



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Montana Agricultural
Experiment Station

Soil Survey of Rosebud County Area and Part of Big Horn County, Montana Part II

How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

On the **general soil map**, which is the color map preceding the detailed soil maps, the survey area is divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your general area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** in Part I of this survey for a general description of the soils in your area.

The **detailed soil maps** follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** in Part I of this survey, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

A **State Soil Geographic Data Base (STATSGO)** is available for this survey area. This data base consists of a soils map at a scale of 1 to 250,000 and descriptions of groups of associated soils. It replaces the general soil map published in older soil surveys. The map and the data base can be used for multicounty planning, and map output can be tailored for a specific use. More information about the State Soil Geographic Data Base for this survey area, or for any portion of Montana, is available at the local office of the Natural Resources Conservation Service.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Natural Resources Conservation Service and the Montana Agricultural Experiment Station. It is part of the technical assistance furnished to the Rosebud Conservation District, the Lower Musselshell Conservation District, the Big Horn Conservation District, and the United States Department of the Interior, Bureau of Indian Affairs. Financial assistance was provided by the United States Department of the Interior, Bureau of Land Management and the Bureau of Indian Affairs, and the Rosebud County Commissioners.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Detailed Soil Map Unit Legend

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- 6—Antwerp silty clay loam, 0 to 4 percent slopes
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- 8—Armells-Delpoint-Cabbart complex, 25 to 70 percent slopes
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Soil Survey of Rosebud County Area and Part of Big Horn County, Montana

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Interpretive ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. No unusual

modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The classification and extent of the soils in this survey area are shown in the tables "Classification of the Soils" and "Acreage and Proportionate Extent of the Soils," which are at the end of this section.

CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Abor-----	Fine, montmorillonitic, frigid Udorthentic Chromusterts
Absher-----	Fine, montmorillonitic Borollic Natrargids
Alona-----	Fine-silty, mixed Borollic Camborthids
Antwerp-----	Fine-silty, mixed (calcareous), frigid Ustic Torriorthents
Armells-----	Loamy-skeletal, mixed (calcareous), frigid Ustic Torriorthents
Assinniboine-----	Fine-loamy, mixed Aridic Argiborolls
Barvon-----	Fine-loamy, mixed Entic Haploborolls
Belfield-----	Fine, montmorillonitic Glossic Natriborolls
Birney-----	Loamy-skeletal, mixed Borollic Camborthids
Bitton-----	Loamy-skeletal, mixed Typic Haploborolls
Blackhall-----	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Bonfri-----	Fine-loamy, mixed Borollic Haplargids
Borollic Camborthids-----	Borollic Camborthids
Brunelda-----	Fine, montmorillonitic, frigid Cambic Gypsiorthids
Bryant-----	Fine-silty, mixed Typic Haploborolls
Bullock-----	Fine-loamy, mixed Borollic Natrargids
Busby-----	Coarse-loamy, mixed Borollic Camborthids
Cabba-----	Loamy, mixed (calcareous), frigid, shallow Typic Ustorthents
Cabbart-----	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Cambeth-----	Fine-silty, mixed Borollic Camborthids
Canburn-----	Fine-loamy, mixed (calcareous), frigid Cumulic Haplaquolls
Castner-----	Loamy-skeletal, mixed Lithic Haploborolls
Chinook-----	Coarse-loamy, mixed Aridic Haploborolls
Coers-----	Fine-loamy, mixed Borollic Camborthids
Creed-----	Fine, montmorillonitic Borollic Natrargids
Davidell-----	Fine-silty, mixed Borollic Haplargids
Degrad-----	Fine-loamy over sandy or sandy-skeletal, mixed Aridic Argiborolls
Delpoint-----	Fine-loamy, mixed Borollic Camborthids
Doney-----	Fine-loamy, mixed, frigid Typic Ustochrepts
Evanston-----	Fine-loamy, mixed Aridic Argiborolls
Fergus variant-----	Fine-silty, mixed Typic Argiborolls
Floweree-----	Fine-silty, mixed Aridic Haploborolls
Fluventic Haploborolls-----	Fluventic Haploborolls
Forelle-----	Fine-loamy, mixed Borollic Haplargids
Galbreth-----	Loamy, mixed, shallow Borollic Camborthids
Gerdrum-----	Fine, montmorillonitic Borollic Natrargids
Glendive-----	Coarse-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Hanly-----	Sandy, mixed, frigid Ustic Torrifluvents
Harlem-----	Fine, montmorillonitic (calcareous), frigid Ustic Torrifluvents
Havre-----	Fine-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Ivanell-----	Fine-silty, mixed Borollic Haplargids
Kirby-----	Loamy-skeletal over fragmental, mixed (calcareous), frigid Ustic Torriorthents
Kobar-----	Fine, montmorillonitic Borollic Camborthids
Kremlin-----	Fine-loamy, mixed Aridic Haploborolls
Lamedeer-----	Loamy-skeletal, mixed, frigid Udic Ustochrepts
Lihen-----	Sandy, mixed Entic Haploborolls
Lonna-----	Fine-silty, mixed Borollic Camborthids
Louscot-----	Fine-silty, mixed, acid, frigid Ustic Torriorthents
Macar-----	Fine-loamy, mixed, frigid Typic Ustochrepts
Marmarth-----	Fine-loamy, mixed Aridic Argiborolls
Marvan-----	Fine, montmorillonitic, frigid Udorthentic Chromusterts
Neldore-----	Clayey, montmorillonitic, nonacid, frigid, shallow Ustic Torriorthents
Niler-----	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Nobe-----	Fine, montmorillonitic (calcareous), frigid Ustic Torriorthents
Orinoco-----	Fine, montmorillonitic (calcareous), frigid Ustic Torriorthents
Rahworth-----	Fine-silty, mixed Borollic Camborthids
Rallod-----	Clayey, montmorillonitic, shallow Borollic Natrargids
Redcreek-----	Loamy, mixed (calcareous), frigid Lithic Ustic Torriorthents
Ringling-----	Loamy-skeletal over fragmental, mixed Typic Haploborolls
Rominell-----	Fine-loamy, mixed Borollic Natrargids
Sagedale-----	Fine, montmorillonitic, frigid Typic Ustochrepts
Savage-----	Fine, montmorillonitic Typic Argiborolls
Shambo-----	Fine-loamy, mixed Typic Haploborolls
Spang-----	Coarse-loamy, mixed Borollic Camborthids

CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Spinekop-----	Fine-loamy, mixed Borollic Camborthids
Straw-----	Fine-loamy, mixed Cumulic Haploborolls
Sumatra-----	Fine-silty, mixed, frigid Ustic Torriorthents
Tinsley-----	Sandy-skeletal, mixed, frigid Typic Ustorthents
Twilight-----	Coarse-loamy, mixed Borollic Camborthids
Twin Creek-----	Fine-loamy, mixed Typic Haploborolls
Typic Fluvaquents-----	Typic Fluvaquents
Typic Haplaquepts-----	Typic Haplaquepts
Ustic Torrifluvents-----	Typic Torrifluvents
Ustic Torriorthents-----	Typic Torriorthents
Vaeda-----	Fine, montmorillonitic, nonacid, frigid Ustic Torriorthents
Vanda-----	Fine, montmorillonitic (calcareous), frigid Ustic Torriorthents
Vanstel-----	Fine-silty, mixed Borollic Haplargids
Volborg-----	Clayey, montmorillonitic, acid, frigid, shallow Ustic Torriorthents
Wayden-----	Clayey, montmorillonitic (calcareous), frigid, shallow Typic Ustorthents
Weingart-----	Fine, montmorillonitic Borollic Natrargids
Yamac-----	Fine-loamy, mixed Borollic Camborthids
Yawdim-----	Clayey, montmorillonitic (calcareous), frigid, shallow Ustic Torriorthents
Yetull-----	Mixed, frigid Ustic Torripsamments
Zatoville-----	Fine, montmorillonitic, frigid Cambic Gypsiorthids

