6.68
	15-30	1.24	1.96	0.64	1.32	3.69	1.23	2.48			
910	0-15	1.04	3.31	0.00	3.31	5.24	0.00	5.24	8.91	0.00	8.91
	15-30	1.13	2.13	0.00	2.13	3.66	0.00	3.66			
911	0-15	1.07	2.65	0.00	2.65	4.29	0.00	4.29	7.82	1.56	6.29
	15-30	1.24	1.87	0.81	1.06	3.52	1.56	2.00			
912	0-15	1.04	2.91	0.00	2.91	4.62	0.00	4.62	10.61	3.83	6.86
	15-30	1.27	3.10	1.94	1.16	6.00	3.83	2.24			
913	0-15	1.08	2.81	0.00	2.81	4.61	0.00	4.61	7.89	0.00	7.89
	15-30	1.12	1.93	0.00	1.93	3.28	0.00	3.28			
914	0-15	1.25	2.69	0.21	2.48	5.11	0.41	4.71	12.27	7.57	4.85
	15-30	1.31	3.59	3.52	0.07	7.16	7.16	0.14			
915	0-15	1.33	1.92	0.00	1.92	3.87	0.00	3.87	6.81	0.00	6.81
	15-30	1.43	1.35	0.00	1.35	2.94	0.00	2.94			
916	0-15	1.50	1.29	0.00	1.29	2.95	0.00	2.95	6.88	1.49	5.42
	15-30	1.50	1.72	0.64	1.08	3.93	1.49	2.47			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
917	0-15	1.38	1.83	0.00	1.83	3.83	0.00	3.83	6.33	0.00	6.33
	15-30	1.50	1.10	0.00	1.10	2.50	0.00	2.50			
918	0-15	1.43	2.54	1.30	1.24	5.50	2.87	2.69	11.95	8.75	3.37
	15-30	1.37	3.10	2.77	0.33	6.45	5.88	0.69			
919	0-15	1.34	1.68	0.00	1.68	3.42	0.00	3.42	7.07	1.53	5.56
	15-30	1.28	1.87	0.77	1.10	3.65	1.53	2.14			
920	0-15	1.42	1.70	0.00	1.70	3.66	0.00	3.66	6.33	0.00	6.33
	15-30	1.41	1.25	0.00	1.25	2.67	0.00	2.67			
921	0-15	1.40	1.88	0.27	1.61	4.01	0.59	3.43	11.12	7.01	4.25
	15-30	1.38	3.40	3.01	0.39	7.12	6.42	0.82			
922	0-15	1.67	1.69	0.00	1.69	4.30	0.00	4.30	6.13	0.19	5.94
	15-30	1.13	1.07	0.11	0.96	1.83	0.19	1.64			
923	0-15	1.31	1.54	0.00	1.54	3.08	0.00	3.08	5.68	0.46	5.23
	15-30	1.30	1.32	0.23	1.09	2.61	0.46	2.15			
924	0-15	1.39	1.43	0.00	1.43	3.02	0.00	3.02	5.15	0.29	4.87
	15-30	1.33	1.06	0.14	0.92	2.14	0.29	1.85			
925	0-15	1.29	1.72	0.00	1.72	3.38	0.00	3.38	6.20	0.19	6.01
	15-30	1.25	1.49	0.10	1.39	2.82	0.19	2.63			
926	0-15	1.35	1.60	0.00	1.60	3.28	0.00	3.28	5.75	0.00	5.75
	15-30	1.31	1.24	0.00	1.24	2.47	0.00	2.47			
927	0-15	1.39	1.46	0.00	1.46	3.09	0.00	3.09	5.48	0.35	5.14
	15-30	1.39	1.13	0.16	0.97	2.39	0.35	2.06			
928	0-15	1.39	1.25	0.00	1.25	2.65	0.00	2.65	4.87	0.55	4.34
	15-30	1.36	1.08	0.26	0.82	2.23	0.55	1.69			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
929	0-15	1.29	1.81	0.63	1.18	3.56	1.26	2.32	7.41	2.61	4.85
	15-30	1.32	1.92	0.66	1.26	3.85	1.35	2.53			
930	0-15	1.29	1.53	0.00	1.53	3.01	0.00	3.01	5.28	0.00	5.28
	15-30	1.32	1.13	0.00	1.13	2.28	0.00	2.28			
931	0-15	1.40	2.18	0.29	1.89	4.64	0.63	4.02	8.40	1.29	7.13
	15-30	1.26	1.96	0.34	1.62	3.76	0.66	3.11			
932	0-15	1.38	1.94	0.00	1.94	4.07	0.00	4.07	8.36	1.59	6.80
	15-30	1.41	2.01	0.73	1.28	4.29	1.59	2.73			
933	0-15	1.38	2.58	0.69	1.89	5.43	1.48	3.98	12.90	8.02	5.03
	15-30	1.51	3.26	2.80	0.46	7.47	6.54	1.05			
934	0-15	1.36	1.80	0.00	1.80	3.71	0.00	3.71	7.78	1.85	5.96
	15-30	1.31	2.04	0.91	1.13	4.06	1.85	2.25			
935	0-15	1.26	2.30	0.00	2.30	4.41	0.00	4.41	8.00	0.58	7.43
	15-30	1.39	1.70	0.27	1.43	3.59	0.58	3.02			
936	0-15	1.23	2.54	0.62	1.92	4.74	1.18	3.58	9.63	3.56	6.14
	15-30	1.43	2.26	1.08	1.18	4.90	2.39	2.56			
937	0-15	1.32	1.72	0.00	1.72	3.44	0.00	3.44	7.34	1.22	6.14
	15-30	1.46	1.76	0.54	1.22	3.90	1.22	2.70			
938	0-15	1.30	2.10	0.00	2.10	4.14	0.00	4.14	6.99	0.00	6.99
	15-30	1.44	1.30	0.00	1.30	2.85	0.00	2.85			
939	0-15	1.32	1.96	0.00	1.96	3.93	0.00	3.93	8.74	2.60	6.20
	15-30	1.31	2.42	1.28	1.14	4.81	2.60	2.27			
940	0-15	1.19	2.41	0.00	2.41	4.34	0.00	4.34	6.92	0.00	6.92
	15-30	1.33	1.27	0.00	1.27	2.57	0.00	2.57			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
941	0-15	1.14	2.52	0.00	2.52	4.38	0.00	4.38	7.36	0.00	7.36
	15-30	1.35	1.45	0.00	1.45	2.98	0.00	2.98			
942	0-15	1.20	2.49	0.00	2.49	4.56	0.00	4.56	7.20	0.00	7.20
	15-30	1.30	1.33	0.00	1.33	2.64	0.00	2.64			
943	0-15	1.14	2.28	0.00	2.28	3.95	0.00	3.95	6.65	0.00	6.65
	15-30	1.28	1.39	0.00	1.39	2.71	0.00	2.71			
944	0-15	1.36	1.95	0.00	1.95	4.04	0.00	4.04	6.92	0.44	6.49
	15-30	1.34	1.41	0.21	1.20	2.87	0.44	2.44			
945	0-15	1.36	1.74	0.00	1.74	3.60	0.00	3.60	6.08	0.17	5.91
	15-30	1.35	1.21	0.08	1.13	2.48	0.17	2.31			
946	0-15	1.36	2.19	0.62	1.57	4.53	1.31	3.25	11.48	6.95	4.66
	15-30	1.35	3.39	2.70	0.69	6.95	5.64	1.41			
947	0-15	1.07	2.38	0.00	2.38	3.88	0.00	3.88	7.56	0.19	7.37
	15-30	1.39	1.74	0.09	1.65	3.68	0.19	3.49			
948	0-15	1.33	1.92	0.00	1.92	3.88	0.00	3.88	6.73	0.00	6.73
	15-30	1.52	1.24	0.00	1.24	2.86	0.00	2.86			
949	0-15	1.18	2.33	0.00	2.33	4.19	0.00	4.19	7.44	0.00	7.44
	15-30	1.55	1.38	0.00	1.38	3.25	0.00	3.25			
950	0-15	1.35	1.56	0.00	1.56	3.20	0.00	3.20	6.98	1.86	5.16
	15-30	1.42	1.76	0.85	0.91	3.79	1.86	1.96			
951	0-15	1.29	1.77	0.00	1.77	3.47	0.00	3.47	5.89	0.00	5.89
	15-30	1.34	1.19	0.00	1.19	2.42	0.00	2.42			
952	0-15	1.15	2.56	0.00	2.56	4.47	0.00	4.47	7.80	0.00	7.80
	15-30	1.25	1.75	0.00	1.75	3.33	0.00	3.33			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
953	0-15	0.96	2.76	0.13	2.63	4.04	0.19	3.85	8.57	3.30	5.33
	15-30	1.23	2.42	1.63	0.79	4.52	3.11	1.48			
954	0-15	0.81	3.51	0.00	3.51	4.31	0.00	4.31	7.42	0.00	7.42
	15-30	1.15	1.78	0.00	1.78	3.11	0.00	3.11			
955	0-15	0.77	3.55	0.00	3.55	4.15	0.00	4.15	7.56	0.00	7.56
	15-30	1.16	1.93	0.00	1.93	3.40	0.00	3.40			
956	0-15	0.89	3.05	0.00	3.05	4.11	0.00	4.11	7.37	0.00	7.37
	15-30	1.36	1.57	0.00	1.57	3.26	0.00	3.26			
957	0-15	0.89	3.28	0.00	3.28	4.42	0.00	4.42	7.82	0.00	7.82
	15-30	1.32	1.69	0.00	1.69	3.39	0.00	3.39			
958	0-15	1.03	2.53	0.00	2.53	3.96	0.00	3.96	6.54	0.00	6.54
	15-30	1.34	1.27	0.00	1.27	2.59	0.00	2.59			
959	0-15	1.05	3.35	0.00	3.35	5.36	0.00	5.36	8.45	0.00	8.45
	15-30	1.30	1.56	0.00	1.56	3.09	0.00	3.09			
960	0-15	0.91	4.05	0.00	4.05	5.62	0.00	5.62	10.33	0.00	10.33
	15-30	1.26	2.45	0.00	2.45	4.71	0.00	4.71			
961	0-15	0.90	4.17	0.00	4.17	5.69	0.00	5.69	9.97	0.00	9.97
	15-30	1.10	2.57	0.00	2.57	4.28	0.00	4.28			
962	0-15	0.97	3.83	0.00	3.83	5.67	0.00	5.67	12.28	4.51	7.85
	15-30	1.24	3.51	2.35	1.16	6.61	4.51	2.18			
963	0-15	0.96	3.64	0.00	3.64	5.32	0.00	5.32	9.27	0.00	9.27
	15-30	1.21	2.15	0.00	2.15	3.94	0.00	3.94			
964	0-15	0.99	3.18	0.00	3.18	4.77	0.00	4.77	9.22	2.08	7.18
	15-30	1.24	2.35	1.08	1.27	4.45	2.08	2.40			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
965	0-15	1.11	2.77	0.00	2.77	4.66	0.00	4.66	7.77	0.00	7.77
	15-30	1.39	1.47	0.00	1.47	3.11	0.00	3.11			
966	0-15	0.96	3.21	0.00	3.21	4.67	0.00	4.67	7.33	0.00	7.33
	15-30	1.18	1.49	0.00	1.49	2.66	0.00	2.66			
967	0-15	0.96	3.46	0.00	3.46	5.05	0.00	5.05	8.66	0.38	8.29
	15-30	1.24	1.92	0.20	1.72	3.62	0.38	3.24			
968	0-15	0.93	3.15	0.00	3.15	4.47	0.00	4.47	8.79	1.20	7.62
	15-30	1.22	2.32	0.63	1.69	4.32	1.20	3.15			
969	0-15	0.97	3.18	0.00	3.18	4.67	0.00	4.67	7.67	0.00	7.67
	15-30	1.17	1.69	0.00	1.69	3.00	0.00	3.00			
970	0-15	1.03	3.29	0.00	3.29	5.15	0.00	5.15	8.48	0.40	8.09
	15-30	1.18	1.86	0.22	1.64	3.34	0.40	2.94			
971	0-15	1.00	3.42	0.29	3.13	5.20	0.45	4.76	9.87	3.40	6.53
	15-30	1.20	2.56	1.59	0.97	4.66	2.95	1.77			
972	0-15	0.98	3.50	0.00	3.50	5.20	0.00	5.20	8.76	0.95	7.83
	15-30	1.25	1.87	0.49	1.38	3.56	0.95	2.62			
973	0-15	1.12	2.72	0.00	2.72	4.62	0.00	4.62	7.40	0.00	7.40
	15-30	1.30	1.41	0.00	1.41	2.78	0.00	2.78			
974	0-15	1.17	2.35	0.00	2.35	4.19	0.00	4.19	6.74	0.00	6.74
	15-30	1.37	1.22	0.00	1.22	2.55	0.00	2.55			
975	0-15	1.17	2.52	0.00	2.52	4.49	0.00	4.49	9.48	3.43	6.12
	15-30	1.31	2.51	1.69	0.82	5.00	3.43	1.63			
976	0-15	1.27	1.62	0.00	1.62	3.13	0.00	3.13	5.22	0.00	5.22
	15-30	1.29	1.06	0.00	1.06	2.08	0.00	2.08			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
977	0-15	1.16	2.80	0.62	2.18	4.93	1.11	3.84	11.76	7.03	4.87
	15-30	1.33	3.38	2.87	0.51	6.83	5.91	1.03			
978	0-15	1.17	2.21	0.55	1.66	3.92	0.99	2.94	9.33	5.43	4.00
	15-30	1.31	2.71	2.18	0.53	5.41	4.44	1.06			
979	0-15	1.48	1.78	0.00	1.78	4.01	0.00	4.01	8.61	2.88	5.78
	15-30	1.41	2.15	1.32	0.83	4.61	2.88	1.78			
980	0-15	1.32	2.05	0.00	2.05	4.11	0.00	4.11	8.32	1.50	6.86
	15-30	1.40	1.98	0.69	1.29	4.21	1.50	2.74			
981	0-15	1.11	2.04	0.00	2.04	3.44	0.00	3.44	5.91	0.00	5.91
	15-30	1.31	1.24	0.00	1.24	2.47	0.00	2.47			
982	0-15	1.21	2.10	0.00	2.10	3.86	0.00	3.86	6.70	0.00	6.70
	15-30	1.36	1.38	0.00	1.38	2.85	0.00	2.85			
983	0-15	1.23	1.84	0.00	1.84	3.44	0.00	3.44	5.83	0.00	5.83
	15-30	1.37	1.15	0.00	1.15	2.40	0.00	2.40			
984	0-15	1.07	2.39	0.00	2.39	3.90	0.00	3.90	6.86	0.00	6.86
	15-30	1.23	1.58	0.00	1.58	2.96	0.00	2.96			
985	0-15	1.10	2.32	0.00	2.32	3.87	0.00	3.87	6.65	0.00	6.65
	15-30	1.18	1.55	0.00	1.55	2.78	0.00	2.78			
986	0-15	1.07	2.27	0.00	2.27	3.69	0.00	3.69	6.04	0.00	6.04
	15-30	1.31	1.18	0.00	1.18	2.35	0.00	2.35			
987	0-15	1.17	2.68	1.65	1.03	4.78	3.00	1.84	10.48	8.61	2.04
	15-30	1.12	3.36	3.24	0.12	5.71	5.61	0.20			
988	0-15	1.41	1.74	0.00	1.74	3.72	0.00	3.72	6.64	0.46	6.18
	15-30	1.42	1.35	0.21	1.14	2.92	0.46	2.46			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
989	0-15	1.45	1.45	0.00	1.45	3.19	0.00	3.19	6.85	2.08	4.81
	15-30	1.43	1.69	0.94	0.75	3.67	2.08	1.63			
990	0-15	1.41	1.16	0.00	1.16	2.48	0.00	2.48	5.33	1.54	3.82
	15-30	1.55	1.21	0.64	0.57	2.86	1.54	1.35			
991	0-15	1.34	2.01	0.00	2.01	4.09	0.00	4.09	6.89	0.00	6.89
	15-30	1.37	1.34	0.00	1.34	2.80	0.00	2.80			
992	0-15	1.40	1.33	0.00	1.33	2.83	0.00	2.83	4.50	0.00	4.50
	15-30	1.41	0.78	0.00	0.78	1.67	0.00	1.67			
993	0-15	1.49	1.35	0.00	1.35	3.06	0.00	3.06	4.93	0.29	4.65
	15-30	1.42	0.87	0.13	0.74	1.88	0.29	1.60			
994	0-15	1.27	1.89	0.00	1.89	3.66	0.00	3.66	6.09	0.00	6.09
	15-30	1.31	1.22	0.00	1.22	2.43	0.00	2.43			
995	0-15	1.31	2.07	0.58	1.49	4.14	1.18	2.98	11.48	8.08	3.56
	15-30	1.36	3.55	3.27	0.28	7.34	6.90	0.58			
996	0-15	1.29	1.87	0.00	1.87	3.66	0.00	3.66	6.51	0.25	6.27
	15-30	1.33	1.41	0.12	1.29	2.85	0.25	2.61			
997	0-15	1.32	1.58	0.00	1.58	3.16	0.00	3.16	6.01	0.28	5.74
	15-30	1.38	1.36	0.13	1.23	2.85	0.28	2.58			
998	0-15	1.36	1.38	0.10	1.28	2.86	0.21	2.65	6.02	1.51	4.54
	15-30	1.45	1.44	0.58	0.86	3.16	1.30	1.89			
999	0-15	1.26	2.01	0.00	2.01	3.86	0.00	3.86	6.47	0.00	6.47
	15-30	1.37	1.26	0.00	1.26	2.61	0.00	2.61			
1000	0-15	1.33	1.58	0.00	1.58	3.19	0.00	3.19	5.45	0.00	5.45
	15-30	1.40	1.06	0.00	1.06	2.26	0.00	2.26			