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Big Horn County	Rosebud County	Total--	
				Area	Extent
		Acres	Acres	Acres	Pct
1	Abor silty clay, 2 to 8 percent slopes-----	0	5,812	5,812	0.2
2	Abor silty clay, 8 to 15 percent slopes-----	0	1,579	1,579	*
3	Abor-Marvan silty clays, 2 to 8 percent slopes-----	0	22,158	22,158	0.7
4	Abor-Neldore silty clays, 4 to 15 percent slopes-----	0	31,068	31,068	0.9
5	Absher-Nobe complex, 0 to 4 percent slopes-----	0	5,661	5,661	0.2
6	Antwerp silty clay loam, 0 to 4 percent slopes-----	0	9,171	9,171	0.3
7	Armells-Cabbart complex, 25 to 70 percent slopes-----	276	13,937	14,213	0.4
8	Armells-Delpoint-Cabbart complex, 25 to 70 percent slopes-----	992	32,434	33,426	1.0
9	Armells-Kirby complex, 25 to 70 percent slopes-----	171	5,620	5,791	0.2
10	Armells-Kirby-Cabbart complex, 25 to 70 percent slopes-----	2,513	28,335	30,848	0.9
11	Assinniboine fine sandy loam, 2 to 8 percent slopes-----	0	1,940	1,940	0.1
12	Badland-----	0	22,872	22,872	0.7
13	Barvon-Lamedeer-Lamedeer, dry, complex, 35 to 70 percent slopes----	4,930	11,238	16,168	0.5
14	Barvon, dry-Doney-Cabba complex, 15 to 70 percent slopes-----	5,937	10,793	16,730	0.5
15	Belfield clay loam, 0 to 4 percent slopes-----	1,150	141	1,291	*
16	Birney channery loam, 15 to 25 percent slopes-----	32	5,011	5,043	0.2
17	Birney-Cabbart complex, moist, 25 to 70 percent slopes-----	0	6,380	6,380	0.2
18	Birney-Cooers-Kirby complex, 2 to 15 percent slopes-----	400	9,468	9,868	0.3
19	Birney-Kirby channery loams, 4 to 25 percent slopes-----	53	18,786	18,839	0.6
20	Birney-Kirby-Cabbart complex, 15 to 25 percent slopes-----	311	6,772	7,083	0.2
21	Birney, moist-Armells-Cabbart complex, 25 to 70 percent slopes-----	4,984	48,942	53,926	1.6
22	Birney, moist-Birney-Kirby channery loams, 15 to 25 percent slopes----	1,264	7,734	8,998	0.3
23	Bitton-Doney-Ringling, dry, complex, 15 to 25 percent slopes-----	1,483	1,948	3,431	0.1
24	Bitton-Doney-Ringling, dry, complex, 25 to 70 percent slopes-----	360	3,429	3,789	0.1
25	Bitton-Ringling, dry, channery loams, 8 to 25 percent slopes-----	252	3,407	3,659	0.1
26	Bitton-Shambo complex, 4 to 15 percent slopes-----	158	1,872	2,030	0.1
27	Bitton-Twin Creek complex, 2 to 8 percent slopes-----	288	3,989	4,277	0.1
28	Bitton-Twin Creek-Ringling, dry, complex, 2 to 15 percent slopes----	2,187	11,215	13,402	0.4
29	Bitton, moist-Doney-Cabba complex, 15 to 70 percent slopes-----	1,325	2,635	3,960	0.1
30	Bitton, moist-Lamedeer, dry-Ringling, dry, channery loams, 15 to 25 percent slopes-----	1,323	5,658	6,981	0.2
31	Bitton, moist-Lamedeer, dry-Ringling, dry, channery loams, 25 to 70 percent slopes-----	20,560	26,281	46,841	1.4
32	Bitton, moist-Ringling, dry-Cabba complex, 25 to 70 percent slopes----	5,919	9,016	14,935	0.5
33	Bonfri-Bullock, eroded-Cabbart complex, 4 to 25 percent slopes-----	0	10,252	10,252	0.3
34	Bonfri-Galbreth fine sandy loams, 1 to 8 percent slopes-----	0	12,117	12,117	0.4
35	Bonfri-Marmarth-Bullock fine sandy loams, 1 to 4 percent slopes----	0	8,910	8,910	0.3
36	Borollic Camborthids-Ustic Torrifluvents complex, 0 to 8 percent slopes-----	312	49,300	49,612	1.5
37	Brunelda silty clay, 2 to 8 percent slopes-----	0	10,207	10,207	0.3
38	Brunelda-Gerdrum complex, 1 to 8 percent slopes-----	0	3,937	3,937	0.1
39	Brunelda-Vaeda-Nobe complex, 1 to 8 percent slopes-----	0	4,319	4,319	0.1
40	Bryant silt loam, 2 to 8 percent slopes-----	11,307	4,679	15,986	0.5
41	Bryant silt loam, 8 to 15 percent slopes-----	2,218	1,465	3,683	0.1
42	Bullock, eroded-Rallod, warm, clay loams, 2 to 15 percent slopes----	0	14,189	14,189	0.4
43	Bullock, eroded-Rominell complex, 2 to 8 percent slopes-----	0	25,341	25,341	0.8
44	Busby fine sandy loam, 2 to 8 percent slopes-----	72	12,719	12,791	0.4
45	Busby fine sandy loam, 8 to 15 percent slopes-----	724	8,966	9,690	0.3
46	Busby loam, 0 to 2 percent slopes-----	0	965	965	*
47	Busby-Rock outcrop complex, 8 to 15 percent slopes-----	989	9,212	10,201	0.3
48	Busby-Twilight-Blackhall, warm, fine sandy loams, 2 to 8 percent slopes-----	125	12,459	12,584	0.4
49	Busby-Twilight-Blackhall, warm, fine sandy loams, 8 to 25 percent slopes-----	6,227	51,417	57,644	1.7
50	Busby-Yetull complex, 2 to 8 percent slopes-----	0	3,625	3,625	0.1
51	Busby-Yetull complex, 8 to 25 percent slopes-----	946	4,906	5,852	0.2
52	Cabba-Wayden-Rock outcrop complex, 25 to 70 percent slopes-----	1,053	827	1,880	0.1
53	Cabba-Wayden-Sagedale complex, 25 to 70 percent slopes-----	199	3,495	3,694	0.1
54	Cabbart-Armells-Rock outcrop complex, 25 to 70 percent slopes-----	847	5,951	6,798	0.2
55	Cabbart-Yawdim-Rock outcrop complex, 15 to 70 percent slopes-----	2,331	87,434	89,765	2.7
56	Cambeth silt loam, 2 to 8 percent slopes-----	274	31,079	31,353	0.9
57	Cambeth silt loam, 8 to 15 percent slopes-----	115	5,385	5,500	0.2

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Big Horn County	Rosebud County	Total--	
				Area	Extent
		Acres	Acres	Acres	Pct
58	Cambeth-Cabbart silt loams, 4 to 15 percent slopes-----	247	63,102	63,349	1.9
59	Cambeth-Cabbart complex, dissected, 8 to 25 percent slopes-----	0	49,896	49,896	1.5
60	Cambeth-Niler complex, 4 to 15 percent slopes-----	0	5,938	5,938	0.2
61	Castner-Shambo complex, 2 to 15 percent slopes-----	633	1,194	1,827	0.1
62	Chinook fine sandy loam, 2 to 8 percent slopes-----	636	3,466	4,102	0.1
63	Chinook fine sandy loam, alkali substratum, 2 to 8 percent slopes--	0	4,073	4,073	0.1
64	Cooers loam, 2 to 8 percent slopes-----	0	3,474	3,474	0.1
65	Cooers-Birney complex, 2 to 8 percent slopes-----	248	4,527	4,775	0.1
66	Cooers-Yamac loams, 2 to 8 percent slopes-----	94	4,360	4,454	0.1
67	Creed loam, sandy substratum, 0 to 2 percent slopes-----	0	3,258	3,258	0.1
68	Davidell loam, 2 to 4 percent slopes-----	0	34,301	34,301	1.0
69	Davidell silty clay loam, 0 to 2 percent slopes-----	0	10,901	10,901	0.3
70	Davidell-Antwerp silty clay loams, 0 to 4 percent slopes-----	0	18,262	18,262	0.6
71	Degradand sandy loam, 0 to 4 percent slopes-----	0	885	885	*
72	Delpoint-Cabbart loams, 25 to 70 percent slopes-----	1,143	20,280	21,423	0.6
73	Delpoint-Cabbart-Yamac loams, 8 to 25 percent slopes-----	4,419	201,467	205,886	6.2
74	Delpoint-Cabbart-Yawdim complex, 25 to 70 percent slopes-----	603	69,977	70,580	2.1
75	Delpoint-Galbreth complex, 2 to 8 percent slopes-----	0	9,075	9,075	0.3
76	Delpoint, moist-Delpoint-Cabbart loams, 15 to 25 percent slopes---	2,020	23,727	25,747	0.8
77	Delpoint, moist-Delpoint-Cabbart loams, 25 to 70 percent slopes---	0	7,733	7,733	0.2
78	Doney-Bitton-Cabba complex, 15 to 35 percent slopes-----	3,182	7,847	11,029	0.3
79	Evanston loam, 0 to 4 percent slopes-----	0	9,096	9,096	0.3
80	Fergus variant-Twin Creek complex, 2 to 8 percent slopes-----	18	1,385	1,403	*
81	Floweree silt loam, 0 to 2 percent slopes-----	534	1,665	2,199	0.1
82	Floweree silt loam, 2 to 8 percent slopes-----	437	5,730	6,167	0.2
83	Floweree-Vanstel silt loams, 0 to 4 percent slopes-----	0	1,931	1,931	0.1
84	Fluventic Haploborolls-Typic Fluvaquents complex, 0 to 4 percent slopes-----	822	692	1,514	*
85	Forelle loam, warm, 2 to 8 percent slopes-----	0	11,997	11,997	0.4
86	Forelle, warm-Gerdrum complex, 2 to 8 percent slopes-----	0	14,983	14,983	0.5
87	Galbreth sandy clay loam, 1 to 4 percent slopes-----	0	3,731	3,731	0.1
88	Gerdrum clay loam, 0 to 2 percent slopes-----	0	8,427	8,427	0.3
89	Gerdrum clay loam, 2 to 8 percent slopes-----	16	25,602	25,618	0.8
90	Gerdrum-Kobar silty clay loams, 0 to 2 percent slopes-----	0	2,232	2,232	0.1
91	Gerdrum-Kobar silty clay loams, 2 to 8 percent slopes-----	0	9,438	9,438	0.3
92	Gerdrum-Marvan silty clays, 2 to 8 percent slopes-----	0	7,059	7,059	0.2
93	Gerdrum-Vanda silty clays, 0 to 4 percent slopes-----	0	25,733	25,733	0.8
94	Gerdrum, shale substratum-Volborg, saline, complex, 1 to 4 percent slopes-----	0	3,137	3,137	0.1
95	Glendive loam, 0 to 2 percent slopes, occasionally flooded-----	0	6,230	6,230	0.2
96	Hanly-Glendive loams, 0 to 2 percent slopes, occasionally flooded--	0	2,117	2,117	0.1
97	Harlem silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	0	3,479	3,479	0.1
98	Harlem silty clay, 0 to 2 percent slopes, occasionally flooded----	15	4,937	4,952	0.1
99	Havre loam, 0 to 2 percent slopes-----	0	7,839	7,839	0.2
100	Havre loam, 0 to 2 percent slopes, occasionally flooded-----	4,377	21,885	26,262	0.8
101	Havre silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	0	8,261	8,261	0.2
102	Havre silty clay loam, moderately wet, 0 to 2 percent slopes, occasionally flooded-----	0	3,273	3,273	0.1
103	Havre silty clay loam, saline, 0 to 2 percent slopes, frequently flooded-----	0	3,927	3,927	0.1
104	Havre, Harlem, and Glendive soils, channeled, 0 to 2 percent slopes-----	1,397	46,406	47,803	1.4
105	Ivanell clay loam, 2 to 8 percent slopes-----	0	6,013	6,013	0.2
106	Ivanell-Davidell complex, 2 to 8 percent slopes-----	0	22,450	22,450	0.7
107	Ivanell-Niler silty clay loams, 4 to 15 percent slopes-----	0	22,832	22,832	0.7
108	Kirby-Cabbart-Rock outcrop complex, 25 to 70 percent slopes-----	3,733	19,556	23,289	0.7
109	Kobar silty clay loam, 0 to 2 percent slopes-----	321	12,961	13,282	0.4
110	Kobar silty clay loam, 2 to 8 percent slopes-----	408	29,773	30,181	0.9
111	Kobar silty clay loam, 8 to 15 percent slopes-----	333	8,514	8,847	0.3
112	Kobar silty clay loam, gullied, 2 to 15 percent slopes-----	0	13,209	13,209	0.4