Table 43. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1001	0-15	1.31	1.90	0.00	1.90	3.79	0.00	3.79	6.78	0.82	5.98
	15-30	1.32	1.49	0.40	1.09	2.99	0.82	2.18			
1002	0-15	1.44	1.66	0.19	1.47	3.64	0.43	3.23	7.00	1.27	5.75
	15-30	1.48	1.49	0.37	1.12	3.35	0.85	2.52			
1003	0-15	1.33	1.87	0.00	1.87	3.77	0.00	3.77	7.04	0.60	6.45
	15-30	1.34	1.60	0.29	1.31	3.27	0.60	2.67			
1004	0-15	1.35	2.39	1.02	1.37	4.89	2.13	2.80	10.27	5.82	4.56
	15-30	1.41	2.51	1.69	0.82	5.38	3.69	1.76			
1005	0-15	1.19	1.80	0.00	1.80	3.26	0.00	3.26	5.53	0.00	5.53
	15-30	1.34	1.11	0.00	1.11	2.27	0.00	2.27			
1006	0-15	1.19	1.92	0.10	1.82	3.47	0.18	3.29	8.74	4.12	4.70
	15-30	1.30	2.66	1.95	0.71	5.27	3.94	1.41			
1007	0-15	1.35	1.58	0.00	1.58	3.24	0.00	3.24	5.42	0.00	5.42
	15-30	1.34	1.07	0.00	1.07	2.17	0.00	2.17			

Table 44. Western Minnesota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
250	0-15	1.16	2.66	0.00	2.66	4.68	0.00	4.68	7.99	0.00	7.99
	15-30	1.35	1.62	0.00	1.62	3.32	0.00	3.32			
251	0-15	1.03	2.58	0.00	2.58	4.02	0.00	4.02	7.88	1.39	6.51
	15-30	1.20	2.12	0.75	1.37	3.85	1.39	2.49			
252	0-15	1.18	2.26	0.00	2.26	4.07	0.00	4.07	7.34	0.00	7.34
	15-30	1.30	1.66	0.00	1.66	3.28	0.00	3.28			
253	0-15	1.08	2.59	0.00	2.59	4.27	0.00	4.27	7.57	0.00	7.57
	15-30	1.25	1.73	0.00	1.73	3.30	0.00	3.30			
254	0-15	1.15	2.48	0.00	2.48	4.34	0.00	4.34	7.88	0.42	7.48
	15-30	1.35	1.73	0.20	1.53	3.54	0.42	3.13			
255	0-15	1.19	1.93	0.00	1.93	3.48	0.00	3.48	6.21	0.00	6.21
	15-30	1.41	1.27	0.00	1.27	2.73	0.00	2.73			
256	0-15	1.33	1.46	0.00	1.46	2.94	0.00	2.94	5.35	0.26	5.09
	15-30	1.40	1.13	0.12	1.01	2.41	0.26	2.15			
257	0-15	1.00	2.89	0.00	2.89	4.41	0.00	4.41	7.58	0.00	7.58
	15-30	1.32	1.58	0.00	1.58	3.17	0.00	3.17			
258	0-15	0.91	3.26	0.00	3.26	4.50	0.00	4.50	4.50	0.00	7.16
	15-30	-	-	-	-	0.00	0.00	2.66			
259	0-15	0.97	3.25	0.26	2.99	4.77	0.39	4.39	4.77	0.39	7.39
	15-30	-	-	-	-	0.00	0.00	3.00			
260	0-15	1.01	3.03	0.00	3.03	4.65	0.00	4.65	8.34	0.00	8.34

Table 44. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
	15-30	1.21	2.01	0.00	2.01	3.69	0.00	3.69			
261	0-15	1.17	2.14	0.00	2.14	3.81	0.00	3.81	7.14	0.00	7.14
	15-30	1.25	1.75	0.00	1.75	3.33	0.00	3.33			
262	0-15	1.21	2.69	0.00	2.69	4.95	0.00	4.95	8.06	0.31	7.75
	15-30	1.35	1.52	0.15	1.37	3.11	0.31	2.80			
263	0-15	1.69	1.17	0.00	1.17	3.00	0.00	3.00	7.16	0.00	7.16
	15-30	1.82	1.50	0.00	1.50	4.16	0.00	4.16			
264	0-15	1.20	2.58	0.00	2.58	4.69	0.00	4.69	8.19	0.00	8.19
	15-30	1.36	1.69	0.00	1.69	3.50	0.00	3.50			
265	0-15	1.25	2.62	0.00	2.62	4.97	0.00	4.97	8.29	0.35	7.95
	15-30	1.43	1.53	0.16	1.37	3.32	0.35	2.98			
266	0-15	1.15	3.16	0.00	3.16	5.51	0.00	5.51	9.59	0.18	9.41
	15-30	1.27	2.11	0.09	2.02	4.08	0.18	3.90			
267	0-15	1.19	2.84	0.00	2.84	5.12	0.00	5.12	8.99	0.00	8.99
	15-30	1.37	1.86	0.00	1.86	3.87	0.00	3.87			
268	0-15	1.41	2.16	0.24	1.92	4.62	0.52	4.11	11.98	0.78	11.21
	15-30	1.67	2.90	0.10	2.80	7.36	0.26	7.11			
269	0-15	0.83	3.80	0.00	3.80	4.80	0.00	4.80	4.80	0.00	8.83
	15-30	-	-	-	-	-	-	4.03			
270	0-15	1.11	3.05	0.11	2.94	5.17	0.19	4.98	5.17	0.19	9.01
	15-30	-	-	-	-	-	-	4.03			
271	0-15	1.18	2.65	0.00	2.65	4.75	0.00	4.75	8.69	0.00	8.69
	15-30	1.36	1.91	0.00	1.91	3.94	0.00	3.94			
272	0-15	0.97	4.04	0.00	4.04	5.94	0.00	5.94	11.41	0.56	10.86
	15-30	1.44	2.50	0.25	2.25	5.47	0.56	4.93			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
273	0-15	0.93	4.71	1.09	3.62	6.66	1.57	5.12	11.58	3.97	7.69
	15-30	1.29†	2.51†	1.20†	1.31†	4.92†	2.40†	2.57†			
274	0-15	0.91	4.03	0.00	4.03	5.55	0.00	5.55	9.23	0.00	9.23
	15-30	1.27	1.91	0.00	1.91	3.68	0.00	3.68			
275	0-15	0.80	4.16	0.34	3.82	5.07	0.42	4.66	9.58	1.62	7.99
	15-30	1.29	2.30	0.60	1.70	4.51	1.20	3.33			
276	0-15	0.93	5.77	1.39	4.38	8.16	2.00	6.19	13.69	5.19	8.61
	15-30	1.07	3.39	1.91	1.48	5.54	3.18	2.42			
277	0-15	0.96	4.10	0.00	4.10	6.01	0.00	6.01	10.34	0.00	10.34
	15-30	1.31	2.18	0.00	2.18	4.33	0.00	4.33			
278	0-15	0.93	7.86	4.80	3.06	11.11	6.92	4.33	16.99	12.82	4.42
	15-30	1.27	3.06	3.01	0.05	5.88	5.90	0.10			
279	0-15	1.00	2.85	0.23	2.62	4.31	0.35	3.96	8.06	0.82	7.25
	15-30	1.38	1.79	0.22	1.57	3.75	0.47	3.29			
280	0-15	0.97	4.19	0.00	4.19	6.19	0.00	6.19	11.88	1.14	10.76
	15-30	1.20	3.11	0.61	2.50	5.69	1.14	4.58			
281	0-15	1.31	2.33	0.00	2.33	4.65	0.00	4.65	7.82	0.00	7.82
	15-30	1.44	1.45	0.00	1.45	3.17	0.00	3.17			
282	0-15	1.27	2.74	0.00	2.74	5.27	0.00	5.27	9.08	0.00	9.08
	15-30	1.26	1.98	0.00	1.98	3.80	0.00	3.80			
283	0-15	1.48	2.92	1.11	1.81	6.55	2.54	4.06	15.45	10.01	5.64
	15-30	1.57	3.72	3.06	0.66	8.90	7.47	1.58			
284	0-15	1.01	3.66	0.61	3.05	5.63	0.96	4.69	12.43	4.13	8.38
	15-30	1.21	3.69	1.69	2.00	6.81	3.18	3.69			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
285	0-15	1.14	3.12	0.00	3.12	5.40	0.00	5.40	10.00	0.95	9.07
	15-30	1.31	2.31	0.47	1.84	4.60	0.95	3.66			
286	0-15	1.16	3.55	0.17	3.38	6.24	0.30	5.94	12.24	1.47	10.80
	15-30	1.57	2.52	0.48	2.04	6.01	1.17	4.86			
287	0-15	1.16	3.89	0.80	3.09	6.89	1.44	5.47	15.97	8.02	8.10
	15-30	1.38	4.32	3.07	1.25	9.08	6.58	2.63			
288	0-15	1.22	4.38	1.95	2.43	8.13	3.69	4.51	17.91	10.90	7.22
	15-30	1.39	4.62	3.34	1.28	9.78	7.21	2.71			
289	0-15	1.10	4.40	1.99	2.41	7.34	3.39	4.02	15.01	8.70	6.48
	15-30	1.24	4.06	2.76	1.30	7.67	5.32	2.46			
290	0-15	1.32	3.38	1.05	2.33	6.76	2.14	4.66	16.44	9.04	7.58
	15-30	1.42	4.48	3.13	1.35	9.68	6.89	2.92			
291	0-15	1.29	3.03	0.85	2.18	5.96	1.70	4.29	11.86	4.23	7.71
	15-30	1.42	2.74	1.15	1.59	5.90	2.53	3.42			
292	0-15	1.03	3.70	0.57	3.13	5.82	0.91	4.92	13.82	3.10	10.78
	15-30	1.25	4.21	1.13	3.08	8.00	2.19	5.86			
293	0-15	1.04	4.91	2.02	2.89	7.78	3.26	4.58	15.72	8.88	7.01
	15-30	1.20	4.34	3.01	1.33	7.94	5.62	2.43			
294	0-15	1.09	3.66	0.82	2.84	6.08	1.39	4.72	10.48	3.46	7.09
	15-30	0.68	4.23	1.95	2.28	4.40	2.07	2.37			
295	0-15	1.10	3.39	0.09	3.30	5.65	0.15	5.50	9.12	0.36	8.76
	15-30	1.05	2.18	0.13	2.05	3.46	0.21	3.26			
296	0-15	1.34	3.44	0.00	3.44	7.02	0.00	7.02	10.28	0.00	10.28
	15-30	0.87	2.46	0.00	2.46	3.26	0.00	3.26			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
297	0-15	1.33	4.21	1.66	2.55	8.50	3.42	5.15	16.64	8.30	8.50
	15-30	1.23	4.37	2.57	1.80	8.14	4.88	3.35			
298	0-15	1.32	4.24	2.59	1.65	8.51	5.30	3.31	16.71	11.38	5.55
	15-30	1.34	4.03	2.93	1.10	8.20	6.08	2.24			
299	0-15	1.26	2.50	0.27	2.23	4.78	0.53	4.26	8.20	1.12	7.10
	15-30	1.31	1.71	0.29	1.42	3.42	0.59	2.84			
300	0-15	1.32	3.75	2.20	1.55	7.50	4.49	3.10	15.59	10.96	4.84
	15-30	1.40	3.81	2.99	0.82	8.09	6.47	1.74			
301	0-15	1.40	2.70	1.30	1.40	5.74	2.82	2.98	11.85	6.74	5.25
	15-30	1.48	2.72	1.71	1.01	6.11	3.92	2.27			
302	0-15	1.24	2.80	0.16	2.64	5.28	0.31	4.98	9.12	1.01	8.13
	15-30	1.30	1.94	0.35	1.59	3.84	0.71	3.15			
303	0-15	1.08	3.54	0.21	3.33	5.81	0.35	5.46	9.97	0.64	9.34
	15-30	1.24	2.21	0.15	2.06	4.16	0.29	3.88			
304	0-15	1.23	2.43	0.00	2.43	4.54	0.00	4.54	8.43	0.00	8.43
	15-30	1.35	1.89	0.00	1.89	3.89	0.00	3.89			
305	0-15	1.30	1.80	0.27	1.53	3.57	0.55	3.03	5.87	1.09	4.80
	15-30	1.40	1.08	0.25	0.83	2.30	0.54	1.77			
306	0-15	1.32	3.27	0.00	3.27	6.55	0.00	6.55	11.74	0.00	11.74
	15-30	1.50	2.28	0.00	2.28	5.20	0.00	5.20			
307	0-15	1.12	3.22	0.00	3.22	5.50	0.00	5.50	9.68	0.00	9.68
	15-30	1.23	2.23	0.00	2.23	4.18	0.00	4.18			
308	0-15	1.43	3.95	1.29	2.66	8.57	2.85	5.77	17.82	7.40	10.56
	15-30	1.58	3.84	1.85	1.99	9.25	4.54	4.79			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
309	0-15	1.21	2.81	0.35	2.46	5.15	0.65	4.51	10.24	2.07	8.21
	15-30	1.31	2.56	0.70	1.86	5.09	1.42	3.70			
310	0-15	1.03	4.16	0.52	3.64	6.48	0.83	5.67	14.13	3.89	10.32
	15-30	1.24	4.07	1.60	2.47	7.65	3.07	4.64			
311	0-15	1.09	3.49	0.28	3.21	5.79	0.47	5.32	11.41	1.42	10.01
	15-30	1.25	2.96	0.49	2.47	5.62	0.95	4.69			
312	0-15	1.06	3.74	0.34	3.40	6.01	0.56	5.47	13.61	2.93	10.73
	15-30	1.43	3.49	1.07	2.42	7.59	2.37	5.27			
313	0-15	1.15	3.25	0.17	3.08	5.70	0.30	5.40	12.28	1.17	11.13
	15-30	1.60	2.70	0.35	2.35	6.58	0.87	5.73			
314	0-15	1.34	3.97	2.08	1.89	8.09	4.32	3.85	13.70	8.48	5.38
	15-30	1.05	3.52	2.56	0.96	5.61	4.16	1.53			
315	0-15	1.20	4.16	1.08	3.08	7.61	2.01	5.63	7.61	2.01	9.64
	15-30	-	-	-	-	-	-	4.01			
316	0-15	0.99	3.51	0.22	3.29	5.30	0.34	4.97	9.25	0.97	8.30
	15-30	1.07	2.43	0.38	2.05	3.95	0.63	3.33			
317	0-15	1.14	3.42	1.04	2.38	5.91	1.83	4.11	11.99	5.09	7.00
	15-30	1.31	3.05	1.60	1.45	6.08	3.25	2.89			
318	0-15	1.28	2.76	0.00	2.76	5.37	0.00	5.37	9.00	0.00	9.00
	15-30	1.40	1.71	0.00	1.71	3.63	0.00	3.63			
319	0-15	1.38	2.27	0.00	2.27	4.75	0.00	4.75	8.64	0.00	8.64
	15-30	1.46	1.75	0.00	1.75	3.89	0.00	3.89			
320	0-15	1.30	2.70	0.15	2.55	5.32	0.30	5.03	10.28	2.07	8.25
	15-30	1.44	2.26	0.79	1.47	4.95	1.77	3.22			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
321	0-15	1.36	2.13	0.11	2.02	4.39	0.23	4.16	8.68	1.17	7.53
	15-30	1.52	1.86	0.40	1.46	4.29	0.94	3.37			
322	0-15	1.31	3.14	1.07	2.07	6.27	2.18	4.14	14.74	7.31	7.56
	15-30	1.43	3.90	2.32	1.58	8.46	5.13	3.43			
323	0-15	1.51	2.54	0.48	2.06	5.82	1.12	4.72	10.92	2.74	8.24
	15-30	1.61	2.09	0.65	1.44	5.11	1.62	3.52			
324	0-15	0.32	2.49	0.00	2.49	1.22	0.00	1.22	3.56	0.18	3.39
	15-30	1.13	1.36	0.10	1.26	2.34	0.18	2.16			
325	0-15	1.09	2.40	0.21	2.19	3.96	0.35	3.62	3.96	0.35	7.07
	15-30	-	-	-	-	-	-	3.45†			
326	0-15	1.13	3.12	0.00	3.12	5.36	0.00	5.36	9.97	0.24	9.74
	15-30	1.41	2.16	0.11	2.05	4.61	0.24	4.38			
327	0-15	1.14	3.99	0.85	3.14	6.93	1.51	5.46	15.41	6.85	8.69
	15-30	1.32	4.22	2.61	1.61	8.48	5.35	3.23			
328	0-15	1.14	3.77	0.00	3.77	6.53	0.00	6.53	11.37	0.00	11.37
	15-30	1.20	2.65	0.00	2.65	4.84	0.00	4.84			
329	0-15	1.27	4.48	2.04	2.44	8.67	4.02	4.72	17.24	9.33	8.09
	15-30	1.33	4.25	2.58	1.67	8.57	5.31	3.37			
330	0-15	1.12	3.58	0.00	3.58	6.09	0.00	6.09	10.60	0.00	10.60
	15-30	1.27	2.34	0.00	2.34	4.51	0.00	4.51			
331	0-15	1.19	3.22	0.00	3.22	5.83	0.00	5.83	11.45	1.45	10.02
	15-30	1.28	2.88	0.73	2.15	5.62	1.45	4.20			
332	0-15	0.93	4.55	0.24	4.31	6.46	0.35	6.12	10.65	0.96	9.71
	15-30	1.20	2.30	0.33	1.97	4.19	0.61	3.59			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
333	0-15	1.10	3.47	0.00	3.47	5.80	0.00	5.80	9.60	0.00	9.60
	15-30	1.22	2.04	0.00	2.04	3.80	0.00	3.80			
334	0-15	1.09	3.25	0.00	3.25	5.38	0.00	5.38	9.68	0.00	9.68
	15-30	1.17	2.41	0.00	2.41	4.30	0.00	4.30			
335	0-15	1.10	4.23	0.00	4.23	7.10	0.00	7.10	13.07	0.00	13.07
	15-30	1.39	2.83	0.00	2.83	5.97	0.00	5.97			
336	0-15	1.21	3.47	0.77	2.70	6.36	1.44	4.95	11.75	4.05	7.78
	15-30	1.23	2.88	1.37	1.51	5.39	2.62	2.83			
337	0-15	1.03	3.89	0.00	3.89	6.06	0.00	6.06	10.73	0.00	10.73
	15-30	1.14	2.70	0.00	2.70	4.66	0.00	4.66			
338	0-15	1.10	3.87	0.00	3.87	6.46	0.00	6.46	12.11	0.00	12.11
	15-30	1.09	3.40	0.00	3.40	5.66	0.00	5.66			
339	0-15	1.02	3.85	0.27	3.58	5.95	0.43	5.54	11.91	2.70	9.26
	15-30	1.19	3.28	1.23	2.05	5.96	2.28	3.72			
340	0-15	0.82	5.39	1.94	3.45	6.76	2.48	4.33	14.11	6.10	8.13
	15-30	0.95	5.08	2.45	2.63	7.35	3.62	3.81			
341	0-15	0.98	5.71	3.06	2.65	8.47	4.63	3.93	19.12	12.34	7.02
	15-30	1.19	5.89	4.18	1.71	10.65	7.71	3.09			
342	0-15	0.88	4.34	1.08	3.26	5.81	1.47	4.36	12.53	3.80	8.80
	15-30	1.04	4.27	1.45	2.82	6.72	2.33	4.44			
343	0-15	0.88	4.91	1.44	3.47	6.59	1.97	4.66	14.60	6.40	8.32
	15-30	1.00	5.27	2.86	2.41	8.01	4.43	3.66			
344	0-15	0.89	4.21	0.14	4.07	5.71	0.19	5.52	11.19	0.79	10.42
	15-30	0.99	3.65	0.39	3.26	5.49	0.60	4.90			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
345	0-15	0.84	4.92	0.93	3.99	6.26	1.21	5.08	13.72	3.87	9.92
	15-30	1.01	4.88	1.71	3.17	7.46	2.67	4.85			
346	0-15	0.88	4.42	0.00	4.42	5.90	0.00	5.90	12.09	0.72	11.38
	15-30	1.02	4.01	0.46	3.55	6.19	0.72	5.48			
347	0-15	0.89	4.44	0.62	3.82	6.01	0.86	5.17	15.15	4.56	10.68
	15-30	0.99	6.09	2.42	3.67	9.14	3.70	5.51			
348	0-15	0.97	4.47	0.00	4.47	6.59	0.00	6.59	12.40	0.59	11.83
	15-30	1.08	3.54	0.35	3.19	5.81	0.59	5.24			
349	0-15	0.97	4.51	0.34	4.17	6.65	0.51	6.15	13.82	3.81	10.09
	15-30	1.08	4.37	1.97	2.40	7.17	3.30	3.94			
350	0-15	0.97	4.61	0.00	4.61	6.80	0.00	6.80	11.82	0.28	11.54
	15-30	1.00	3.29	0.18	3.11	5.02	0.28	4.74			
351	0-15	1.03	5.21	1.60	3.61	8.17	2.56	5.66	18.14	7.19	11.09
	15-30	1.30	5.05	2.30	2.75	9.97	4.63	5.43			
352	0-15	1.15	3.74	0.59	3.15	6.54	1.05	5.51	15.41	6.60	8.94
	15-30	1.31	4.45	2.73	1.72	8.87	5.55	3.43			
353	0-15	0.98	5.22	0.97	4.25	7.77	1.47	6.33	16.56	4.67	11.98
	15-30	1.19	4.87	1.74	3.13	8.79	3.20	5.65			
354	0-15	1.35	2.59	0.59	2.00	5.31	1.23	4.10	10.50	3.58	6.99
	15-30	1.39	2.46	1.09	1.37	5.18	2.34	2.89			
355	0-15	1.25	2.64	0.81	1.83	5.00	1.56	3.47	11.84	5.69	6.26
	15-30	1.47	3.06	1.81	1.25	6.84	4.12	2.79			
356	0-15	1.05	5.14	2.06	3.08	8.24	3.37	4.94	17.20	8.55	8.81
	15-30	1.23	4.81	2.73	2.08	8.96	5.19	3.88			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
357	0-15	1.11	4.89	2.29	2.60	8.26	3.94	4.39	16.90	9.31	7.77
	15-30	1.42	3.99	2.43	1.56	8.64	5.36	3.38			
358	0-15	1.14	3.64	0.46	3.18	6.33	0.82	5.53	15.51	6.82	8.82
	15-30	1.39	4.35	2.79	1.56	9.19	6.01	3.29			
359	0-15	1.20	3.47	0.19	3.28	6.34	0.35	5.99	13.83	3.71	10.19
	15-30	1.35	3.66	1.61	2.05	7.49	3.36	4.19			
360	0-15	1.05	4.37	0.53	3.84	6.95	0.86	6.10	14.91	3.87	11.12
	15-30	1.11	4.73	1.75	2.98	7.97	3.01	5.02			
361	0-15	1.34	4.20	0.00	4.20	8.56	0.00	8.56	15.25	0.97	14.30
	15-30	1.36	3.24	0.46	2.78	6.68	0.97	5.74			
362	0-15	1.11	5.28	1.63	3.65	8.88	2.79	6.14	18.37	7.84	10.68
	15-30	1.21	5.18	2.70	2.48	9.50	5.05	4.55			
363	0-15	1.08	5.39	1.42	3.97	8.83	2.37	6.50	17.99	5.52	12.58
	15-30	1.05	5.75	1.94	3.81	9.17	3.15	6.07			
364	0-15	1.06	4.32	0.27	4.05	6.95	0.44	6.51	13.32	1.57	11.78
	15-30	1.19	3.52	0.61	2.91	6.37	1.13	5.26			
365	0-15	0.97	4.20	0.32	3.88	6.22	0.48	5.75	13.26	2.78	10.54
	15-30	1.20	3.85	1.23	2.62	7.04	2.29	4.79			
366	0-15	1.02	4.18	0.33	3.85	6.48	0.52	5.97	13.24	2.97	10.33
	15-30	1.18	3.77	1.34	2.43	6.76	2.45	4.36			
367	0-15	1.15	4.88	2.50	2.38	8.52	4.45	4.15	17.24	10.07	7.36
	15-30	1.25	4.59	2.90	1.69	8.72	5.62	3.21			
368	0-15	1.02	4.30	0.22	4.08	6.66	0.35	6.31	13.13	2.14	11.04
	15-30	1.24	3.43	0.93	2.50	6.48	1.79	4.72			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
369	0-15	0.74	6.86	2.11	4.75	7.76	2.43	5.37	16.12	6.44	9.81
	15-30	0.93	5.94	2.79	3.15	8.36	4.00	4.43			
370	0-15	1.00	4.46	0.13	4.33	6.81	0.20	6.61	12.80	0.66	12.15
	15-30	1.14	3.45	0.26	3.19	5.99	0.46	5.54			
371	0-15	0.94	4.64	0.00	4.64	6.62	0.00	6.62	11.72	0.32	11.41
	15-30	0.98	3.43	0.21	3.22	5.10	0.32	4.79			
372	0-15	0.85	5.44	1.60	3.84	7.02	2.10	4.95	16.48	8.18	8.46
	15-30	1.15	5.40	3.40	2.00	9.47	6.08	3.51			
373	0-15	0.69	7.05	1.37	5.68	7.42	1.47	5.97	15.29	4.82	10.56
	15-30	0.92	5.61	2.34	3.27	7.87	3.35	4.59			
374	0-15	0.81	4.73	0.63	4.10	5.82	0.79	5.05	12.80	3.45	9.42
	15-30	1.07	4.28	1.60	2.68	6.98	2.66	4.37			
375	0-15	0.74	6.30	0.91	5.39	7.06	1.04	6.04	14.12	3.21	10.98
	15-30	0.84	5.55	1.67	3.88	7.06	2.17	4.94			
376	0-15	0.73	5.98	0.86	5.12	6.63	0.97	5.68	14.10	4.48	9.71
	15-30	0.96	5.12	2.36	2.76	7.47	3.51	4.03			
377	0-15	0.83	5.31	0.50	4.81	6.67	0.64	6.04	13.71	2.74	11.03
	15-30	1.04	4.45	1.30	3.15	7.04	2.10	4.98			
378	0-15	0.57	5.96	0.72	5.24	5.15	0.63	4.52	10.49	2.51	8.03
	15-30	0.73	4.79	1.65	3.14	5.35	1.88	3.51			
379	0-15	0.98	5.13	1.55	3.58	7.63	2.35	5.33	16.41	7.51	9.04
	15-30	1.16	4.98	2.87	2.11	8.77	5.16	3.72			
380	0-15	0.99	5.18	1.59	3.59	7.83	2.45	5.42	16.13	6.36	9.89
	15-30	1.26	4.33	2.00	2.33	8.30	3.91	4.47			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
381	0-15	1.04	4.62	0.54	4.08	7.28	0.87	6.43	14.64	3.54	11.18
	15-30	1.18	4.11	1.46	2.65	7.37	2.67	4.75			
382	0-15	1.09	4.06	0.57	3.49	6.75	0.97	5.80	13.89	3.56	10.40
	15-30	1.17	4.02	1.43	2.59	7.14	2.59	4.60			
383	0-15	1.19	4.31	0.97	3.34	7.77	1.78	6.02	14.83	4.58	10.33
	15-30	1.14	4.09	1.59	2.50	7.06	2.80	4.31			
384	0-15	1.07	4.52	0.91	3.61	7.35	1.51	5.87	15.58	5.41	10.27
	15-30	1.19	4.56	2.12	2.44	8.22	3.90	4.40			
385	0-15	0.92	4.52	0.37	4.15	6.30	0.53	5.78	12.37	1.28	11.11
	15-30	1.08	3.69	0.45	3.24	6.07	0.75	5.33			
386	0-15	0.97	5.21	0.77	4.44	7.68	1.16	6.55	15.84	4.09	11.83
	15-30	1.08	4.97	1.75	3.22	8.16	2.93	5.29			
387	0-15	0.97	5.31	0.39	4.92	7.83	0.59	7.25	14.12	1.24	12.90
	15-30	1.06	3.90	0.40	3.50	6.29	0.66	5.65			
388	0-15	0.91	4.91	0.96	3.95	6.76	1.35	5.44	14.49	5.09	9.50
	15-30	1.04	4.87	2.31	2.56	7.73	3.74	4.06			
389	0-15	0.96	5.59	1.76	3.83	8.16	2.62	5.59	18.33	9.50	9.01
	15-30	1.18	5.65	3.75	1.90	10.16	6.88	3.42			
390	0-15	0.94	4.19	0.09	4.10	6.01	0.13	5.89	11.97	0.87	11.12
	15-30	1.17	3.36	0.41	2.95	5.96	0.74	5.23			
391	0-15	0.84	4.25	0.19	4.06	5.45	0.25	5.20	11.73	2.23	9.55
	15-30	1.10	3.76	1.16	2.60	6.28	1.98	4.35			
392	0-15	1.18	2.88	0.29	2.59	5.18	0.53	4.66	10.92	0.53	10.40
	15-30	0.82	4.62	0.00	4.62	5.73	0.00	5.73			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
393	0-15	0.88	4.65	0.51	4.14	6.23	0.70	5.55	14.96	6.41	8.68
	15-30	1.12	5.13	3.29	1.84	8.73	5.71	3.13			
394	0-15	0.97	4.01	0.19	3.82	5.90	0.29	5.62	11.46	1.29	10.19
	15-30	1.16	3.16	0.56	2.60	5.55	1.00	4.57			
395	0-15	0.91	4.37	0.00	4.37	6.03	0.00	6.03	10.84	0.00	10.84
	15-30	1.09	2.91	0.00	2.91	4.81	0.00	4.81			
396	0-15	1.01	4.01	0.11	3.90	6.15	0.17	5.98	12.36	1.96	10.43
	15-30	1.26	3.25	0.92	2.33	6.21	1.79	4.45			
397	0-15	1.03	4.14	0.30	3.84	6.45	0.48	5.99	12.50	1.06	11.46
	15-30	1.22	3.27	0.31	2.96	6.05	0.58	5.47			
398	0-15	1.09	3.95	0.12	3.83	6.57	0.20	6.37	13.12	2.78	10.40
	15-30	1.20	3.58	1.38	2.20	6.56	2.58	4.03			
399	0-15	1.02	4.05	0.00	4.05	6.27	0.00	6.27	11.60	0.17	11.43
	15-30	1.12	3.13	0.10	3.03	5.33	0.17	5.16			
400	0-15	1.08	3.63	0.00	3.63	5.96	0.00	5.96	10.65	0.16	10.49
	15-30	1.27	2.43	0.08	2.35	4.69	0.16	4.54			
401	0-15	1.09	4.76	1.59	3.17	7.90	2.69	5.26	16.32	6.19	10.25
	15-30	1.22	4.54	1.85	2.69	8.42	3.50	4.99			
402	0-15	1.06	4.01	0.76	3.25	6.46	1.25	5.24	14.78	5.58	9.31
	15-30	1.18	4.64	2.37	2.27	8.32	4.33	4.07			
403	0-15	1.03	4.71	1.32	3.39	7.34	2.10	5.28	15.55	6.51	9.17
	15-30	1.22	4.42	2.33	2.09	8.21	4.41	3.88			
404	0-15	1.00	5.14	0.81	4.33	7.79	1.25	6.56	14.98	3.41	11.63
	15-30	1.12	4.24	1.25	2.99	7.19	2.16	5.07			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
405	0-15	1.00	4.14	0.73	3.41	6.27	1.13	5.16	12.31	2.42	9.94
	15-30	1.23	3.23	0.68	2.55	6.04	1.30	4.77			
406	0-15	0.99	4.55	1.22	3.33	6.82	1.86	4.99	14.67	5.20	9.57
	15-30	1.12	4.61	1.92	2.69	7.86	3.34	4.58			
407	0-15	1.05	3.92	0.48	3.44	6.25	0.78	5.48	12.87	2.99	9.93
	15-30	1.16	3.75	1.23	2.52	6.62	2.21	4.45			
408	0-15	1.08	4.22	0.52	3.70	6.92	0.87	6.07	15.55	5.20	10.45
	15-30	1.25	4.53	2.23	2.30	8.63	4.33	4.38			
409	0-15	0.98	4.41	0.29	4.12	6.54	0.44	6.11	12.71	0.96	11.77
	15-30	1.13	3.60	0.30	3.30	6.17	0.52	5.65			
410	0-15	1.16	5.37	0.86	4.51	9.48	1.55	7.97	18.12	5.53	12.69
	15-30	1.26	4.51	2.04	2.47	8.64	3.98	4.73			
411	0-15	0.76	5.54	0.68	4.86	6.36	0.80	5.58	12.65	2.62	10.07
	15-30	0.99	4.17	1.19	2.98	6.28	1.83	4.49			
412	0-15	0.88	5.28	0.57	4.71	7.09	0.78	6.33	14.16	1.96	12.24
	15-30	1.00	4.64	0.76	3.88	7.07	1.18	5.92			
413	0-15	1.00	5.80	1.95	3.85	8.83	3.03	5.86	16.51	7.34	9.31
	15-30	1.05	4.79	2.64	2.15	7.68	4.32	3.45			
414	0-15	0.79	5.63	0.94	4.69	6.74	1.15	5.61	13.35	3.50	9.92
	15-30	0.92	4.73	1.65	3.08	6.61	2.35	4.31			
415	0-15	0.96	4.52	1.25	3.27	6.62	1.87	4.79	13.37	7.19	6.32
	15-30	1.05	4.24	3.28	0.96	6.75	5.32	1.53			
416	0-15	1.06	3.97	0.60	3.37	6.37	0.98	5.40	14.24	6.46	7.91
	15-30	1.19	4.34	2.96	1.38	7.87	5.47	2.50			