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Big Horn County	Rosebud County	Total--	
				Area	Extent
				Acres	Pct
113	Kobar silty clay, 0 to 2 percent slopes-----	0	4,998	4,998	0.2
114	Kobar silty clay, moderately wet, 0 to 2 percent slopes-----	0	3,409	3,409	0.1
115	Kobar-Cabbart-Yawdim complex, 8 to 25 percent slopes-----	544	26,730	27,274	0.8
116	Kremlin loam, 0 to 2 percent slopes-----	2,166	1,744	3,910	0.1
117	Kremlin loam, 2 to 8 percent slopes-----	1,272	7,123	8,395	0.3
118	Lamedeer-Lamedeer, dry-Ringling channery loams, 35 to 70 percent slopes-----	608	4,970	5,578	0.2
119	Lamedeer-Twin Creek, moist-Ringling complex, 4 to 15 percent slopes-----	0	5,244	5,244	0.2
120	Lamedeer-Twin Creek, moist-Ringling complex, 15 to 35 percent slopes-----	0	9,754	9,754	0.3
121	Lamedeer, dry-Bitton, moist-Ringling, dry, channery loams, 25 to 70 percent slopes-----	7,948	20,531	28,479	0.9
122	Lihen sandy loam, 15 to 35 percent slopes-----	0	1,589	1,589	*
123	Lonna silt loam, 0 to 2 percent slopes-----	51	7,461	7,512	0.2
124	Lonna silt loam, 2 to 8 percent slopes-----	1,066	33,616	34,682	1.0
125	Lonna silt loam, 8 to 15 percent slopes-----	90	7,401	7,491	0.2
126	Lonna silty clay loam, 0 to 2 percent slopes-----	0	3,932	3,932	0.1
127	Lonna silty clay loam, 2 to 8 percent slopes-----	0	11,011	11,011	0.3
128	Lonna-Alona silt loams, 0 to 2 percent slopes-----	0	5,134	5,134	0.2
129	Lonna-Alona silt loams, 2 to 8 percent slopes-----	0	8,910	8,910	0.3
130	Lonna-Antwerp silty clay loams, 0 to 2 percent slopes-----	0	3,148	3,148	0.1
131	Lonna-Antwerp silty clay loams, 2 to 8 percent slopes-----	0	8,130	8,130	0.2
132	Lonna-Cabbart-Yawdim complex, 8 to 25 percent slopes-----	961	20,579	21,540	0.6
133	Lonna-Cambeth silt loams, 2 to 8 percent slopes-----	0	59,843	59,843	1.8
134	Louscot silt loam, 0 to 4 percent slopes-----	0	16,859	16,859	0.5
135	Macar-Doney-Rock outcrop complex, 15 to 45 percent slopes-----	11,485	1,996	13,481	0.4
136	Marmarth fine sandy loam, 2 to 8 percent slopes-----	0	4,515	4,515	0.1
137	Marmarth-Galbreth complex, 2 to 15 percent slopes-----	0	1,845	1,845	0.1
138	Marvan silty clay, 0 to 2 percent slopes-----	0	20,243	20,243	0.6
139	Marvan silty clay, 2 to 8 percent slopes-----	0	22,133	22,133	0.7
140	Marvan silty clay, saline, 2 to 8 percent slopes-----	0	6,491	6,491	0.2
141	Neldore silty clay, 4 to 25 percent slopes-----	0	56,500	56,500	1.7
142	Neldore-Abor silty clays, 8 to 25 percent slopes-----	0	33,750	33,750	1.0
143	Neldore-Abor silty clays, 25 to 60 percent slopes-----	0	8,472	8,472	0.3
144	Neldore-Abor-Rock outcrop complex, 8 to 35 percent slopes-----	0	12,072	12,072	0.4
145	Neldore-Neldore, saline, silty clays, 4 to 15 percent slopes-----	0	21,449	21,449	0.6
146	Neldore-Rock outcrop complex, 15 to 60 percent slopes-----	0	15,350	15,350	0.5
147	Neldore-Ustic Torriorthents, strongly saline-Neldore, saline, complex, 2 to 25 percent slopes-----	0	39,173	39,173	1.2
148	Neldore-Volborg silty clays, 4 to 25 percent slopes-----	0	20,388	20,388	0.6
149	Neldore-Yawdim silty clays, 8 to 45 percent slopes-----	0	8,186	8,186	0.2
150	Niler silty clay loam, 4 to 35 percent slopes-----	0	13,762	13,762	0.4
151	Orinoco-Yawdim silty clay loams, 2 to 8 percent slopes-----	0	6,315	6,315	0.2
152	Rahworth loam, 2 to 8 percent slopes-----	0	4,066	4,066	0.1
153	Rahworth-Davidell-Sumatra complex, 2 to 8 percent slopes-----	0	12,087	12,087	0.4
154	Riverwash-----	0	2,011	2,011	0.1
155	Rock outcrop-----	0	3,057	3,057	0.1
156	Rominell fine sandy loam, 1 to 4 percent slopes, eroded-----	0	9,835	9,835	0.3
157	Sagedale silty clay loam, 4 to 15 percent slopes-----	431	331	762	*
158	Sagedale-Cabba-Wayden complex, 8 to 25 percent slopes-----	1,331	4,997	6,328	0.2
159	Savage silty clay loam, 0 to 2 percent slopes-----	347	0	347	*
160	Savage silty clay loam, 2 to 8 percent slopes-----	977	1,969	2,946	0.1
161	Shambo loam, 0 to 2 percent slopes-----	373	590	963	*
162	Shambo loam, 2 to 8 percent slopes-----	4,834	4,119	8,953	0.3
163	Shambo loam, 8 to 15 percent slopes-----	1,914	1,550	3,464	0.1
164	Shambo-Bitton-Cabba complex, 8 to 15 percent slopes-----	44	1,650	1,694	0.1
165	Shambo-Doney loams, 4 to 15 percent slopes-----	7,570	2,318	9,888	0.3
166	Shambo-Doney-Cabba loams, 8 to 35 percent slopes-----	17,755	5,631	23,386	0.7
167	Shambo-Doney-Sagedale complex, 8 to 35 percent slopes-----	4,307	772	5,079	0.2
168	Spang sandy loam, 2 to 8 percent slopes-----	0	710	710	*
169	Spang-Birney complex, 8 to 15 percent slopes-----	0	3,283	3,283	0.1
170	Spang, moist-Birney, moist-Birney complex, 8 to 25 percent slopes--	0	3,298	3,298	0.1

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Big Horn County	Rosebud County	Total--	
				Area	Extent
		Acres	Acres	Acres	Pct
171	Spinekop silty clay loam, 0 to 2 percent slopes-----	0	6,597	6,597	0.2
172	Straw-Canburn, warm, loams, 0 to 2 percent slopes-----	1,226	693	1,919	0.1
173	Sumatra silty clay loam, 4 to 25 percent slopes-----	0	39,384	39,384	1.2
174	Sumatra-Rock outcrop complex, 4 to 35 percent slopes-----	0	11,494	11,494	0.3
175	Tinsley very gravelly sandy loam, 15 to 35 percent slopes-----	0	4,188	4,188	0.1
176	Tinsley-Armells-Yamac complex, 8 to 35 percent slopes-----	0	13,369	13,369	0.4
177	Tinsley-Cabbart complex, 15 to 45 percent slopes-----	0	6,838	6,838	0.2
178	Twilight-Blackhall, warm, fine sandy loams, 15 to 70 percent slopes-----	0	15,345	15,345	0.5
179	Twin Creek-Shambo loams, 2 to 8 percent slopes-----	625	1,619	2,244	0.1
180	Typic Haplaquepts, 0 to 2 percent slopes-----	38	495	533	*
181	Ustic Torrifluvents, 0 to 2 percent slopes, frequently flooded-----	0	4,244	4,244	0.1
182	Ustic Torrifluvents, saline, 0 to 2 percent slopes, frequently flooded-----	0	8,382	8,382	0.3
183	Ustic Torriorthents, 15 to 35 percent slopes-----	4,568	19,294	23,862	0.7
184	Ustic Torriorthents, loamy, 4 to 15 percent slopes-----	0	3,454	3,454	0.1
185	Ustic Torriorthents, moderately saline, 0 to 70 percent slopes-----	0	38,806	38,806	1.2
186	Ustic Torriorthents, strongly saline, 0 to 8 percent slopes-----	0	10,438	10,438	0.3
187	Ustic Torriorthents, clayey-Volborg, saline, complex, 1 to 8 percent slopes-----	0	1,760	1,760	0.1
188	Vaeda silty clay, 0 to 4 percent slopes-----	0	17,191	17,191	0.5
189	Vanda silty clay, 0 to 4 percent slopes-----	0	14,687	14,687	0.4
190	Vanstel loam, 2 to 8 percent slopes-----	0	33,240	33,240	1.0
191	Volborg silty clay, 8 to 35 percent slopes-----	0	17,035	17,035	0.5
192	Volborg silty clay, saline, 1 to 4 percent slopes-----	0	26,940	26,940	0.8
193	Volborg, saline-Rock outcrop complex, 4 to 45 percent slopes-----	0	13,651	13,651	0.4
194	Weingart clay, 2 to 8 percent slopes-----	0	3,193	3,193	0.1
195	Weingart-Neldore complex, 4 to 25 percent slopes-----	0	4,656	4,656	0.1
196	Weingart-Niler-Rock outcrop complex, dissected, 2 to 25 percent slopes-----	0	11,861	11,861	0.4
197	Yamac loam, 0 to 2 percent slopes-----	1,184	14,643	15,827	0.5
198	Yamac loam, 2 to 8 percent slopes-----	5,089	78,247	83,336	2.5
199	Yamac loam, 8 to 15 percent slopes-----	3,513	15,986	19,499	0.6
200	Yamac-Abor complex, 8 to 25 percent slopes-----	0	6,526	6,526	0.2
201	Yamac-Birney complex, 2 to 8 percent slopes-----	135	5,953	6,088	0.2
202	Yamac-Birney complex, 8 to 15 percent slopes-----	59	10,560	10,619	0.3
203	Yamac-Birney complex, 15 to 25 percent slopes-----	407	6,072	6,479	0.2
204	Yamac-Birney-Cabbart complex, 15 to 25 percent slopes-----	2,521	25,260	27,781	0.8
205	Yamac-Busby complex, 2 to 8 percent slopes-----	39	19,344	19,383	0.6
206	Yamac-Busby complex, 8 to 15 percent slopes-----	267	13,000	13,267	0.4
207	Yamac-Cabbart loams, 8 to 25 percent slopes-----	5,047	44,319	49,366	1.5
208	Yamac-Delpoint loams, 4 to 15 percent slopes-----	961	67,911	68,872	2.1
209	Yamac-Redcreek loams, 2 to 15 percent slopes-----	196	7,476	7,672	0.2
210	Yamac-Rominell, eroded, complex, 2 to 8 percent slopes-----	0	3,328	3,328	0.1
211	Yawdim silty clay loam, 2 to 8 percent slopes-----	0	3,670	3,670	0.1
212	Yawdim-Cabbart-Kobar complex, 15 to 70 percent slopes-----	0	6,119	6,119	0.2
213	Yawdim-Orinoco silty clay loams, 2 to 8 percent slopes-----	0	7,250	7,250	0.2
214	Zatoville silty clay loam, 1 to 4 percent slopes-----	0	5,757	5,757	0.2
215	Zatoville silty clay loam, loamy substratum, 0 to 2 percent slopes-----	0	1,539	1,539	*
216	Zatoville silty clay, moderately wet, 0 to 2 percent slopes-----	0	1,262	1,262	*
217	Zatoville-Orinoco silty clay loams, 2 to 8 percent slopes-----	0	10,237	10,237	0.3
DA	Denied access-----	0	111,664	111,664	3.4
W	Water-----	8	9,692	9,700	0.3
	Total-----	202,200	3,114,400	3,316,600	100.0

* Less than 0.05 percent.

Agronomy

General management needed for crops and for hay and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

About 6 percent of the survey area is used for crops. About 170,000 acres is used as nonirrigated cropland, and about 30,000 acres, mainly along the Yellowstone and Tongue Rivers, is used as irrigated cropland. Small acreages of irrigated crops are also along the Musselshell River.

Winter wheat is the principal nonirrigated crop in the survey area (fig. 4), but spring wheat, barley, and alfalfa hay are also important. The main management concerns are conserving moisture, controlling soil blowing, controlling water erosion, and maintaining soil fertility.

Alfalfa hay and corn for silage are the principal irrigated crops, but irrigated grass-legume hay, spring wheat, sugar beets, dry pinto beans, corn for grain, and pasture are also important. A common crop rotation system includes 3 to 5 years of growing alfalfa followed by 1 year of growing corn and then 1 year of growing small grain.