Table 44. (continued)

Sample Number	Depth cm	B.D. g cm ⁻³	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
			-----Percent-----			-----kg m ⁻² -----					
417	0-15	0.93	4.67	0.26	4.41	6.57	0.37	6.20	15.66	6.27	9.52
	15-30	1.12	5.32	3.38	1.94	9.10	5.89	3.32			
418	0-15	0.85	4.69	0.93	3.76	6.04	1.22	4.85	12.67	3.12	9.62
	15-30	1.01	4.32	1.21	3.11	6.63	1.89	4.77			
419	0-15	0.86	4.34	0.36	3.98	5.66	0.48	5.19	11.12	1.15	9.99
	15-30	1.08	3.31	0.40	2.91	5.45	0.67	4.79			
420	0-15	0.72	5.69	0.12	5.57	6.27	0.13	6.14	14.22	0.29	13.94
	15-30	1.11	4.71	0.09	4.62	7.96	0.16	7.81			
421	0-15	0.77	4.97	0.00	4.97	5.79	0.00	5.79	11.96	1.02	10.95
	15-30	1.10	3.69	0.60	3.09	6.16	1.02	5.16			
422	0-15	0.83	4.77	0.78	3.99	6.04	1.01	5.06	12.79	3.21	9.64
	15-30	1.06	4.19	1.34	2.85	6.74	2.20	4.59			
423	0-15	1.04	5.19	2.13	3.06	8.22	3.44	4.85	17.62	10.30	7.52
	15-30	1.21	5.11	3.66	1.45	9.40	6.86	2.67			
424	0-15	0.92	4.08	0.00	4.08	5.71	0.00	5.71	11.82	2.35	9.52
	15-30	1.10	3.66	1.38	2.28	6.11	2.35	3.81			
425	0-15	0.86	4.28	0.23	4.05	5.59	0.31	5.29	12.57	3.04	9.59
	15-30	1.14	4.01	1.54	2.47	6.98	2.73	4.30			
426	0-15	0.89	4.86	0.20	4.66	6.58	0.28	6.31	12.47	1.16	11.33
	15-30	1.00	3.86	0.57	3.29	5.89	0.89	5.02			
427	0-15	0.83	5.22	0.46	4.76	6.56	0.59	5.98	13.59	2.89	10.76
	15-30	1.02	4.55	1.46	3.09	7.04	2.30	4.78			
428	0-15	1.08	5.02	2.33	2.69	8.26	3.91	4.42	17.29	10.01	7.48
	15-30	1.28	4.64	3.07	1.57	9.04	6.10	3.06			