The main management concerns for irrigated cropland are poor water management, uneven fields, seepage from water conveyance systems, salinity, and soil blowing. The maintenance of soil fertility is also a management concern. Proper management of irrigation water includes properly timing the application of water and controlling the length of the run, border width, field slope, and application rate. Most of the soils in the survey area require leveling for the effective distribution of water by all irrigation systems except for sprinkler irrigation systems.

Planners of management systems for individual fields or farms should consider obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in the table "Main Cropland Limitations and Hazards." The main concerns in managing nonirrigated cropland are conserving moisture, controlling soil blowing and water erosion, and maintaining soil fertility.

Conserving moisture primarily involves reducing the evaporation and runoff rates and increasing the water infiltration rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Generally, a combination of several practices is needed to control *soil blowing* and *water erosion*. Conservation tillage, stripcropping, field windbreaks, tall grass barriers, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Measures that are effective in maintaining *soil fertility* include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some limitations and hazards cannot be easily overcome. These are *channels*, *flooding*, *depth to rock*, *ponding*, *gullies*, and *lack of timely precipitation*.

Additional limitations and hazards are as follows:

Areas of rock outcrop and slick spots.—Farming around these areas may be feasible. Subsoiling or deep ripping soft sedimentary beds increases the effective rooting depth and the rate of water infiltration.

Excessive permeability.—This limitation causes deep leaching of nutrients and pesticides. The capacity of the soil to retain moisture for plant use is poor.



Figure 4.—Harvesting winter wheat in an area of Kremlin loam, 0 to 2 percent slopes. This field includes alternating strips of crops and fallow.

Potential for ground-water pollution.—This is a hazard in soils that have excessive permeability, hard bedrock, or a water table within the profile.

Lime content, limited available water capacity, poor tilth, restricted permeability, and surface crusting.—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer in areas where the soils have a high content of lime.

Short frost-free season.—If the growing season is less than 90 days, short-season crops or grasses should be grown.

Surface coarse fragments.—This limitation causes

rapid wear of tillage equipment. It cannot be easily overcome.

Slope.—Where the slope is more than 8 percent, water erosion and soil blowing may be accelerated unless conservation farming practices are applied.

Surface stones.—Stones or boulders on the surface can hinder normal tillage unless they are removed.

Salt and sodium content.—In areas where this is a limitation, only salt- and sodium-tolerant crops should be grown.

On irrigated soils the main management concerns are *efficient water use, nutrient management, control of erosion, pest and weed control, and timely planting and harvesting* for a successful crop. An irrigation system that provides optimum control and distribution of water

at minimum cost is needed. Overirrigation wastes water, leaches plant nutrients, and causes erosion. Also, it can create drainage problems, raise the water table, and increase the salinity of the soil.

Following is an explanation of the criteria used to determine the limitations or hazards.

Areas of rock outcrop.—Rock outcrop is a named component of the map unit.

Areas of rubble land.—Rubble land is a named component of the map unit.

Areas of slick spots.—Slick spots are a named component of the map unit.

Channeled.—The word “channeled” is included in the name of the map unit.

Depth to rock.—Bedrock is within a depth of 40 inches.

Erosion by water.—The surface K factor multiplied by the upper slope limit is more than 2 (same as prime farmland criteria).

Excessive permeability.—The upper limit of the permeability range is 6 inches or more within the soil profile.

Flooding.—The component of the map unit is occasionally flooded or frequently flooded.

Gullied.—The word “gullied” is included in the name of the map unit.

Lack of timely precipitation.—The component of the map unit has a Xeric moisture regime. The amount of annual precipitation is no more than 14 inches.

Lime content.—The component is assigned to wind erodibility group 4L or has more than 5 percent lime in the upper 10 inches.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 5 inches or less.

Ponding.—Ponding duration is assigned to the component of the map unit.

Potential for ground-water pollution.—The soil has a water table within a depth of 4 feet or hard bedrock within the profile, or permeability is more than 6 inches per hour.

Poor tilth.—The component of the map unit has more than 35 percent clay in the surface layer.

Restricted permeability.—Permeability is 0.06 inches per hour or less.

Salt content.—The component of the map unit has electrical conductivity of more than 4 in the surface layer or more than 8 within a depth of 30 inches.

Short frost-free season.—The map unit has a growing season of less than 90 frost-free days.

Slope.—The upper slope range of the component of the map unit is more than 8 percent.

Sodium content.—The sodium adsorption ratio of the

component of the map unit is more than 13 within a depth of 30 inches.

Soil blowing.—The wind erodibility index multiplied by the selected high C factor for the survey area and then divided by the T factor is more than 8 for the component of the map unit.

Surface rock fragments.—The terms describing the texture of the surface layer include any rock fragment modifier except for gravelly or channery, and “surface stones” is not already indicated as a limitation.

Surface crusting.—The sodium adsorption ratio in the surface layer is 5 or more for any texture and 4 or more if the texture is silt, silt loam, loam, or very fine sandy loam.

Surface stones.—The terms describing the texture of the surface layer include any stony or bouldery modifier, or the soil is a stony or bouldery phase.

Water table.—The component of the map unit has a water table within a depth of 60 inches.

Crop Yield Estimates

The average yields per acre that can be expected of the principal crops under a high level of management are shown in the table “Land Capability and Yields per Acre of Crops and Pasture.” In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss. Yields for dryland crops are based on a crop-fallow system.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity

of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Pasture and Hayland Interpretations

Soils are assigned to pasture and hayland groups according to their suitability for the production of forage. The soils in each group are similar enough to be suited to the same species of grasses or legumes, have similar limitations and hazards, require similar management, and have similar productivity levels and other responses to management.

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Yield estimates are often provided in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in the table "Land Capability and Yields per Acre of Crops and Pasture."

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, as described in "Land

Capability Classification" (4), soils generally are grouped at three levels—capability class, subclass, and unit. These levels indicate the degree and kinds of limitations affecting mechanized farming systems that produce the more commonly grown field crops, such as corn, small grain, cotton, hay, and field-grown vegetables. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use.

If properly managed, soils in classes 1, 2, 3, and 4 are suitable for the mechanized production of commonly grown field crops and for pasture and woodland. The degree of the soil limitations affecting the production of cultivated crops increases progressively from class 1 to class 4. The limitations can affect levels of production and the risk of permanent soil deterioration caused by erosion and other factors.

Soils in classes 5, 6, and 7 are generally not suited to the mechanized production of commonly grown field crops without special management, but they are suitable for plants that provide a permanent cover, such as grasses and trees. The severity of the soil limitations affecting crops increases progressively from class 5 to class 7. The local office of the Cooperative Extension Service or the Natural Resources Conservation Service can provide guidance on the use of these soils as cropland.

Areas in class 8 are generally not suitable for crops, pasture, or woodland without a level of management that is impractical. These areas may have potential for other uses, such as recreational facilities and wildlife habitat.

Capability subclasses identify the dominant kind of limitation in the class. They are designated by adding a small letter, *E*, *W*, *S*, or *C*, to the class numeral, for example, 2E. The letter *E* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *W* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *S* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *C*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class 1 because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *W*, *S*, or *C* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use mainly to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the table "Land Capability and Yields per Acre of Crops and Pasture" at the end of this section.

Prime Farmland and Other Important Farmland

In this section, prime farmland and other important farmland are defined. The soils in the survey area that are considered prime farmland are listed in the table "Prime Farmland" at the end of this section.

Prime Farmland

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They either are used for food and fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils commonly receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable, and the level of acidity or alkalinity and the content of salts and sodium are acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and they are not frequently

flooded during the growing season or are protected from flooding. Slopes range mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland where these limitations are overcome by drainage measures, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information about the criteria for prime farmland can be obtained at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

To qualify as prime farmland, soils in this survey area must have a developed irrigation system and a dependable supply of suitable quality water. The soils also have less than 5 percent finely divided calcium carbonate.

About 20,000 acres of soils in the survey area are presently irrigated and meet all of the requirements for prime farmland. These soils are along the Yellowstone, Tongue, and Musselshell Rivers. They are used mainly for irrigated alfalfa or corn. If irrigated, another 69,955 acres of soils would meet the requirements for prime farmland. Many of these soils are in the Yellowstone, Tongue, and Musselshell River Valleys, in brushy areas along the rivers, and on some islands that are covered by brush. Some areas of these soils are also in sidestream valleys that have little or no water available for irrigation.

The map units in the survey area that meet the requirements for prime farmland are listed in the table "Prime Farmland." On the soils included in the table, measures that overcome limitations are needed. The need for these measures is indicated in parentheses after the map unit name. The location of each map unit is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described in the section "Soil Series and Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high-quality crop when treated and managed by acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, and vegetables.

Unique farmland is used for a specific high-value

food or fiber crop; has an adequate supply of available moisture for the specific crop because of stored moisture, precipitation, or irrigation; and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional Farmland of Statewide Importance

Some areas other than areas of prime and unique farmland are of statewide importance in the production of food, feed, fiber, forage, and oilseed crops. The criteria used in defining and delineating these areas are determined by the appropriate State agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some states additional farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

A list of this land has not been maintained for Montana and thus is not presently available.

Additional Farmland of Local Importance

This land consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

Erosion Factors

Soil erodibility (K) and soil-loss tolerance (T) factors are used in an equation that predicts the amount of soil lost through water erosion in areas of cropland. The procedure for predicting soil loss is useful in guiding the selection of soil and water conservation practices.

Soil Erodibility (K) Factor

The soil erodibility (K) factor indicates the susceptibility of a soil to sheet and rill erosion by water. The soil properties that influence erodibility are those that affect the infiltration rate, the movement of water through the soil, and the water storage capacity of the soil and those that allow the soil to resist dispersion,

splashing, abrasion, and the transporting forces of rainfall and runoff. The most important soil properties are the content of silt plus very fine sand, the content of sand coarser than very fine sand, the content of organic matter, soil structure, and permeability.

Fragment-Free Soil Erodibility (Kf) Factor

This is one of the factors used in the revised Universal Soil Loss Equation. It shows the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Soil-Loss Tolerance (T) Factor

The soil-loss tolerance (T) factor is an estimate of the maximum annual rate of soil erosion that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons of soil loss per acre per year. Ratings of 1 to 5 are used, depending on soil properties and prior erosion. The criteria used in assigning a T factor to a soil include maintenance of an adequate rooting depth for crop production, potential reduction of crop yields, maintenance of water-control structures affected by sedimentation, prevention of gulying, and the value of nutrients lost through erosion.

Wind Erodibility Groups

Wind erodibility is directly related to the percentage of dry, nonerodible surface soil aggregates larger than 0.84 millimeter in diameter. From this percentage, the wind erodibility index (I) factor is determined. This factor is an expression of the stability of the soil aggregates, or the extent to which they are broken down by tillage and the abrasion caused by windblown soil particles. Soils are assigned to wind erodibility groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 millimeter.