Table 44. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
429	0-15	1.01	4.16	0.10	4.06	6.38	0.16	6.23	11.99	0.68	11.33
	15-30	1.24	2.97	0.27	2.70	5.61	0.52	5.10			
430	0-15	1.11	3.17	0.22	2.95	5.35	0.38	4.98	11.14	2.25	8.93
	15-30	1.31	2.90	0.92	1.98	5.78	1.87	3.95			
431	0-15	0.97	4.19	0.00	4.19	6.15	0.00	6.15	10.71	0.22	10.50
	15-30	1.18	2.54	0.12	2.42	4.56	0.22	4.35			
432	0-15	1.16	4.18	1.11	3.07	7.37	1.99	5.41	16.85	7.47	9.52
	15-30	1.35	4.61	2.61	2.00	9.48	5.48	4.11			
433	0-15	0.87	6.20	2.04	4.16	8.21	2.75	5.51	18.08	9.19	9.07
	15-30	1.17	5.57	3.56	2.01	9.88	6.44	3.56			
434	0-15	0.95	3.67	0.22	3.45	5.29	0.32	4.97	9.26	0.32	8.95
	15-30	1.18	2.21	0.00	2.21	3.98	0.00	3.98			
435	0-15	1.15	4.77	2.36	2.41	8.36	4.22	4.22	17.76	12.04	5.95
	15-30	1.34	4.63	3.78	0.85	9.40	7.83	1.73			
436	0-15	1.04	3.72	0.43	3.29	5.87	0.69	5.19	11.75	3.06	8.75
	15-30	1.29	2.99	1.18	1.81	5.88	2.37	3.56			
437	0-15	0.99	3.73	0.38	3.35	5.60	0.58	5.03	12.61	3.25	9.42
	15-30	1.25	3.70	1.38	2.32	7.01	2.67	4.40			
438	0-15	1.20	4.42	2.24	2.18	8.07	4.17	3.98	16.93	9.48	7.63
	15-30	1.38	4.22	2.48	1.74	8.86	5.31	3.65			
439	0-15	1.22	5.18	3.18	2.00	9.60	6.01	3.70	19.56	15.26	4.60
	15-30	1.28	5.12	4.66	0.46	9.96	9.25	0.90			
440	0-15	1.17	3.35	0.00	3.35	5.94	0.00	5.94	10.04	0.00	10.04
	15-30	1.25	2.17	0.00	2.17	4.11	0.00	4.11			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
441	0-15	1.51	2.11	0.62	1.49	4.85	1.45	3.43	9.13	1.95	7.21
	15-30	1.39	2.02	0.23	1.79	4.27	0.50	3.78			
442	0-15	1.42	2.63	1.57	1.06	5.69	3.46	2.29	10.54	5.68	4.97
	15-30	1.43	2.23	1.00	1.23	4.85	2.22	2.68			
443	0-15	1.55	2.27	1.21	1.06	5.34	2.90	2.49	12.02	8.36	3.82
	15-30	1.56	2.82	2.26	0.56	6.68	5.46	1.33			
444	0-15	1.46	1.48	0.28	1.20	3.28	0.63	2.66	5.93	1.17	4.78
	15-30	1.46	1.20	0.24	0.96	2.65	0.54	2.12			
445	0-15	1.32	2.35	0.00	2.35	4.71	0.00	4.71	7.37	0.00	7.37
	15-30	1.40	1.25	0.00	1.25	2.65	0.00	2.65			
446	0-15	1.13	3.59	0.00	3.59	6.17	0.00	6.17	11.18	0.34	10.85
	15-30	1.16	2.83	0.19	2.64	5.01	0.34	4.67			
447	0-15	1.14	3.32	0.00	3.32	5.75	0.00	5.75	9.63	0.00	9.63
	15-30	1.19	2.14	0.00	2.14	3.87	0.00	3.87			
448	0-15	0.94	4.19	0.00	4.19	5.98	0.00	5.98	10.95	0.00	10.95
	15-30	1.10	2.98	0.00	2.98	4.97	0.00	4.97			
449	0-15	1.41	4.07	0.76	3.31	8.69	1.66	7.07	17.94	6.10	11.96
	15-30	1.55	3.93	1.85	2.08	9.25	4.44	4.90			
450	0-15	1.24	2.64	0.21	2.43	4.98	0.40	4.58	13.71	6.19	7.63
	15-30	1.36	4.21	2.74	1.47	8.72	5.79	3.05			
451	0-15	1.17	3.25	0.00	3.25	5.78	0.00	5.78	9.20	0.00	9.20
	15-30	1.32	1.71	0.00	1.71	3.42	0.00	3.42			
452	0-15	1.27	4.28	2.80	1.48	8.27	5.52	2.86	18.17	14.22	4.23
	15-30	1.36	4.78	4.12	0.66	9.90	8.70	1.37			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
		cm									
453	0-15	1.37	3.69	1.99	1.70	7.68	4.22	3.54	16.66	10.87	6.00
	15-30	1.44	4.09	2.97	1.12	8.97	6.65	2.46			
454	0-15	1.20	2.99	0.08	2.91	5.45	0.15	5.31	10.99	3.37	7.69
	15-30	1.24	2.95	1.68	1.27	5.54	3.22	2.38			
455	0-15	1.32	3.28	1.26	2.02	6.60	2.58	4.06	16.72	10.97	5.97
	15-30	1.39	4.78	3.88	0.90	10.13	8.38	1.91			
456	0-15	1.29	2.71	0.11	2.60	5.30	0.22	5.09	10.11	2.38	7.78
	15-30	1.26	2.52	1.11	1.41	4.81	2.16	2.69			
457	0-15	1.28	3.27	0.71	2.56	6.35	1.41	4.97	15.48	7.12	8.49
	15-30	1.37	4.38	2.69	1.69	9.13	5.72	3.52			
458	0-15	1.01	3.50	0.09	3.41	5.37	0.14	5.23	11.43	1.87	9.59
	15-30	1.27	3.14	0.88	2.26	6.06	1.73	4.36			
459	0-15	1.28	2.69	0.18	2.51	5.22	0.36	4.87	9.43	1.06	8.38
	15-30	1.34	2.06	0.34	1.72	4.20	0.71	3.51			
460	0-15	1.16	3.27	0.11	3.16	5.77	0.20	5.57	10.69	0.20	10.49
	15-30	1.21	2.68	0.00	2.68	4.92	0.00	4.92			
461	0-15	1.09	3.92	1.32	2.60	6.48	2.23	4.30	14.69	8.16	6.69
	15-30	1.31	4.12	2.92	1.20	8.21	5.93	2.39			
462	0-15	1.05	3.25	0.08	3.17	5.18	0.13	5.05	10.24	0.93	9.32
	15-30	1.33	2.50	0.39	2.11	5.06	0.80	4.27			
463	0-15	1.08	3.23	0.11	3.12	5.31	0.18	5.13	11.29	0.99	10.32
	15-30	1.33	2.96	0.39	2.57	5.98	0.80	5.19			
464	0-15	1.03	3.44	0.00	3.44	5.40	0.00	5.40	11.17	1.14	10.06
	15-30	1.31	2.90	0.56	2.34	5.77	1.14	4.66			

Table 44. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
465	0-15	1.29	4.52	2.50	2.02	8.86	5.00	3.96	19.19	13.40	6.05
	15-30	1.40	4.84	3.86	0.98	10.33	8.40	2.09			
466	0-15	1.07	3.76	0.25	3.51	6.14	0.42	5.73	11.76	0.86	10.92
	15-30	1.24	2.98	0.23	2.75	5.62	0.44	5.19			
467	0-15	1.14	4.24	1.19	3.05	7.35	2.10	5.29	17.19	9.86	7.52
	15-30	1.28	5.07	3.92	1.15	9.84	7.76	2.23			

†Entire sample was not collectable due to unfavorable sampling conditions. The reported value was calculated from averages within the same field.

Table 45. North central Iowa and southern Minnesota sample depth, bulk density (B.D.), percent total carbon, percent inorganic carbon, percent organic carbon, total carbon mass, inorganic carbon mass, organic carbon mass, 0-15 and 15-30 cm sum total carbon, 0-15 and 15-30 cm sum inorganic carbon, and 0-15 and 15-30 cm sum organic carbon. For site location refer to Appendix F.

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1750	0-15	1.04	3.54	0.00	3.54	5.57	0.00	5.57	10.45	0.00	10.45
	15-30	1.24	2.58	0.00	2.58	4.87	0.00	4.87			
1751	0-15	1.24	2.72	0.11	2.61	5.12	0.21	4.91	9.84	0.77	9.08
	15-30	1.37	2.27	0.27	2.00	4.72	0.56	4.16			
1752	0-15	1.21	2.75	0.00	2.75	5.08	0.00	5.08	9.90	0.00	9.90
	15-30	1.36	2.33	0.00	2.33	4.83	0.00	4.83			
1753	0-15	1.31	2.30	0.00	2.30	4.57	0.00	4.57	7.68	0.00	7.68
	15-30	1.38	1.49	0.00	1.49	3.12	0.00	3.12			
1754	0-15	0.95	4.19	0.00	4.19	6.07	0.00	6.07	11.28	0.00	11.28
	15-30	1.28	2.68	0.00	2.68	5.21	0.00	5.21			
1755	0-15	0.82	4.53	0.00	4.53	5.66	0.00	5.66	10.90	0.22	10.68
	15-30	1.03	3.34	0.14	3.20	5.25	0.22	5.03			
1756	0-15	0.99	3.54	0.00	3.54	5.33	0.00	5.33	9.55	0.00	9.55
	15-30	1.22	2.27	0.00	2.27	4.22	0.00	4.22			
1757	0-15	0.99	3.70	0.00	3.70	5.55	0.00	5.55	9.66	0.00	9.66
	15-30	1.30	2.09	0.00	2.09	4.12	0.00	4.12			
1758	0-15	1.17	2.63	0.00	2.63	4.68	0.00	4.68	9.00	0.00	9.00
	15-30	1.27	2.24	0.00	2.24	4.32	0.00	4.32			
1759	0-15	1.28	2.03	0.00	2.03	3.96	0.00	3.96	6.33	0.00	6.33
	15-30	1.38	1.13	0.00	1.13	2.36	0.00	2.36			
1760	0-15	1.28	1.97	1.55	0.42	3.85	3.03	0.82	6.23	3.50	2.73

Table 45. (continued)