Additional information about wind erodibility groups and K, Kf, T, and I factors can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops

from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not originally support trees. Knowledge of how trees perform on such land can be gained only by observing and recording the performance of trees that have been planted and have survived. Many popular windbreak species are not indigenous to the areas in which they are planted.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters, a tree or shrub may grow well or grow poorly, depending on the characteristics of the soil. Each tree or shrub has definable potential heights in a given physiographic area and under a given climate. Accurate definitions of potential heights are necessary when a windbreak is planned and designed.

Windbreak Suitability Groups

Windbreak suitability groups consist of soils in which the kinds and degrees of the hazards and limitations that affect the survival and growth of trees and shrubs in windbreaks are about the same. These groups are listed for each soil in the survey area in the table "Windbreak Suitability Groups" at the end of this section. They are described in the following paragraphs.

Group 1 consists of soils that have no soil-related hazards or limitations or only slight hazards or limitations if they are used for windbreaks. Slopes are less than 15 percent.

Group 2M consists of soils that have a moderate available water capacity (5 to 10 inches) because of texture, depth, or both. The soils are well drained and are not affected by salinity. A layer of concentrated lime, if it occurs, is below a depth of 24 inches. Slopes are less than 15 percent.

Group 2L consists of soils that have a layer of concentrated lime (more than 15 percent calcium carbonate equivalent) at a depth of about 15 to 24 inches. The available water capacity is at least 5 inches. The soils are well drained and are not affected by salinity or alkalinity (the electrical conductivity is less than 4 millimhos per centimeter). Slopes are less than 15 percent.

Group 2W consists of soils that have an available water capacity of 5 inches or more. If the soils have a layer of concentrated lime, the layer is below a depth of 15 inches. The depth to a permanent water table is 30

to 60 inches. The soils are not affected by salinity. Slopes are less than 15 percent.

Group 2S consists of soils that are moderately affected by salinity (the electrical conductivity is 4 to 12 millimhos per centimeter). The available water capacity is at least 5 inches. A layer of concentrated lime, if it occurs, is at a depth of 15 inches or more. The water table is at a depth of 30 inches or more. Slopes are less than 15 percent.

Group 3M consists of soils that have an available water capacity of 2 to 5 inches because of texture, depth, or both. A layer of concentrated lime, if it occurs, is at a depth of 15 inches or more. The soils are well drained and are not affected by salinity (the electrical conductivity is less than 4 millimhos per centimeter).

Group 3L consists of soils that have a layer of concentrated lime (more than 15 percent calcium carbonate equivalent) at a depth of less than 15 inches. A permanent water table is at a depth of more than 30 inches. The available water capacity is more than 5 inches. The soils are not affected by salinity (the electrical conductivity is less than 4 millimhos per centimeter). Slopes are less than 15 percent.

Group 3W consists of soils that have an available water capacity of 2 inches or more. If the soils have a layer of concentrated lime, the layer is below a depth of 15 inches. The depth to a permanent water table is 30 inches or less. It is more than 10 inches during all or most of the growing season. The soils are not affected by salinity. Slopes are less than 15 percent.

Group 3S consists of soils that are severely affected by salinity or alkalinity (the electrical conductivity is 12 to 16 millimhos per centimeter). The available water capacity is 5 inches or more. A layer of concentrated lime, if it occurs, is at a depth of more than 15 inches. A permanent water table is at a depth of 30 inches or more. Slopes are less than 15 percent.

Group 4 consists of soils that have slopes of more than 15 percent, except for those in areas where the length of the slopes is 100 feet or less, and the less sloping soils that have very severe limitations, including soils that have a very low available water capacity (2 inches or less); very shallow, stony, or gravelly soils; strongly saline and alkali soils, in which the electrical conductivity is more than 16 millimhos per centimeter; and soils that have a pH of more than 9.0. Rock outcrop also is in this group.

The table "Windbreak Suitability Group Species List" shows the height that locally grown trees and shrubs are expected to reach in 20 years on soils in each windbreak suitability group. The estimates in this table are based on measurements and observation of established plantings that have been given adequate

care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and

caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a nursery.

MAIN CROPLAND LIMITATIONS AND HAZARDS

(See text for a description of the limitations and hazards listed in this table)

Soil name and map symbol	Cropland limitations or hazards
1: Abor-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Soil blowing
2: Abor-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
3: Abor-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Soil blowing
Marvan-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
4: Abor-----	Depth to rock Erosion by water Lime content Poor tilth Restricted permeability Slope Soil blowing
Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
5:	
Absher-----	Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting
Nobe-----	Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Surface crusting
6:	
Antwerp-----	Lime content Restricted permeability Salt content Sodium content Surface crusting
7:	
Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
8:	
Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Delpoint-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
9:	
Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
9: Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments
10: Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
11: Assinniboine-----	Lime content Soil blowing
12: Badland-----	Nonsoil material
13: Barvon-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Lamedeer, dry-----	Erosion by water Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
14: Barvon-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Doney-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
15: Belfield-----	Restricted permeability Salt content Sodium content Soil blowing
16: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
17: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
18: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Coopers-----	Erosion by water

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
18: Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing
19: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing
20: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
21: Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
21: Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
22: Birney, moist-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Kirby-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing
23: Bitton-----	Erosion by water Slope Soil blowing
Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
24: Bitton-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
24: Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
25: Bitton-----	Erosion by water Limited available water capacity Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
26: Bitton-----	Erosion by water Slope Soil blowing
Shambo-----	Erosion by water Slope
27: Bitton-----	Soil blowing
Twin Creek-----	Erosion by water
28: Bitton-----	Erosion by water Slope Soil blowing
Twin Creek-----	Erosion by water
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
29: Bitton-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
29: Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
30: Bitton-----	Erosion by water Slope Soil blowing
Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
31: Bitton-----	Erosion by water Limited available water capacity Slope Soil blowing
Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
32: Bitton-----	Erosion by water Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
33:	
Bonfri-----	Depth to rock Erosion by water Soil blowing
Bullock-----	Depth to rock Erosion by water Limited available water capacity Restricted permeability Salt content Sodium content Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
34:	
Bonfri-----	Depth to rock Soil blowing
Galbreth-----	Depth to rock Limited available water capacity Soil blowing
35:	
Bonfri-----	Depth to rock Limited available water capacity Soil blowing
Marmarth-----	Depth to rock Limited available water capacity Soil blowing
Bullock-----	Depth to rock Lime content Limited available water capacity Restricted permeability Salt content Sodium content Soil blowing
36:	
Borollic Camborthids-----	Onsite investigation required
Ustic Torrfluvents-----	Onsite investigation required
37:	
Brunelda-----	Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
38: Brunelda-----	Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Gerdrum-----	Lime content Poor tilth Restricted permeability Salt content Sodium content
39: Brunelda-----	Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Vaeda-----	Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting
Nobe-----	Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Surface crusting
40: Bryant-----	Erosion by water Lime content
41: Bryant-----	Erosion by water Lime content Slope
42: Bullock-----	Depth to rock Erosion by water Limited available water capacity Restricted permeability Salt content Sodium content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
42: Rallod-----	Depth to rock Erosion by water Lime content Limited available water capacity Restricted permeability Slope Sodium content Soil blowing
43: Bullock-----	Depth to rock Erosion by water Limited available water capacity Restricted permeability Salt content Sodium content Soil blowing
Rominell-----	Erosion by water Restricted permeability Sodium content Soil blowing
44: Busby-----	Excessive permeability Potential for ground-water pollution Soil blowing
45: Busby-----	Erosion by water Excessive permeability Potential for ground-water pollution Slope Soil blowing
46: Busby-----	Soil blowing
47: Busby-----	Areas of rock outcrop Erosion by water Excessive permeability Potential for ground-water pollution Slope Soil blowing
Rock outcrop-----	Nonsoil material
48: Busby-----	Excessive permeability Potential for ground-water pollution Soil blowing
Twilight-----	Depth to rock Limited available water capacity Soil blowing
Blackhall-----	Depth to rock Lime content Limited available water capacity Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
49: Busby-----	Erosion by water Slope Soil blowing
Twilight-----	Depth to rock Erosion by water Limited available water capacity Slope Soil blowing
Blackhall-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
50: Busby-----	Excessive permeability Potential for ground-water pollution Soil blowing
Yetull-----	Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Soil blowing
51: Busby-----	Erosion by water Excessive permeability Potential for ground-water pollution Slope Soil blowing
Yetull-----	Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing
52: Cabba-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Wayden-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
52: Rock outcrop-----	Nonsoil material
53: Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Wayden-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Sagedale-----	Erosion by water Poor tilth Restricted permeability Slope Soil blowing
54: Cabbart-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Armells-----	Areas of rock outcrop Erosion by water Lime content Limited available water capacity Slope Soil blowing
Rock outcrop-----	Nonsoil material
55: Cabbart-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Yawdim-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
55: Rock outcrop-----	Nonsoil material
56: Cambeth-----	Depth to rock Erosion by water Lime content Soil blowing
57: Cambeth-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
58: Cambeth-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
59: Cambeth-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
60: Cambeth-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Niler-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
61: Castner-----	Depth to rock Lime content Limited available water capacity Potential for ground-water pollution Soil blowing
Shambo-----	Erosion by water Slope
62: Chinook-----	Soil blowing
63: Chinook-----	Soil blowing
64: Cooers-----	Erosion by water
65: Cooers-----	Erosion by water
Birney-----	Lime content Limited available water capacity Soil blowing
66: Cooers-----	Erosion by water
Yamac-----	Erosion by water
67: Creed-----	Excessive permeability Potential for ground-water pollution Restricted permeability Salt content Sodium content Soil blowing
68: Davidell-----	Lime content Salt content Sodium content Soil blowing
69: Davidell-----	Salt content Sodium content
70: Davidell-----	Salt content Sodium content
Antwerp-----	Lime content Restricted permeability Salt content Sodium content Surface crusting
71: Degrand-----	Excessive permeability Potential for ground-water pollution Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
72: Delpoint-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
73: Delpoint-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Yamac-----	Erosion by water Slope
74: Delpoint-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
75: Delpoint-----	Depth to rock Erosion by water Lime content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
75: Galbreth-----	Depth to rock Limited available water capacity Soil blowing
76: Delpoint, moist-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Delpoint-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
77: Delpoint, moist-----	Depth to rock Erosion by water Lime content Slope Soil blowing
Delpoint-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
78: Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Bitton-----	Erosion by water Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
78: Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
79: Evanston-----	Lime content
80: Fergus variant-----	Erosion by water
Twin Creek-----	Erosion by water
81: Floweree-----	None
82: Floweree-----	Erosion by water
83: Floweree-----	None
Vanstel-----	Soil blowing
84: Fluventic Haploborolls---	Onsite investigation required
Typic Fluvaquents-----	Onsite investigation required
85: Forelle-----	Erosion by water
86: Forelle-----	Erosion by water
Gerdrum-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content
87: Galbreth-----	Depth to rock Limited available water capacity Soil blowing
88: Gerdrum-----	Lime content Poor tilth Restricted permeability Salt content Sodium content
89: Gerdrum-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
90: Gerdrum-----	Lime content Poor tilth Restricted permeability Salt content Sodium content
Kobar-----	Lime content Poor tilth Restricted permeability
91: Gerdrum-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content
Kobar-----	Erosion by water Lime content Poor tilth Restricted permeability
92: Gerdrum-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Marvan-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
93: Gerdrum-----	Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Vanda-----	Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting
94: Gerdrum-----	Lime content Limited available water capacity Restricted permeability Salt content Sodium content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
94: Volborg-----	Depth to rock Limited available water capacity Poor tilth Restricted permeability Salt content Soil blowing Surface crusting
95: Glendive-----	Flooding Lime content Soil blowing
96: Hanly-----	Excessive permeability Flooding Limited available water capacity Potential for ground-water pollution Soil blowing
Glendive-----	Flooding Lime content Soil blowing
97: Harlem-----	Flooding Lime content Poor tilth Restricted permeability
98: Harlem-----	Flooding Lime content Poor tilth Restricted permeability Soil blowing
99: Havre-----	Lime content Soil blowing
100: Havre-----	Flooding Soil blowing
101: Havre-----	Flooding Lime content
102: Havre-----	Flooding Lime content Poor tilth Water table
103: Havre-----	Flooding Ponding Poor tilth Salt content Water table