Sample Number	Depth cm	B.D. g cm ⁻³	C Concentration Percent			C Mass kg m ⁻²					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
1761	15-30	1.41	1.11	0.22	0.89	2.38	0.47	1.91	7.33	0.75	6.57
	0-15	1.30	1.97	0.15	1.82	3.90	0.30	3.60			
1762	15-30	1.50	1.50	0.20	1.30	3.43	0.46	2.97	7.65	2.51	5.14
	0-15	1.33	2.05	0.38	1.67	4.14	0.77	3.37			
1763	15-30	1.47	1.57	0.78	0.79	3.51	1.74	1.77	9.73	3.37	6.36
	0-15	1.29	2.03	0.00	2.03	3.98	0.00	3.98			
1764	15-30	1.35	2.80	1.64	1.16	5.75	3.37	2.38	9.26	4.88	4.38
	0-15	1.38	1.52	0.00	1.52	3.18	0.00	3.18			
1765	15-30	1.44	2.78	2.23	0.55	6.08	4.88	1.20	7.08	0.00	7.08
	0-15	1.45	1.58	0.00	1.58	3.48	0.00	3.48			
1766	15-30	1.33	1.78	0.00	1.78	3.60	0.00	3.60	6.25	0.00	6.25
	0-15	1.41	1.71	0.00	1.71	3.66	0.00	3.66			
1767	15-30	1.43	1.19	0.00	1.19	2.59	0.00	2.59	9.24	0.68	8.56
	0-15	1.35	2.10	0.23	1.87	4.31	0.47	3.84			
1768	15-30	1.39	2.33	0.10	2.23	4.93	0.21	4.72	7.93	0.00	7.93
	0-15	1.34	1.90	0.00	1.90	3.88	0.00	3.88			
1769	15-30	1.43	1.86	0.00	1.86	4.05	0.00	4.05	7.45	0.00	7.45
	0-15	1.45	1.39	0.00	1.39	3.06	0.00	3.06			
1770	15-30	1.49	1.94	0.00	1.94	4.39	0.00	4.39	13.24	3.11	10.13
	0-15	1.11	3.56	0.35	3.21	6.02	0.59	5.42			
1771	15-30	1.17	4.07	1.42	2.65	7.22	2.52	4.70	7.53	0.69	6.84
	0-15	1.48	1.65	0.09	1.56	3.71	0.20	3.51			
1772	15-30	1.53	1.64	0.21	1.43	3.82	0.49	3.33	10.38	0.00	10.38
	0-15	1.11	3.42	0.00	3.42	5.79	0.00	5.79			
	15-30	1.23	2.46	0.00	2.46	4.59	0.00	4.59			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1773	0-15	1.29	2.54	0.00	2.54	5.00	0.00	5.00	9.45	0.00	9.45
	15-30	1.38	2.12	0.00	2.12	4.45	0.00	4.45			
1774	0-15	1.19	2.57	0.00	2.57	4.66	0.00	4.66	9.24	0.00	9.24
	15-30	1.25	2.41	0.00	2.41	4.58	0.00	4.58			
1775	0-15	1.35	1.94	0.36	1.58	3.98	0.74	3.24	13.80	2.06	11.74
	15-30	1.40	4.61	0.62	3.99	9.81	1.32	8.49			
1776	0-15	1.14	2.71	0.00	2.71	4.69	0.00	4.69	8.94	0.00	8.94
	15-30	1.31	2.14	0.00	2.14	4.25	0.00	4.25			
1777	0-15	1.18	2.84	0.22	2.62	5.09	0.39	4.70	9.76	1.83	7.93
	15-30	1.31	2.34	0.72	1.62	4.67	1.44	3.23			
1778	0-15	1.30	2.19	0.00	2.19	4.34	0.00	4.34	8.33	0.00	8.33
	15-30	1.37	1.92	0.00	1.92	3.99	0.00	3.99			
1779	0-15	1.27	3.14	0.75	2.39	6.08	1.45	4.63	12.51	5.24	7.27
	15-30	1.42	2.97	1.75	1.22	6.43	3.79	2.64			
1780	0-15	1.30	1.64	0.13	1.51	3.25	0.26	2.99	8.99	3.74	5.25
	15-30	1.44	2.62	1.59	1.03	5.74	3.48	2.26			
1781	0-15	1.40	1.98	0.00	1.98	4.21	0.00	4.21	8.78	0.40	8.39
	15-30	1.45	2.08	0.18	1.90	4.57	0.40	4.17			
1782	0-15	1.34	2.53	0.00	2.53	5.16	0.00	5.16	8.72	0.00	8.72
	15-30	1.47	1.59	0.00	1.59	3.56	0.00	3.56			
1783	0-15	1.36	2.46	0.00	2.46	5.09	0.00	5.09	9.52	0.00	9.52
	15-30	1.34	2.17	0.00	2.17	4.43	0.00	4.43			
1784	0-15	1.08	2.93	0.11	2.82	4.83	0.18	4.65	9.77	0.70	9.07
	15-30	1.31	2.49	0.26	2.23	4.94	0.52	4.42			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1785	0-15	1.13	2.81	0.00	2.81	4.83	0.00	4.83	10.74	0.42	10.33
	15-30	1.25	3.11	0.22	2.89	5.91	0.42	5.49			
1786	0-15	1.13	2.62	0.00	2.62	4.52	0.00	4.52	8.82	0.00	8.82
	15-30	1.27	2.22	0.00	2.22	4.30	0.00	4.30			
1787	0-15	1.34	2.32	0.56	1.76	4.73	1.14	3.59	10.78	5.01	5.77
	15-30	1.52	2.61	1.67	0.94	6.04	3.86	2.18			
1788	0-15	1.34	1.43	0.00	1.43	2.92	0.00	2.92	7.64	0.00	7.64
	15-30	1.44	2.16	0.00	2.16	4.72	0.00	4.72			
1789	0-15	1.26	2.37	0.10	2.27	4.53	0.19	4.34	8.49	0.19	8.30
	15-30	1.36	1.91	0.00	1.91	3.96	0.00	3.96			
1790	0-15	1.20	2.74	0.00	2.74	5.01	0.00	5.01	9.59	0.00	9.59
	15-30	1.32	2.29	0.00	2.29	4.58	0.00	4.58			
1791	0-15	1.25	2.10	0.00	2.10	4.01	0.00	4.01	6.84	0.55	6.29
	15-30	1.45	1.29	0.25	1.04	2.84	0.55	2.29			
1792	0-15	1.25	2.62	0.00	2.62	5.00	0.00	5.00	9.11	0.60	8.51
	15-30	1.46	1.85	0.27	1.58	4.12	0.60	3.52			
1793	0-15	1.20	2.83	0.00	2.83	5.15	0.00	5.15	9.83	0.00	9.83
	15-30	1.32	2.34	0.00	2.34	4.68	0.00	4.68			
1794	0-15	1.20	2.74	0.00	2.74	4.99	0.00	4.99	9.10	0.00	9.10
	15-30	1.23	2.19	0.00	2.19	4.11	0.00	4.11			
1795	0-15	1.10	3.35	0.00	3.35	5.58	0.00	5.58	11.84	0.00	11.84
	15-30	1.29	3.20	0.00	3.20	6.26	0.00	6.26			
1796	0-15	1.09	2.68	0.00	2.68	4.46	0.00	4.46	8.72	0.00	8.72
	15-30	1.24	2.26	0.00	2.26	4.26	0.00	4.26			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1797	0-15	1.14	2.40	0.00	2.40	4.17	0.00	4.17	9.16	0.00	9.16
	15-30	1.27	2.58	0.00	2.58	4.99	0.00	4.99			
1798	0-15	1.25	2.29	0.08	2.21	4.35	0.15	4.20	8.18	0.15	8.03
	15-30	1.34	1.88	0.00	1.88	3.83	0.00	3.83			
1799	0-15	1.18	3.01	0.00	3.01	5.41	0.00	5.41	10.86	0.00	10.86
	15-30	1.28	2.79	0.00	2.79	5.44	0.00	5.44			
1800	0-15	1.19	2.48	0.00	2.48	4.50	0.00	4.50	8.23	0.00	8.23
	15-30	1.27	1.93	0.00	1.93	3.74	0.00	3.74			
1801	0-15	1.18	2.62	0.00	2.62	4.72	0.00	4.72	8.82	0.00	8.82
	15-30	1.23	2.20	0.00	2.20	4.10	0.00	4.10			
1802	0-15	1.18	2.61	0.00	2.61	4.68	0.00	4.68	9.36	0.00	9.36
	15-30	1.19	2.59	0.00	2.59	4.68	0.00	4.68			
1803	0-15	1.21	3.15	0.00	3.15	5.79	0.00	5.79	11.49	0.00	11.49
	15-30	1.37	2.74	0.00	2.74	5.70	0.00	5.70			
1804	0-15	1.04	2.26	0.00	2.26	3.57	0.00	3.57	5.92	0.00	5.92
	15-30	1.17	1.32	0.00	1.32	2.36	0.00	2.36			
1805	0-15	1.23	2.78	0.00	2.78	5.20	0.00	5.20	10.22	0.00	10.22
	15-30	1.26	2.62	0.00	2.62	5.01	0.00	5.01			
1806	0-15	1.17	4.48	0.88	3.60	7.95	1.56	6.39	15.94	5.43	10.51
	15-30	1.35	3.90	1.89	2.01	7.99	3.87	4.12			
1807	0-15	0.98	3.21	0.00	3.21	4.79	0.00	4.79	8.87	0.78	8.09
	15-30	1.07	2.50	0.48	2.02	4.08	0.78	3.29			
1808	0-15	1.23	2.01	0.00	2.01	3.76	0.00	3.76	6.20	0.00	6.20
	15-30	1.37	1.17	0.00	1.17	2.44	0.00	2.44			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1809	0-15	1.31	2.27	0.00	2.27	4.53	0.00	4.53	8.93	0.00	8.93
	15-30	1.29	2.24	0.00	2.24	4.40	0.00	4.40			
1810	0-15	1.36	2.23	0.00	2.23	4.61	0.00	4.61	9.20	0.00	9.20
	15-30	1.39	2.17	0.00	2.17	4.59	0.00	4.59			
1811	0-15	1.23	2.72	0.00	2.72	5.09	0.00	5.09	9.39	0.75	8.64
	15-30	1.40	2.02	0.35	1.67	4.30	0.75	3.56			
1812	0-15	1.24	2.94	0.00	2.94	5.55	0.00	5.55	10.47	0.00	10.47
	15-30	1.32	2.45	0.00	2.45	4.93	0.00	4.93			
1813	0-15	1.29	2.18	0.00	2.18	4.26	0.00	4.26	7.68	0.00	7.68
	15-30	1.44	1.56	0.00	1.56	3.42	0.00	3.42			
1814	0-15	1.31	2.12	0.00	2.12	4.22	0.00	4.22	8.08	0.00	8.08
	15-30	1.39	1.83	0.00	1.83	3.85	0.00	3.85			
1815	0-15	1.25	2.82	0.00	2.82	5.37	0.00	5.37	10.87	0.00	10.87
	15-30	1.30	2.78	0.00	2.78	5.49	0.00	5.49			
1816	0-15	1.35	2.32	0.00	2.32	4.75	0.00	4.75	9.16	0.00	9.16
	15-30	1.39	2.08	0.00	2.08	4.41	0.00	4.41			
1817	0-15	1.18	3.88	0.00	3.88	6.95	0.00	6.95	12.97	0.00	12.97
	15-30	1.32	2.99	0.00	2.99	6.02	0.00	6.02			
1818	0-15	1.32	2.72	0.08	2.64	5.47	0.16	5.31	10.03	0.50	9.53
	15-30	1.40	2.15	0.16	1.99	4.56	0.34	4.22			
1819	0-15	1.07	4.82	1.75	3.07	7.85	2.85	5.00	15.61	6.04	9.57
	15-30	1.17	4.38	1.80	2.58	7.76	3.19	4.57			
1820	0-15	1.06	3.67	0.00	3.67	5.89	0.00	5.89	11.92	0.00	11.92
	15-30	1.17	3.39	0.00	3.39	6.03	0.00	6.03			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1821	0-15	1.19	3.17	0.00	3.17	5.74	0.00	5.74	10.44	0.00	10.44
	15-30	1.32	2.34	0.00	2.34	4.70	0.00	4.70			
1822	0-15	1.30	2.12	0.18	1.94	4.18	0.36	3.83	6.86	0.58	6.28
	15-30	1.37	1.29	0.11	1.18	2.68	0.23	2.45			
1823	0-15	1.14	3.53	0.09	3.44	6.13	0.16	5.98	12.93	0.83	12.10
	15-30	1.23	3.63	0.36	3.27	6.80	0.67	6.12			
1824	0-15	1.22	2.91	0.00	2.91	5.40	0.00	5.40	10.21	0.00	10.21
	15-30	1.34	2.37	0.00	2.37	4.82	0.00	4.82			
1825	0-15	1.12	3.82	0.00	3.82	6.48	0.00	6.48	12.91	0.00	12.91
	15-30	1.30	3.26	0.00	3.26	6.43	0.00	6.43			
1826	0-15	1.33	2.48	0.00	2.48	5.01	0.00	5.01	9.90	0.00	9.90
	15-30	1.41	2.28	0.00	2.28	4.88	0.00	4.88			
1827	0-15	1.17	3.22	0.00	3.22	5.70	0.00	5.70	10.90	0.00	10.90
	15-30	1.31	2.61	0.00	2.61	5.19	0.00	5.19			
1828	0-15	1.35	2.44	0.00	2.44	5.01	0.00	5.01	9.33	0.00	9.33
	15-30	1.39	2.04	0.00	2.04	4.31	0.00	4.31			
1829	0-15	1.15	3.51	0.00	3.51	6.14	0.00	6.14	11.44	0.00	11.44
	15-30	1.21	2.89	0.00	2.89	5.30	0.00	5.30			
1830	0-15	1.25	2.94	0.00	2.94	5.59	0.00	5.59	10.91	0.00	10.91
	15-30	1.35	2.60	0.00	2.60	5.33	0.00	5.33			
1831	0-15	1.13	3.81	0.11	3.70	6.54	0.19	6.35	12.50	1.35	11.15
	15-30	1.21	3.23	0.63	2.60	5.96	1.16	4.80			
1832	0-15	1.40	2.17	0.00	2.17	4.61	0.00	4.61	8.57	0.00	8.57
	15-30	1.44	1.81	0.00	1.81	3.96	0.00	3.96			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
		cm									
1833	0-15	1.31	2.08	0.09	1.99	4.13	0.18	3.95	7.98	0.55	7.43
	15-30	1.45	1.75	0.17	1.58	3.85	0.37	3.48			
1834	0-15	1.25	3.04	0.40	2.64	5.77	0.76	5.01	11.05	2.55	8.49
	15-30	1.44	2.41	0.82	1.59	5.27	1.79	3.48			
1835	0-15	1.04	6.57	4.35	2.22	10.37	6.87	3.50	21.77	16.07	5.70
	15-30	1.25	6.02	4.86	1.16	11.40	9.20	2.20			
1836	0-15	1.26	2.70	0.00	2.70	5.18	0.00	5.18	10.37	0.24	10.13
	15-30	1.30	2.62	0.12	2.50	5.19	0.24	4.95			
1837	0-15	1.08	5.03	2.26	2.77	8.26	3.71	4.55	16.65	9.10	7.54
	15-30	1.19	4.62	2.97	1.65	8.39	5.39	3.00			
1838	0-15	1.28	2.19	0.00	2.19	4.27	0.00	4.27	7.82	0.00	7.82
	15-30	1.36	1.72	0.00	1.72	3.55	0.00	3.55			
1839	0-15	1.21	3.14	0.12	3.02	5.75	0.22	5.53	10.81	0.60	10.21
	15-30	1.31	2.54	0.19	2.35	5.06	0.38	4.68			
1840	0-15	1.27	2.37	0.35	2.02	4.57	0.67	3.89	8.87	1.03	7.84
	15-30	1.37	2.07	0.17	1.90	4.30	0.35	3.95			
1841	0-15	1.27	2.46	0.00	2.46	4.74	0.00	4.74	8.50	0.22	8.28
	15-30	1.34	1.84	0.11	1.73	3.76	0.22	3.54			
1842	0-15	1.06	6.17	4.19	1.98	9.95	6.75	3.19	20.38	15.20	5.18
	15-30	1.18	5.83	4.72	1.11	10.43	8.45	1.99			
1843	0-15	1.26	3.31	0.44	2.87	6.32	0.84	5.48	11.90	2.30	9.60
	15-30	1.39	2.64	0.69	1.95	5.58	1.46	4.12			
1844	0-15	1.19	3.39	0.00	3.39	6.13	0.00	6.13	11.57	0.00	11.57
	15-30	1.21	2.95	0.00	2.95	5.44	0.00	5.44			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1845	0-15	1.13	4.37	1.27	3.10	7.52	2.19	5.33	14.95	6.50	8.45
	15-30	1.32	3.70	2.15	1.55	7.43	4.32	3.11			
1846	0-15	1.15	4.18	1.26	2.92	7.32	2.21	5.12	14.90	5.05	9.84
	15-30	1.29	3.86	1.45	2.41	7.57	2.85	4.73			
1847	0-15	1.22	2.88	0.00	2.88	5.34	0.00	5.34	10.30	0.00	10.30
	15-30	1.26	2.59	0.00	2.59	4.96	0.00	4.96			
1848	0-15	0.99	4.03	0.00	4.03	6.06	0.00	6.06	10.90	0.00	10.90
	15-30	1.10	2.90	0.00	2.90	4.84	0.00	4.84			
1849	0-15	0.92	4.23	0.00	4.23	5.93	0.00	5.93	10.69	0.00	10.69
	15-30	1.13	2.78	0.00	2.78	4.77	0.00	4.77			
1850	0-15	0.91	4.17	0.00	4.17	5.79	0.00	5.79	10.73	0.00	10.73
	15-30	1.12	2.89	0.00	2.89	4.94	0.00	4.94			
1851	0-15	1.02	4.93	0.51	4.42	7.64	0.79	6.85	14.48	1.06	13.43
	15-30	1.16	3.88†	0.15†	3.73†	6.84	0.26	6.58			
1852	0-15	0.98	4.07	0.00	4.07	6.07	0.00	6.07	10.50	0.00	10.50
	15-30	1.21	2.41	0.00	2.41	4.43	0.00	4.43			
1853	0-15	1.02	4.65	0.00	4.65	7.21	0.00	7.21	12.22	0.23	11.99
	15-30	1.18	2.80	0.13	2.67	5.01	0.23	4.78			
1854	0-15	0.99	3.73	0.00	3.73	5.60	0.00	5.60	10.05	0.00	10.05
	15-30	1.21	2.41	0.00	2.41	4.45	0.00	4.45			
1855	0-15	1.02	5.04	0.09	4.95	7.81	0.14	7.67	14.06	1.14	12.91
	15-30	1.03	3.98	0.64	3.34	6.24	1.00	5.24			
1856	0-15	0.91	4.84	0.00	4.84	6.67	0.00	6.67	12.11	0.00	12.11
	15-30	1.10	3.25	0.00	3.25	5.44	0.00	5.44			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1857	0-15	1.02	6.89	2.42	4.47	10.68	3.75	6.93	17.52	4.02	13.51
	15-30	1.16	3.88†	0.15†	3.73†	6.84	0.26	6.58			
1858	0-15	1.02	5.05	0.00	5.05	7.83	0.00	7.83	13.18	0.00	13.18
	15-30	1.01	3.49	0.00	3.49	5.35	0.00	5.35			
1859	0-15	1.00	4.04	0.00	4.04	6.11	0.00	6.11	11.37	0.00	11.37
	15-30	1.21	2.86	0.00	2.86	5.26	0.00	5.26			
1860	0-15	0.95	4.48	0.00	4.48	6.47	0.00	6.47	11.51	0.00	11.51
	15-30	1.12	2.96	0.00	2.96	5.04	0.00	5.04			
1861	0-15	0.97	4.15	0.00	4.15	6.10	0.00	6.10	10.91	0.00	10.91
	15-30	1.15	2.76	0.00	2.76	4.81	0.00	4.81			
1862	0-15	1.02	4.95	0.00	4.95	7.67	0.00	7.67	13.17	0.19	12.99
	15-30	1.12	3.23	0.11	3.12	5.50	0.19	5.31			
1863	0-15	0.98	4.04	0.00	4.04	5.99	0.00	5.99	10.69	0.00	10.69
	15-30	1.14	2.72	0.00	2.72	4.70	0.00	4.70			
1864	0-15	1.06	5.79	0.00	5.79	9.31	0.00	9.31	16.51	0.00	16.51
	15-30	1.09	4.36	0.00	4.36	7.20	0.00	7.20			
1865	0-15	0.79	5.84	0.00	5.84	6.98	0.00	6.98	12.83	0.00	12.83
	15-30	1.01	3.83	0.00	3.83	5.85	0.00	5.85			
1866	0-15	0.99	3.72	0.00	3.72	5.62	0.00	5.62	11.33	0.15	11.17
	15-30	1.27	2.95	0.08	2.87	5.71	0.15	5.55			
1867	0-15	1.20	2.87	0.00	2.87	5.23	0.00	5.23	10.43	0.00	10.43
	15-30	1.39	2.46	0.00	2.46	5.21	0.00	5.21			
1868	0-15	1.28	1.94	0.19	1.75	3.76	0.37	3.39	6.51	0.37	6.14
	15-30	1.38	1.31	0.00	1.31	2.75	0.00	2.75			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1869	0-15	0.95	5.28	1.51	3.77	7.63	2.18	5.45	16.36	5.86	10.51
	15-30	1.14	5.06	2.13	2.93	8.74	3.68	5.06			
1870	0-15	1.27	3.13	0.21	2.92	6.03	0.40	5.63	11.41	2.23	9.18
	15-30	1.44	2.45	0.83	1.62	5.37	1.82	3.55			
1871	0-15	1.36	1.79	0.00	1.79	3.71	0.00	3.71	6.85	0.00	6.85
	15-30	1.45	1.42	0.00	1.42	3.14	0.00	3.14			
1872	0-15	1.20	2.16	0.00	2.16	3.93	0.00	3.93	7.40	0.00	7.40
	15-30	1.36	1.68	0.00	1.68	3.47	0.00	3.47			
1873	0-15	1.27	2.20	0.00	2.20	4.24	0.00	4.24	8.46	0.00	8.46
	15-30	1.46	1.90	0.00	1.90	4.22	0.00	4.22			
1874	0-15	1.24	2.63	0.00	2.63	4.94	0.00	4.94	9.74	0.00	9.74
	15-30	1.37	2.30	0.00	2.30	4.81	0.00	4.81			
1875	0-15	1.24	2.78	0.00	2.78	5.22	0.00	5.22	9.01	0.36	8.65
	15-30	1.38	1.81	0.17	1.64	3.79	0.36	3.43			
1876	0-15	1.26	2.59	0.00	2.59	4.98	0.00	4.98	8.82	0.00	8.82
	15-30	1.38	1.83	0.00	1.83	3.85	0.00	3.85			
1877	0-15	1.01	4.32	0.50	3.82	6.66	0.77	5.89	12.25	2.24	10.01
	15-30	1.27	2.89	0.76	2.13	5.60	1.47	4.13			
1878	0-15	1.14	4.14	1.28	2.86	7.17	2.22	4.96	14.26	5.95	8.32
	15-30	1.35	3.46	1.82	1.64	7.09	3.73	3.36			
1879	0-15	1.13	2.34	0.00	2.34	4.02	0.00	4.02	10.38	0.00	10.38
	15-30	1.33	3.14	0.00	3.14	6.35	0.00	6.35			
1880	0-15	1.21	2.12	0.00	2.12	3.90†	0.00	3.90†	7.61	0.00	7.61
	15-30	1.34	1.82	0.00	1.82	3.72	0.00	3.72			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1881	0-15	1.08	3.64	0.00	3.64	5.98	0.00	5.98	12.38	0.20	12.18
	15-30	1.31	3.21	0.10	3.11	6.40	0.20	6.20			
1882	0-15	1.17	2.43	0.00	2.43	4.33	0.00	4.33	7.77	0.22	7.55
	15-30	1.31	1.72	0.11	1.61	3.44	0.22	3.22			
1883	0-15	1.05	4.88	2.96	1.92	7.79	4.73	3.07	17.68	8.82	8.86
	15-30	1.23	5.31	2.20	3.11	9.89	4.10	5.79			
1884	0-15	1.16	3.41	0.00	3.41	6.02	0.00	6.02	11.31	0.18	11.13
	15-30	1.33	2.61	0.09	2.52	5.29	0.18	5.11			
1885	0-15	1.37	2.78	0.00	2.78	5.78	0.00	5.78	11.02	0.21	10.81
	15-30	1.40	2.46	0.10	2.36	5.23	0.21	5.02			
1886	0-15	1.11	3.38	0.00	3.38	5.68	0.00	5.68	10.91	0.00	10.91
	15-30	1.29	2.67	0.00	2.67	5.23	0.00	5.23			
1887	0-15	1.27	2.58	0.00	2.58	4.97	0.00	4.97	9.33	0.00	9.33
	15-30	1.36	2.12	0.00	2.12	4.37	0.00	4.37			
1888	0-15	1.24	2.47	0.00	2.47	4.65	0.00	4.65	8.48	0.00	8.48
	15-30	1.32	1.91	0.00	1.91	3.82	0.00	3.82			
1889	0-15	1.29	2.24	0.47	1.77	4.40	0.92	3.48	8.74	3.68	5.06
	15-30	1.35	2.11	1.34	0.77	4.34	2.76	1.58			
1890	0-15	1.26	2.39	0.00	2.39	4.58	0.00	4.58	8.48	0.00	8.48
	15-30	1.39	1.84	0.00	1.84	3.90	0.00	3.90			
1891	0-15	1.32	2.89	0.50	2.39	5.82	1.01	4.81	11.10	2.64	8.46
	15-30	1.38	2.52	0.78	1.74	5.29	1.64	3.65			
1892	0-15	1.38	2.09	0.00	2.09	4.38	0.00	4.38	8.28	0.00	8.28
	15-30	1.45	1.77	0.00	1.77	3.90	0.00	3.90			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1893	0-15	1.23	4.39	0.12	4.27	8.21	0.22	7.98	15.22	2.06	13.15
	15-30	1.36†	3.39†	0.89†	2.50†	7.01†	1.84†	5.17†			
1894	0-15	1.22	4.61	2.31	2.30	8.53	4.28	4.26	16.47	8.92	7.55
	15-30	1.36	3.83	2.24	1.59	7.94	4.64	3.30			
1895	0-15	1.12	4.05	0.08	3.97	6.92	0.14	6.78	12.05	0.43	11.62
	15-30	1.38	2.45	0.14	2.31	5.13	0.29	4.83			
1896	0-15	1.20	4.48	1.29	3.19	8.14	2.34	5.80	15.53	4.21	11.31
	15-30	1.26	3.87	0.98	2.89	7.38	1.87	5.51			
1897	0-15	1.39	2.25	0.00	2.25	4.76	0.00	4.76	9.04	0.00	9.04
	15-30	1.47	1.91	0.00	1.91	4.28	0.00	4.28			
1898	0-15	1.18	5.88	3.74	2.14	10.56	6.72	3.84	21.01	14.55	6.46
	15-30	1.20	5.72	4.29	1.43	10.45	7.84	2.61			
1899	0-15	1.28	2.83	0.00	2.83	5.52	0.00	5.52	10.84	1.56	9.28
	15-30	1.53	2.29	0.67	1.62	5.32	1.56	3.76			
1900	0-15	1.03	4.78	0.87	3.91	7.48	1.36	6.12	14.49	3.20	11.29
	15-30	1.36†	3.39†	0.89†	2.50†	7.01	1.84†	5.17†			
1901	0-15	1.25	2.66	0.47	2.19	5.04	0.89	4.15	10.19	2.64	7.55
	15-30	1.37	2.47	0.84	1.63	5.14	1.75	3.39			
1902	0-15	1.11	3.67	0.09	3.58	6.19	0.15	6.04	11.95	0.35	11.59
	15-30	1.20	3.16	0.11	3.05	5.76	0.20	5.56			
1903	0-15	0.96	3.82	0.00	3.82	5.56	0.00	5.56	11.07	0.00	11.07
	15-30	1.10	3.30	0.00	3.30	5.51	0.00	5.51			
1904	0-15	1.27	2.67	0.21	2.46	5.15	0.40	4.74	9.17	1.85	7.32
	15-30	1.34	1.98	0.71	1.27	4.02	1.44	2.58			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1905	0-15	1.11	3.97	0.08	3.89	6.70	0.13	6.56	11.19	0.13	11.05
	15-30	1.18	2.51	0.00	2.51	4.49	0.00	4.49			
1906	0-15	1.01	3.19	0.00	3.19	4.89	0.00	4.89	9.54	0.00	9.54
	15-30	1.16	2.64	0.00	2.64	4.65	0.00	4.65			
1907	0-15	1.22	2.86	0.00	2.86	5.29	0.00	5.29	10.48	1.92	8.56
	15-30	1.29	2.65	0.98	1.67	5.19	1.92	3.27			
1908	0-15	0.91	4.46	0.23	4.23	6.14	0.32	5.82	11.63	1.98	9.65
	15-30	1.10	3.27	0.99	2.28	5.49	1.66	3.83			
1909	0-15	1.11	6.37	3.39	2.98	10.75	5.72	5.03	16.53	6.28	10.26
	15-30	1.22	3.12†	0.30†	2.82†	5.79	0.56	5.23			
1910	0-15	0.98	3.51	0.00	3.51	5.21	0.00	5.21	10.17	0.20	9.98
	15-30	1.17	2.79	0.11	2.68	4.97	0.20	4.77			
1911	0-15	1.26	3.04	0.00	3.04	5.80	0.00	5.80	11.01	0.00	11.01
	15-30	1.33	2.58	0.00	2.58	5.21	0.00	5.21			
1912	0-15	1.23	2.38	0.00	2.38	4.44	0.00	4.44	8.60	0.00	8.60
	15-30	1.28	2.13	0.00	2.13	4.16	0.00	4.16			
1913	0-15	1.02	3.60	0.00	3.60	5.59	0.00	5.59	11.15	1.67	9.48
	15-30	1.12	3.26	0.98	2.28	5.56	1.67	3.89			
1914	0-15	1.08	3.19	0.00	3.19	5.24	0.00	5.24	8.64	0.00	8.64
	15-30	1.32	1.70	0.00	1.70	3.40	0.00	3.40			
1915	0-15	1.24	3.03	0.00	3.03	5.71	0.00	5.71	9.73	0.00	9.73
	15-30	1.24	2.13	0.00	2.13	4.02	0.00	4.02			
1916	0-15	1.11	4.14	0.24	3.90	6.99	0.40	6.58	12.77	0.96	11.81
	15-30	1.22	3.12†	0.30†	2.82†	5.79	0.56	5.23			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1917	0-15	1.34	2.69	0.00	2.69	5.49	0.00	5.49	9.58	0.00	9.58
	15-30	1.45	1.85	0.00	1.85	4.08	0.00	4.08			
1918	0-15	1.27	2.95	0.00	2.95	5.70	0.00	5.70	9.99	0.00	9.99
	15-30	1.39	2.03	0.00	2.03	4.29	0.00	4.29			
1919	0-15	1.30	2.15	0.35	1.80	4.24	0.69	3.55	10.02	0.69	9.33
	15-30	1.37	2.78	0.00	2.78	5.78	0.00	5.78			
1920	0-15	1.28	6.04	1.15	4.89	11.75	2.24	9.51	17.23	3.16	14.23
	15-30	1.35†	2.67†	0.45†	2.30†	5.48	0.92†	4.72†			
1921	0-15	1.28	2.47	0.00	2.47	4.79	0.00	4.79	9.04	0.00	9.04
	15-30	1.35	2.07	0.00	2.07	4.25	0.00	4.25			
1922	0-15	1.35	2.17	0.00	2.17	4.46	0.00	4.46	8.11	0.00	8.11
	15-30	1.41	1.70	0.00	1.70	3.65	0.00	3.65			
1923	0-15	1.03	5.14	2.06	3.08	8.04	3.22	4.81	17.11	8.51	8.60
	15-30	1.09	5.47	3.19	2.28	9.08	5.29	3.78			
1924	0-15	1.33	2.26	0.00	2.26	4.58	0.00	4.58	8.64	0.00	8.64
	15-30	1.41	1.90	0.00	1.90	4.06	0.00	4.06			
1925	0-15	1.18	3.46	0.00	3.46	6.20	0.00	6.20	12.16	1.47	10.69
	15-30	1.22	3.20	0.79	2.41	5.95	1.47	4.48			
1926	0-15	1.30	2.40	0.31	2.09	4.73	0.61	4.12	8.98	2.24	6.74
	15-30	1.36	2.06	0.79	1.27	4.24	1.63	2.62			
1927	0-15	1.24	2.40	0.00	2.40	4.52	0.00	4.52	7.61	0.00	7.61
	15-30	1.27	1.60	0.00	1.60	3.09	0.00	3.09			
1928	0-15	1.41	1.59	0.00	1.59	3.40	0.00	3.40	5.84	0.00	5.84
	15-30	1.53	1.05	0.00	1.05	2.44	0.00	2.44			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1929	0-15	1.23	2.61	0.00	2.61	4.87	0.00	4.87	8.35	0.00	8.35
	15-30	1.29	1.77	0.00	1.77	3.48	0.00	3.48			
1930	0-15	1.05	2.45	0.00	2.45	3.91	0.00	3.91	6.64	0.00	6.64
	15-30	1.30	1.38	0.00	1.38	2.73	0.00	2.73			
1931	0-15	1.17	2.55	0.00	2.55	4.54	0.00	4.54	7.49	0.00	7.49
	15-30	1.34	1.45	0.00	1.45	2.95	0.00	2.95			
1932	0-15	1.19	2.39	0.00	2.39	4.31	0.00	4.31	7.03	0.00	7.03
	15-30	1.37	1.31	0.00	1.31	2.72	0.00	2.72			
1933	0-15	1.16	2.53	0.00	2.53	4.46	0.00	4.46	8.51	0.00	8.51
	15-30	1.26	2.12	0.00	2.12	4.05	0.00	4.05			
1934	0-15	1.25	2.47	0.00	2.47	4.69	0.00	4.69	8.22	0.00	8.22
	15-30	1.26	1.84	0.00	1.84	3.53	0.00	3.53			
1935	0-15	1.14	3.60	0.00	3.60	6.24	0.00	6.24	11.25	0.51	10.73
	15-30	1.35	2.43	0.25	2.18	5.00	0.51	4.49			
1936	0-15	1.27	2.53	0.10	2.43	4.87	0.19	4.68	9.67	3.16	6.51
	15-30	1.45	2.17	1.34	0.83	4.80	2.96	1.84			
1937	0-15	1.13	3.53	0.00	3.53	6.04	0.00	6.04	10.92	0.00	10.92
	15-30	1.26	2.55	0.00	2.55	4.88	0.00	4.88			
1938	0-15	1.11	3.62	0.00	3.62	6.12	0.00	6.12	10.87	0.00	10.87
	15-30	1.21	2.59	0.00	2.59	4.75	0.00	4.75			
1939	0-15	1.05	4.18	0.00	4.18	6.70	0.00	6.70	12.02	0.00	12.02
	15-30	1.23	2.84	0.00	2.84	5.32	0.00	5.32			
1940	0-15	1.12	3.74	0.00	3.74	6.38	0.00	6.38	11.78	0.00	11.78
	15-30	1.27	2.80	0.00	2.80	5.39	0.00	5.39			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1941	0-15	1.03	4.15	0.00	4.15	6.51	0.00	6.51	11.99	0.00	11.99
	15-30	1.12	3.21	0.00	3.21	5.48	0.00	5.48			
1942	0-15	1.29	2.74	0.48	2.26	5.38	0.94	4.44	10.02	3.76	6.26
	15-30	1.36	2.24	1.36	0.88	4.64	2.82	1.82			
1943	0-15	1.30	2.62	0.21	2.41	5.19	0.42	4.78	10.10	1.96	8.15
	15-30	1.33	2.42	0.76	1.66	4.91	1.54	3.37			
1944	0-15	1.27	2.43	0.00	2.43	4.70	0.00	4.70	8.12	0.00	8.12
	15-30	1.32	1.71	0.00	1.71	3.43	0.00	3.43			
1945	0-15	1.23	3.54	0.09	3.45	6.62	0.17	6.45	12.65	0.42	12.23
	15-30	1.18	3.37	0.14	3.23	6.03	0.25	5.78			
1946	0-15	1.16	2.93	0.00	2.93	5.17	0.00	5.17	10.10	0.56	9.55
	15-30	1.26	2.58	0.29	2.29	4.94	0.56	4.38			
1947	0-15	1.19	2.82	0.00	2.82	5.09	0.00	5.09	9.24	0.00	9.24
	15-30	1.24	2.20	0.00	2.20	4.14	0.00	4.14			
1948	0-15	1.25	2.59	0.00	2.59	4.92	0.00	4.92	8.08	0.20	7.88
	15-30	1.30	1.60	0.10	1.50	3.16	0.20	2.96			
1949	0-15	1.33	2.95	0.95	2.00	5.94	1.91	4.03	13.42	7.31	6.11
	15-30	1.38	3.56	2.57	0.99	7.48	5.40	2.08			
1950	0-15	1.29	2.72	0.00	2.72	5.34	0.00	5.34	9.43	0.00	9.43
	15-30	1.34	2.01	0.00	2.01	4.09	0.00	4.09			
1951	0-15	1.21	3.25	0.00	3.25	6.00	0.00	6.00	11.19	0.00	11.19
	15-30	1.33	2.57	0.00	2.57	5.19	0.00	5.19			
1952	0-15	1.07	3.31	0.00	3.31	5.37	0.00	5.37	10.08	0.00	10.08
	15-30	1.16	2.67	0.00	2.67	4.72	0.00	4.72			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1953	0-15	1.08	3.41	0.11	3.30	5.57	0.18	5.39	10.04	0.18	9.86
	15-30	1.10	2.67	0.00	2.67	4.46	0.00	4.46			
1954	0-15	1.33	2.22	0.00	2.22	4.50	0.00	4.50	8.75	0.00	8.75
	15-30	1.35	2.07	0.00	2.07	4.25	0.00	4.25			
1955	0-15	1.35	2.02	0.00	2.02	4.15	0.00	4.15	7.65	0.00	7.65
	15-30	1.35	1.70	0.00	1.70	3.50	0.00	3.50			
1956	0-15	1.23	2.93	0.00	2.93	5.50	0.00	5.50	10.41	0.79	9.62
	15-30	1.29	2.50	0.40	2.10	4.91	0.79	4.13			
1957	0-15	1.35	1.55	0.00	1.55	3.18	0.00	3.18	5.34	0.00	5.34
	15-30	1.51	0.94	0.00	0.94	2.16	0.00	2.16			
1958	0-15	1.16	3.35	0.00	3.35	5.89	0.00	5.89	11.02	0.00	11.02
	15-30	1.20	2.82	0.00	2.82	5.13	0.00	5.13			
1959	0-15	1.24	2.28	0.00	2.28	4.29	0.00	4.29	7.67	0.00	7.67
	15-30	1.36	1.64	0.00	1.64	3.38	0.00	3.38			
1960	0-15	1.31	1.16	0.00	1.16	2.31	0.00	2.31	3.94	0.21	3.73
	15-30	1.56	0.69	0.09	0.60	1.63	0.21	1.42			
1961	0-15	1.34	1.29	0.00	1.29	2.62	0.00	2.62	5.21	0.00	5.21
	15-30	1.51	1.13	0.00	1.13	2.59	0.00	2.59			
1962	0-15	1.35	2.72	0.00	2.72	5.56	0.00	5.56	8.72	0.00	8.72
	15-30	1.37	1.52	0.00	1.52	3.16	0.00	3.16			
1963	0-15	1.26	1.53	0.00	1.53	2.94	0.00	2.94	5.23	0.00	5.23
	15-30	1.46	1.03	0.00	1.03	2.29	0.00	2.29			
1964	0-15	1.19	3.17	0.00	3.17	5.74	0.00	5.74	9.71	0.00	9.71
	15-30	1.29	2.02	0.00	2.02	3.97	0.00	3.97			