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
104: Havre-----	Channeled Flooding Lime content Soil blowing
Harlem-----	Channeled Flooding Lime content Poor tilth Restricted permeability
Glendive-----	Channeled Flooding Lime content Soil blowing
105: Ivanell-----	Depth to rock Erosion by water Lime content Salt content Sodium content Soil blowing
106: Ivanell-----	Depth to rock Erosion by water Lime content Limited available water capacity Salt content Sodium content Soil blowing
Davidell-----	Lime content Salt content Sodium content Soil blowing
107: Ivanell-----	Depth to rock Erosion by water Salt content Sodium content Soil blowing
Niler-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
108: Kirby-----	Areas of rock outcrop Erosion by water Excessive permeability Lime content Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
108: Cabbart-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Rock outcrop-----	Nonsoil material
109: Kobar-----	Lime content Poor tilth Restricted permeability
110: Kobar-----	Erosion by water Lime content Poor tilth Restricted permeability
111: Kobar-----	Erosion by water Lime content Poor tilth Restricted permeability Slope
112: Kobar-----	Erosion by water Gullied Lime content Poor tilth Restricted permeability Slope
113: Kobar-----	Lime content Poor tilth Restricted permeability Soil blowing
114: Kobar-----	Poor tilth Restricted permeability Soil blowing Water table
115: Kobar-----	Erosion by water Lime content Poor tilth Restricted permeability Slope
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
115: Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
116: Kremlin-----	None
117: Kremlin-----	Erosion by water
118: Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Lamedeer, dry-----	Erosion by water Limited available water capacity Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
119: Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Twin Creek-----	Erosion by water
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
120: Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Twin Creek-----	Erosion by water Slope

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
120: Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
121: Lamedeer-----	Erosion by water Limited available water capacity Slope Soil blowing
Bitton-----	Erosion by water Slope Soil blowing
Ringling-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing
122: Lihen-----	Erosion by water Excessive permeability Lime content Potential for ground-water pollution Slope Soil blowing
123: Lonna-----	Lime content Soil blowing
124: Lonna-----	Erosion by water Lime content Soil blowing
125: Lonna-----	Erosion by water Lime content Slope Soil blowing
126: Lonna-----	Lime content Soil blowing
127: Lonna-----	Erosion by water Lime content Soil blowing
128: Lonna-----	Lime content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
128: Alona-----	Lime content Salt content Sodium content Surface crusting
129: Lonna-----	Erosion by water Lime content Soil blowing
Alona-----	Erosion by water Lime content Salt content Sodium content Surface crusting
130: Lonna-----	Lime content Soil blowing
Antwerp-----	Lime content Restricted permeability Salt content Sodium content Surface crusting
131: Lonna-----	Erosion by water Lime content Soil blowing
Antwerp-----	Lime content Restricted permeability Salt content Sodium content Surface crusting
132: Lonna-----	Erosion by water Lime content Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
133:	
Lonna-----	Erosion by water Lime content Soil blowing
Cambeth-----	Depth to rock Erosion by water Lime content Soil blowing
134:	
Louscot-----	Salt content
135:	
Macar-----	Areas of rock outcrop Erosion by water Lime content Salt content Slope
Doney-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Rock outcrop-----	Nonsoil material
136:	
Marmarth-----	Depth to rock Limited available water capacity Soil blowing
137:	
Marmarth-----	Depth to rock Limited available water capacity Soil blowing
Galbreth-----	Depth to rock Erosion by water Limited available water capacity Slope Soil blowing
138:	
Marvan-----	Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
139:	
Marvan-----	Erosion by water Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
140: Marvan-----	Erosion by water Poor tilth Restricted permeability Salt content Sodium content Soil blowing
141: Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
142: Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Abor-----	Depth to rock Erosion by water Lime content Poor tilth Restricted permeability Slope Soil blowing
143: Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Abor-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
144: Neldore-----	Areas of rock outcrop Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
144:	
Abor-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Rock outcrop-----	Nonsoil material
145:	
Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Neldore, saline-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Soil blowing
146:	
Neldore-----	Areas of rock outcrop Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Rock outcrop-----	Nonsoil material
147:	
Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Ustic Torriorthents-----	Onsite investigation required
Neldore, saline-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
148: Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Volborg-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
149: Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
150: Niler-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
151: Orinoco-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
152: Rahworth-----	Erosion by water Lime content Salt content Sodium content
153: Rahworth-----	Erosion by water Salt content Sodium content
Davidell-----	Sodium content Soil blowing
Sumatra-----	Erosion by water Lime content Limited available water capacity Salt content Sodium content Soil blowing
154: Riverwash-----	Nonsoil material
155: Rock outcrop-----	Nonsoil material
156: Rominell-----	Restricted permeability Sodium content Soil blowing
157: Sagedale-----	Erosion by water Poor tilth Restricted permeability Slope Soil blowing
158: Sagedale-----	Erosion by water Poor tilth Restricted permeability Slope Soil blowing
Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Wayden-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
159: Savage-----	Restricted permeability
160: Savage-----	Erosion by water Restricted permeability
161: Shambo-----	None
162: Shambo-----	Erosion by water
163: Shambo-----	Erosion by water Slope
164: Shambo-----	Erosion by water Slope
Bitton-----	Erosion by water Limited available water capacity Slope Soil blowing
Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
165: Shambo-----	Erosion by water
Doney-----	Depth to rock Erosion by water Lime content Slope Soil blowing
166: Shambo-----	Erosion by water Slope
Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabba-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
167: Shambo-----	Erosion by water Slope

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
167:	
Doney-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Sagedale-----	Erosion by water Poor tilth Restricted permeability Slope Soil blowing
168:	
Spang-----	Excessive permeability Potential for ground-water pollution Soil blowing
169:	
Spang-----	Erosion by water Slope Soil blowing
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
170:	
Spang-----	Erosion by water Slope Soil blowing
Birney, moist-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
171:	
Spinekop-----	Poor tilth
172:	
Straw-----	Lime content Soil blowing
Canburn-----	Flooding Lime content Potential for ground-water pollution Water table

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
173: Sumatra-----	Erosion by water Lime content Limited available water capacity Salt content Slope Sodium content Soil blowing
174: Sumatra-----	Areas of rock outcrop Erosion by water Lime content Limited available water capacity Salt content Slope Sodium content Soil blowing
Rock outcrop-----	Nonsoil material
175: Tinsley-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments
176: Tinsley-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments
Armells-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Yamac-----	Erosion by water Slope
177: Tinsley-----	Erosion by water Excessive permeability Limited available water capacity Potential for ground-water pollution Slope Soil blowing Surface rock fragments
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
178:	
Twilight-----	Depth to rock Erosion by water Limited available water capacity Slope Soil blowing
Blackhall-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
179:	
Twin Creek-----	Erosion by water
Shambo-----	Erosion by water
180:	
Typic Haplaquepts-----	Onsite investigation required
181:	
Ustic Torrifluents-----	Onsite investigation required
182:	
Ustic Torrifluents-----	Onsite investigation required
183:	
Ustic Torriorthents-----	Onsite investigation required
184:	
Ustic Torriorthents-----	Onsite investigation required
185:	
Ustic Torriorthents-----	Onsite investigation required
186:	
Ustic Torriorthents-----	Onsite investigation required
187:	
Ustic Torriorthents-----	Onsite investigation required
Volborg-----	Depth to rock Limited available water capacity Poor tilth Restricted permeability Salt content Soil blowing Surface crusting
188:	
Vaeda-----	Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
189: Vanda-----	Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting
190: Vanstel-----	Erosion by water Soil blowing
191: Volborg-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
192: Volborg-----	Depth to rock Limited available water capacity Poor tilth Restricted permeability Salt content Soil blowing Surface crusting
193: Volborg-----	Areas of rock outcrop Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Slope Soil blowing Surface crusting
Rock outcrop-----	Nonsoil material
194: Weingart-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
195: Weingart-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing Surface crusting
Neldore-----	Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
196: Weingart-----	Areas of rock outcrop Depth to rock Erosion by water Limited available water capacity Poor tilth Restricted permeability Salt content Slope Sodium content Soil blowing Surface crusting
Niler-----	Areas of rock outcrop Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Rock outcrop-----	Nonsoil material
197: Yamac-----	None
198: Yamac-----	Erosion by water
199: Yamac-----	Erosion by water Slope
200: Yamac-----	Erosion by water Slope

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
200: Abor-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
201: Yamac-----	Erosion by water
Birney-----	Lime content Limited available water capacity Soil blowing
202: Yamac-----	Erosion by water Lime content Slope
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
203: Yamac-----	Erosion by water Slope
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
204: Yamac-----	Erosion by water Slope
Birney-----	Erosion by water Lime content Limited available water capacity Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
205: Yamac-----	Erosion by water
Busby-----	Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
206:	
Yamac-----	Erosion by water Lime content Slope
Busby-----	Erosion by water Slope Soil blowing
207:	
Yamac-----	Erosion by water Slope
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
208:	
Yamac-----	Erosion by water Slope
Delpoint-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
209:	
Yamac-----	Erosion by water Slope
Redcreek-----	Depth to rock Erosion by water Lime content Limited available water capacity Potential for ground-water pollution Soil blowing
210:	
Yamac-----	Erosion by water
Rominell-----	Erosion by water Restricted permeability Sodium content
211:	
Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Soil blowing

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
212: Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Slope Soil blowing
Cabbart-----	Depth to rock Erosion by water Lime content Limited available water capacity Slope Soil blowing
Kobar-----	Erosion by water Lime content Poor tilth Restricted permeability Slope
213: Yawdim-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Soil blowing
Orinoco-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing
214: Zatoville-----	Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing
215: Zatoville-----	Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing Water table

MAIN CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations or hazards
216: Zatoville-----	Lime content Poor tilth Restricted permeability Salt content Sodium content Soil blowing Water table
217: Zatoville-----	Erosion by water Poor tilth Restricted permeability Salt content Sodium content Soil blowing
Orinoco-----	Depth to rock Erosion by water Lime content Limited available water capacity Poor tilth Restricted permeability Salt content Sodium content Soil blowing
DA: Denied access-----	Onsite investigation required
W: Water-----	Nonsoil material