Table 45. (continued)

Sample		B.D.	C Concentration			C Mass					
Number	Depth		TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
		g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
		cm									
1965	0-15	1.30	3.21	0.00	3.21	6.36	0.00	6.36	11.21	0.00	11.21
	15-30	1.40	2.28	0.00	2.28	4.85	0.00	4.85			
1966	0-15	1.10	3.31	0.00	3.31	5.52	0.00	5.52	10.53	0.00	10.53
	15-30	1.23	2.69	0.00	2.69	5.01	0.00	5.01			
1967	0-15	1.24	2.90	0.00	2.90	5.48	0.00	5.48	9.59	0.00	9.59
	15-30	1.42	1.91	0.00	1.91	4.11	0.00	4.11			
1968	0-15	1.23	3.19	0.00	3.19	5.96	0.00	5.96	10.27	0.00	10.27
	15-30	1.32	2.14	0.00	2.14	4.31	0.00	4.31			
1969	0-15	1.02	3.96	0.00	3.96	6.13	0.00	6.13	12.81	0.00	12.81
	15-30	1.19	3.70	0.00	3.70	6.69	0.00	6.69			
1970	0-15	1.09	3.42	0.47	2.95	5.65	0.78	4.88	12.06	4.11	7.95
	15-30	1.25	3.36	1.75	1.61	6.41	3.34	3.07			
1971	0-15	1.31	2.73	1.27	1.46	5.42	2.52	2.90	8.57	2.52	6.05
	15-30	1.37	1.51	0.00	1.51	3.15	0.00	3.15			
1972	0-15	1.17	3.60	0.25	3.35	6.43	0.45	5.98	11.60	0.45	11.16
	15-30	1.28	2.65	0.00	2.65	5.17	0.00	5.17			
1973	0-15	1.28	2.66	0.51	2.15	5.18	0.99	4.19	9.34	3.65	5.69
	15-30	1.41	1.94	1.24	0.70	4.16	2.66	1.50			
1974	0-15	1.21	2.65	0.00	2.65	4.87	0.00	4.87	7.87	0.00	7.87
	15-30	1.41	1.40	0.00	1.40	3.00	0.00	3.00			
1975	0-15	1.27	2.49	0.00	2.49	4.80	0.00	4.80	7.11	0.00	7.11
	15-30	1.29	1.18	0.00	1.18	2.31	0.00	2.31			
1976	0-15	1.26	2.39	0.00	2.39	4.59	0.00	4.59	6.96	0.20	6.75
	15-30	1.35	1.16	0.10	1.06	2.37	0.20	2.17			

Table 45. (continued)

Sample Number	Depth	B.D.	C Concentration			C Mass					
			TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1977	0-15	1.19	3.35	0.76	2.59	6.07	1.38	4.70	11.93	3.89	8.05
	15-30	1.35	2.85	1.22	1.63	5.86	2.51	3.35			
1978	0-15	1.16	2.41	0.49	1.92	4.23	0.86	3.37	8.11	3.06	5.06
	15-30	1.54	1.66	0.94	0.72	3.88	2.20	1.68			
1979	0-15	1.13	3.44	0.00	3.44	5.91	0.00	5.91	10.53	0.21	10.31
	15-30	1.17	2.60	0.12	2.48	4.62	0.21	4.41			
1980	0-15	1.22	3.79	0.30	3.49	7.04	0.56	6.48	10.92	0.56	10.36
	15-30	1.32	1.94	0.00	1.94	3.88	0.00	3.88			
1981	0-15	1.25	2.93	0.00	2.93	5.57	0.00	5.57	9.94	0.00	9.94
	15-30	1.21	2.37	0.00	2.37	4.37	0.00	4.37			
1982	0-15	1.21	2.96	0.77	2.19	5.46	1.42	4.04	10.44	4.39	6.05
	15-30	1.36	2.40	1.43	0.97	4.98	2.97	2.01			
1983	0-15	1.36	1.80	0.76	1.04	3.71	1.57	2.15	7.16	2.98	4.19
	15-30	1.60	1.42	0.58	0.84	3.45	1.41	2.04			
1984	0-15	1.16	2.50	0.00	2.50	4.41	0.00	4.41	7.77	0.00	7.77
	15-30	1.32	1.68	0.00	1.68	3.36	0.00	3.36			
1985	0-15	1.28	2.34	0.00	2.34	4.55	0.00	4.55	8.73	0.00	8.73
	15-30	1.36	2.02	0.00	2.02	4.18	0.00	4.18			
1986	0-15	1.08	3.41	0.19	3.22	5.61	0.31	5.30	11.54	3.26	8.29
	15-30	1.29	3.02	1.50	1.52	5.93	2.94	2.98			
1987	0-15	0.90	4.32	0.00	4.32	5.94	0.00	5.94	11.70	0.00	11.70
	15-30	1.16	3.27	0.00	3.27	5.77	0.00	5.77			
1988	0-15	1.13	3.15	0.00	3.15	5.41	0.00	5.41	9.26	0.00	9.26
	15-30	1.35	1.88	0.00	1.88	3.85	0.00	3.85			

Table 45. (continued)

Sample			C Concentration			C Mass					
Number	Depth	B.D.	TC	IC	OC	TC	IC	OC	Sum TC	Sum IC	Sum OC
	cm	g cm ⁻³	-----Percent-----			-----kg m ⁻² -----					
1989	0-15	1.01	3.92	0.00	3.92	6.04	0.00	6.04	10.72	0.00	10.72
	15-30	1.27	2.43	0.00	2.43	4.68	0.00	4.68			
1990	0-15	1.22	2.68	0.00	2.68	4.97	0.00	4.97	8.54	0.00	8.54
	15-30	1.35	1.74	0.00	1.74	3.57	0.00	3.57			