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
33: Bonfri-----	3E	---	33.0	---	29.0	---	48.0	---	---	---	---	---	---	---
Bullock-----	6E	---	14.0	---	13.0	---	24.0	---	---	---	---	---	---	---
Cabbart-----	7E	---	8.0	---	7.0	---	15.0	---	---	---	---	---	---	---
34: Bonfri-----	4E	---	33.0	---	29.0	---	48.0	---	---	---	0.8	---	0.8	---
Galbreth-----	6E	---	13.0	---	12.0	---	22.0	---	---	---	---	---	---	---
35: Bonfri-----	4E	---	30.0	---	27.0	---	45.0	---	---	---	0.8	---	0.8	---
Marmarth-----	4E	---	23.0	---	20.0	---	35.0	---	---	---	0.7	---	0.7	---
Bullock-----	6S	---	14.0	---	13.0	---	24.0	---	---	---	---	---	---	---
36: Borollic Camborthids. Ustic Torrifluvents.														
37: Brunelda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
38: Brunelda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
Gerdrum-----	6S	---	---	---	---	---	---	---	---	---	---	---	---	---
39: Brunelda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
Vaeda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
Nobe-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
40: Bryant-----	3E	---	51.0	---	45.0	---	74.0	---	---	---	1.4	---	1.4	---
41: Bryant-----	4E	---	48.0	---	43.0	---	70.0	---	---	---	1.0	---	1.0	---
42: Bullock-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Rallod-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
43: Bullock-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Rominell-----	4E	---	---	---	---	---	---	---	---	---	---	---	---	---
44: Busby-----	4E	---	33.0	---	29.0	---	48.0	---	---	---	1.0	---	1.0	---

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
71: Degrand-----	4E	4E	32.0	---	29.0	---	48.0	80.0	---	---	0.8	---	0.8	---
72: Delpoint-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
73: Delpoint-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Yamac-----	4E	---	---	---	---	---	---	---	---	---	---	---	---	---
74: Delpoint-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Yawdim-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
75: Delpoint-----	3E	---	35.0	---	31.0	---	50.0	---	---	---	0.8	---	0.8	---
Galbreth-----	6E	---	10.0	---	9.0	---	19.0	---	---	---	0.3	---	0.3	---
76: Delpoint, moist-	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Delpoint-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
77: Delpoint, moist-	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Delpoint-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
78: Doney-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Bitton-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabba-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
79: Evanston-----	3E	---	39.0	---	35.0	---	57.0	---	---	---	1.2	---	1.2	---
80: Fergus variant--	3E	---	41.0	---	37.0	---	59.0	---	---	---	1.5	---	1.5	---
Twin Creek-----	3E	---	39.0	---	35.0	---	57.0	---	---	---	1.4	---	1.4	---
81: Floweree-----	3E	---	46.0	---	41.0	---	68.0	---	---	---	1.2	---	1.2	---
82: Floweree-----	3E	---	46.0	---	41.0	---	68.0	---	---	---	1.0	---	1.0	---

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
83: Floweree-----	3E	---	42.0	---	37.0	---	60.0	---	---	---	1.0	---	1.0	---
Vanstel-----	3E	---	37.0	---	33.0	---	54.0	---	---	---	1.0	---	1.0	---
84: Fluventic Haploborolls. Typic Fluvaquents.														
85: Forelle-----	3E	---	39.0	---	35.0	---	57.0	---	---	---	1.0	---	1.0	---
86: Forelle-----	3E	---	41.0	---	36.0	---	58.0	---	---	---	1.0	---	1.0	---
Gerdrum-----	6E	---	19.0	---	17.0	---	30.0	---	---	---	0.5	---	0.5	---
87: Galbreth-----	6E	---	12.0	---	11.0	---	21.0	---	---	---	---	---	---	---
88: Gerdrum-----	6S	---	19.0	---	17.0	---	30.0	---	---	---	---	---	---	---
89: Gerdrum-----	6E	---	19.0	---	17.0	---	31.0	---	---	---	---	---	---	---
90: Gerdrum-----	6S	---	18.0	---	16.0	---	29.0	---	---	---	0.6	---	0.6	---
Kobar-----	3E	---	38.0	---	34.0	---	55.0	---	---	---	1.0	---	1.0	---
91: Gerdrum-----	6E	---	19.0	---	17.0	---	30.0	---	---	---	0.5	---	0.5	---
Kobar-----	3E	---	38.0	---	34.0	---	55.0	---	---	---	0.8	---	0.8	---
92: Gerdrum-----	6E	---	19.0	---	17.0	---	31.0	---	---	---	---	---	---	---
Marvan-----	4E	---	29.0	---	25.0	---	43.0	---	---	---	---	---	---	---
93: Gerdrum-----	6S	---	---	---	---	---	---	---	---	---	---	---	---	---
Vanda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
94: Gerdrum-----	6S	---	---	---	---	---	---	---	---	---	---	---	---	---
Volborg-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
95: Glendive-----	3W	2W	34.0	---	30.0	60.0	50.0	85.0	---	22.0	1.0	5.0	1.0	10.0
96: Hanly-----	4W	3W	19.0	36.0	17.0	36.0	31.0	85.0	---	10.0	0.8	3.0	0.8	6.0
Glendive-----	3W	2W	32.0	---	28.0	60.0	47.0	85.0	---	22.0	1.0	5.0	1.0	10.0

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
113: Kobar-----	4E	4E	38.0	---	33.0	62.0	55.0	85.0	---	20.0	1.0	4.5	1.0	10.0
114: Kobar-----	4E	4E	43.0	---	38.0	62.0	62.0	85.0	---	20.0	2.5	5.0	2.5	8.0
115: Kobar-----	4E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Yawdim-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
116: Kremlin-----	3E	---	42.0	---	37.0	---	60.0	---	---	---	1.2	---	1.2	---
117: Kremlin-----	3E	---	41.0	---	36.0	---	59.0	---	---	---	1.0	---	1.0	---
118: Lamedeer-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Lamedeer, dry---	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Ringling-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
119: Lamedeer-----	4E	---	26.0	---	23.0	---	39.0	---	---	---	0.7	---	0.7	---
Twin Creek-----	3E	---	47.0	---	42.0	---	69.0	---	---	---	1.8	---	1.5	---
Ringling-----	7E	---	16.0	---	14.0	---	27.0	---	---	---	0.3	---	0.3	---
120: Lamedeer-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Twin Creek-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Ringling-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
121: Lamedeer-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Bitton-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Ringling-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
122: Lihen-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
123: Lonna-----	4E	4E	40.0	---	35.0	---	57.0	---	---	---	1.1	5.0	1.1	---
124: Lonna-----	4E	---	40.0	---	35.0	---	57.0	---	---	---	1.0	---	1.0	---
125: Lonna-----	4E	---	37.0	---	33.0	---	54.0	---	---	---	0.7	---	0.7	---
126: Lonna-----	4E	4E	39.0	---	35.0	---	57.0	---	---	---	1.1	5.0	1.1	---

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu			Bu		Tons		Tons		AUM
167:														
Doney-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Sagedale-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
168:														
Spang-----	4E	---	37.0	---	33.0	---	56.0	---	---	---	1.0	---	1.0	---
169:														
Spang-----	4E	---	37.0	---	33.0	---	56.0	---	---	---	0.7	---	0.7	---
Birney-----	4E	---	19.0	---	17.0	---	32.0	---	---	---	0.5	---	0.5	---
170:														
Spang-----	4E	---	---	---	---	---	---	---	---	---	---	---	---	---
Birney, moist---	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Birney-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
171:														
Spinekop-----	3E	2E	39.0	---	35.0	70.0	57.0	95.0	---	25.0	1.0	6.0	1.0	12.0
172:														
Straw-----	3E	---	---	---	---	---	---	---	---	---	---	---	---	---
Canburn-----	5W	---	---	---	---	---	---	---	---	---	---	---	---	---
173:														
Sumatra-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
174:														
Sumatra-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop.														
175:														
Tinsley-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
176:														
Tinsley-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Armells-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Yamac-----	4E	---	---	---	---	---	---	---	---	---	---	---	---	---
177:														
Tinsley-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
178:														
Twilight-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Blackhall-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
179:														
Twin Creek-----	3E	---	47.0	---	42.0	---	68.0	---	---	---	1.8	---	1.5	---
Shambo-----	3E	---	51.0	---	45.0	---	74.0	---	---	---	1.4	---	1.4	---

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
180: Typic Haplaquepts.														
181: Ustic Torrifluvents.														
182: Ustic Torrifluvents.														
186: Ustic Torriorthents.														
187: Ustic Torriorthents.														
Volborg-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
188: Vaeda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
189: Vanda-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
190: Vanstel-----	3E	---	42.0	---	37.0	---	61.0	---	---	---	1.0	---	1.0	---
191: Volborg-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
192: Volborg-----	7S	---	---	---	---	---	---	---	---	---	---	---	---	---
193: Volborg-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop.														
194: Weingart-----	6E	---	12.0	---	11.0	---	21.0	---	---	---	---	---	---	---
195: Weingart-----	6E	---	13.0	---	12.0	---	22.0	---	---	---	---	---	---	---
Neldore-----	7E	---	5.0	---	5.0	---	13.0	---	---	---	---	---	---	---
196: Weingart-----	6E	---	8.0	---	7.0	---	15.0	---	---	---	---	---	---	---
Niler-----	7E	---	---	---	---	---	6.0	---	---	---	---	---	---	---
Rock outcrop.														
197: Yamac-----	3E	2E	38.0	---	34.0	70.0	55.0	95.0	---	---	1.2	6.0	1.2	12.

LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Winter wheat		Spring wheat		Barley		Corn silage		Alfalfa hay		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
			Bu		Bu		Bu		Tons		Tons		AUM	
198: Yamac-----	3E	---	38.0	---	34.0	---	55.0	---	---	---	0.7	---	0.7	---
199: Yamac-----	4E	---	36.0	---	31.0	---	52.0	---	---	---	0.7	---	0.7	---
200: Yamac-----	4E	---	40.0	---	35.0	---	58.0	---	---	---	---	---	---	---
Abor-----	6E	---	18.0	---	16.0	---	29.0	---	---	---	---	---	---	---
201: Yamac-----	3E	---	42.0	---	38.0	---	62.0	---	---	---	1.0	---	1.0	---
Birney-----	4E	---	22.0	---	21.0	---	36.0	---	---	---	0.6	---	0.6	---
202: Yamac-----	4E	---	40.0	---	35.0	---	58.0	---	---	---	0.8	---	---	---
Birney-----	4E	---	20.0	---	18.0	---	33.0	---	---	---	0.5	---	0.5	---
203: Yamac-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Birney-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
204: Yamac-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Birney-----	6E	---	---	---	---	---	---	---	---	---	---	---	---	---
Cabbart-----	7E	---	---	---	---	---	---	---	---	---	---	---	---	---
205: Yamac-----	3E	---	42.0	---	38.0	---	62.0	---	---	---	1.0	---	1.0	---
Busby-----	4E	---	36.0	---	32.0	---	55.0	---	---	---	0.7	---	0.7	---
206: Yamac-----	4E	---	40.0	---	35.0	---	58.0	---	---	---	0.8	---	0.8	---
Busby-----	4E	---	36.0	---	32.0	---	55.0	---	---	---	0.7	---	0.7	---
207: Yamac-----	4E	---	36.0	---	31.0	---	52.0	---	---	---	---	---	---	---
Cabbart-----	7E	---	9.0	---	8.0	---	18.0	---	---	---	---	---	---	---
208: Yamac-----	4E	---	36.0	---	31.0	---	52.0	---	---	---	0.8	---	0.8	---
Delpoint-----	4E	---	25.0	---	23.0	---	39.0	---	---	---	0.6	---	0.7	---
209: Yamac-----	4E	---	36.0	---	31.0	---	52.0	---	---	---	---	---	---	---
Redcreek-----	6E	---	15.0	---	13.0	---	25.0	---	---	---	---	---	---	---
210: Yamac-----	3E	---	38.0	---	34.0	---	55.0	---	---	---	1.0	---	1.0	---

PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
46	Busby loam, 0 to 2 percent slopes (where irrigated)
79	Evanston loam, 0 to 4 percent slopes (where irrigated)
81	Floweree silt loam, 0 to 2 percent slopes (where irrigated)
83	Floweree-Vanstel silt loams, 0 to 4 percent slopes (where irrigated)
95	Glendive loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
99	Havre loam, 0 to 2 percent slopes (where irrigated)
100	Havre loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
101	Havre silty clay loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
116	Kremlin loam, 0 to 2 percent slopes (where irrigated)
159	Savage silty clay loam, 0 to 2 percent slopes (where irrigated)
161	Shambo loam, 0 to 2 percent slopes (where irrigated)
171	Spinekop silty clay loam, 0 to 2 percent slopes (where irrigated)
197	Yamac loam, 0 to 2 percent slopes (where irrigated)

WINDBREAK SUITABILITY GROUPS

(Suitable shrubs and trees with their mature heights are listed in the adjoining Windbreak Suitability Group Species List. A dashed entry indicates a woodland unit and a windbreak suitability group is not assigned)

Soil name and map symbol	Windbreak suitability group
1: Abor-----	3M
2: Abor-----	3M
3: Abor----- Marvan-----	3M 3S
4: Abor----- Neldore-----	3M 3M
5: Absher----- Nobe-----	4S 4S
6: Antwerp-----	4S
7: Armells----- Cabbart-----	4 4
8: Armells----- Delpoint----- Cabbart-----	4 4 4
9: Armells----- Kirby-----	4 4
10: Armells----- Kirby----- Cabbart-----	4 4 4
11: Assinniboine-----	2M
12: Badland-----	4
13: Barvon----- Lamedeer----- Lamedeer, dry-----	--- --- ---
14: Barvon----- Doney----- Cabba-----	--- 4 4

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
15: Belfield-----	3S
16: Birney-----	4
17: Birney----- Cabbart-----	--- ---
18: Birney----- Cooers----- Kirby-----	3M 1 4M
19: Birney----- Kirby-----	4 4
20: Birney----- Kirby----- Cabbart-----	4 4 4
21: Birney----- Armells----- Cabbart-----	--- 4 4
22: Birney, moist----- Birney----- Kirby-----	--- 4 4
23: Bitton----- Doney----- Ringling-----	4 4 4
24: Bitton----- Doney----- Ringling-----	4 4 4
25: Bitton----- Ringling-----	4 4
26: Bitton----- Shambo-----	3M 1
27: Bitton----- Twin Creek-----	3M 1
28: Bitton----- Twin Creek----- Ringling-----	3M 1 4M

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
29:	
Bitton-----	---
Doney-----	4
Cabba-----	4
30:	
Bitton-----	---
Lamedeer-----	---
Ringling-----	4
31:	
Bitton-----	---
Lamedeer-----	---
Ringling-----	4
32:	
Bitton-----	---
Ringling-----	4
Cabba-----	4
33:	
Bonfri-----	4
Bullock-----	4
Cabbart-----	4
34:	
Bonfri-----	2M
Galbreth-----	4M
35:	
Bonfri-----	2M
Marmarth-----	3M
Bullock-----	3S
36:	
Borollic Camborthids-----	4
Ustic Torrifluvents-----	4
37:	
Brunelda-----	4S
38:	
Brunelda-----	4S
Gerdrum-----	3S
39:	
Brunelda-----	4S
Vaeda-----	3S
Nobe-----	4S
40:	
Bryant-----	1
41:	
Bryant-----	1
42:	
Bullock-----	3S
Rallod-----	4S
43:	
Bullock-----	3S
Rominell-----	4S

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
44: Busby-----	2M
45: Busby-----	2M
46: Busby-----	2M
47: Busby----- Rock outcrop-----	2M 4
48: Busby----- Twilight----- Blackhall-----	2M 3M 3M
49: Busby----- Twilight----- Blackhall-----	4 4 4
50: Busby----- Yetull-----	2M 3M
51: Busby----- Yetull-----	4 4
52: Cabba----- Wayden----- Rock outcrop-----	4 4 4
53: Cabba----- Wayden----- Sagedale-----	4 4 4
54: Cabbart----- Armells----- Rock outcrop-----	4 4 4
55: Cabbart----- Yawdim----- Rock outcrop-----	4 4 4
56: Cambeth-----	2M
57: Cambeth-----	2M
58: Cambeth----- Cabbart-----	2M 3M
59: Cambeth-----	4

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
59: Cabbart-----	4
60: Cambeth----- Niler-----	2M 4M
61: Castner----- Shambo-----	4M 1
62: Chinook-----	2M
63: Chinook-----	4S
64: Cooers-----	1
65: Cooers----- Birney-----	1 3M
66: Cooers----- Yamac-----	1 1
67: Creed-----	3S
68: Davidell-----	3S
69: Davidell-----	3S
70: Davidell----- Antwerp-----	3S 4S
71: Degrand-----	2M
72: Delpoint----- Cabbart-----	4 4
73: Delpoint----- Cabbart----- Yamac-----	4 4 1
74: Delpoint----- Cabbart----- Yawdim-----	4 4 4
75: Delpoint----- Galbreth-----	2M 4M

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
76:	
Delpoint, moist-----	---
Delpoint-----	4
Cabbart-----	4
77:	
Delpoint, moist-----	---
Delpoint-----	4
Cabbart-----	4
78:	
Doney-----	4
Bitton-----	4
Cabba-----	4
79:	
Evanston-----	1
80:	
Fergus variant-----	1
Twin Creek-----	1
81:	
Floweree-----	1
82:	
Floweree-----	1
83:	
Floweree-----	1
Vanstel-----	1
84:	
Fluventic Haploborolls---	4
Typic Fluvaquents-----	4
85:	
Forelle-----	1
86:	
Forelle-----	1
Gerdrum-----	3S
87:	
Galbreth-----	4M
88:	
Gerdrum-----	3S
89:	
Gerdrum-----	3S
90:	
Gerdrum-----	3S
Kobar-----	2M
91:	
Gerdrum-----	3S
Kobar-----	2M
92:	
Gerdrum-----	3S
Marvan-----	3S

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
93:	
Gerdrum-----	3S
Vanda-----	4S
94:	
Gerdrum-----	3S
Volborg-----	4M
95:	
Glendive-----	2M
96:	
Hanly-----	3M
Glendive-----	2M
97:	
Harlem-----	2M
98:	
Harlem-----	2M
99:	
Havre-----	1
100:	
Havre-----	1
101:	
Havre-----	1
102:	
Havre-----	2W
103:	
Havre-----	2W
104:	
Havre-----	1
Harlem-----	2M
Glendive-----	2M
105:	
Ivanell-----	3S
106:	
Ivanell-----	3S
Davidell-----	3S
107:	
Ivanell-----	3S
Niler-----	4M
108:	
Kirby-----	4
Cabbart-----	4
Rock outcrop-----	4
109:	
Kobar-----	2M
110:	
Kobar-----	2M

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
111: Kobar-----	2M
112: Kobar-----	2M
113: Kobar-----	2M
114: Kobar-----	2W
115: Kobar----- Cabbart----- Yawdim-----	2M 4 4
116: Kremlin-----	1
117: Kremlin-----	1
118: Lamedeer----- Lamedeer, dry----- Ringling-----	--- --- ---
119: Lamedeer----- Twin Creek----- Ringling-----	--- --- ---
120: Lamedeer----- Twin Creek----- Ringling-----	--- --- ---
121: Lamedeer----- Bitton----- Ringling-----	--- --- 4
122: Lihen-----	4
123: Lonna-----	1
124: Lonna-----	1
125: Lonna-----	1
126: Lonna-----	1
127: Lonna-----	1

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
128:	
Lonna-----	1
Alona-----	4S
129:	
Lonna-----	1
Alona-----	4S
130:	
Lonna-----	1
Antwerp-----	3S
131:	
Lonna-----	1
Antwerp-----	3S
132:	
Lonna-----	1
Cabbart-----	4
Yawdim-----	4
133:	
Lonna-----	1
Cambeth-----	2M
134:	
Louscot-----	3S
135:	
Macar-----	4
Doney-----	4
Rock outcrop-----	4
136:	
Marmarth-----	3M
137:	
Marmarth-----	3M
Galbreth-----	4M
138:	
Marvan-----	3S
139:	
Marvan-----	3S
140:	
Marvan-----	3S
141:	
Neldore-----	4
142:	
Neldore-----	4
Abor-----	4
143:	
Neldore-----	4
Abor-----	4
144:	
Neldore-----	4

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
144: Abor----- Rock outcrop-----	4
145: Neldore----- Neldore, saline-----	3M 3M
146: Neldore----- Rock outcrop-----	4 4
147: Neldore----- Ustic Torriorthents----- Neldore, saline-----	3M 4S 3M
148: Neldore----- Volborg-----	4 4
149: Neldore----- Yawdim-----	4 4
150: Niler-----	4
151: Orinoco----- Yawdim-----	3S 3M
152: Rahworth-----	4S
153: Rahworth----- Davidell----- Sumatra-----	4S 3S 4S
154: Riverwash-----	4
155: Rock outcrop-----	4
156: Rominell-----	4S
157: Sagedale-----	2M
158: Sagedale----- Cabba----- Wayden-----	2M 3M 3M
159: Savage-----	1
160: Savage-----	1

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
161: Shambo-----	1
162: Shambo-----	1
163: Shambo-----	1
164: Shambo-----	1
Bitton-----	3M
Cabba-----	3M
165: Shambo-----	1
Doney-----	2M
166: Shambo-----	1
Doney-----	4
Cabba-----	4
167: Shambo-----	1
Doney-----	4
Sagedale-----	4
168: Spang-----	2M
169: Spang-----	2M
Birney-----	3M
170: Spang-----	---
Birney, moist-----	---
Birney-----	4
171: Spinekop-----	2M
172: Straw-----	1
Canburn-----	4W
173: Sumatra-----	4
174: Sumatra-----	4
Rock outcrop-----	4
175: Tinsley-----	4
176: Tinsley-----	4
Armells-----	4
Yamac-----	1

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
177:	
Tinsley-----	4
Cabbart-----	4
178:	
Twilight-----	4
Blackhall-----	4
179:	
Twin Creek-----	1
Shambo-----	1
180:	
Typic Haplaquepts-----	3W
181:	
Ustic Torrifluvents-----	2W
182:	
Ustic Torrifluvents-----	4S
183:	
Ustic Torriorthents-----	4
184:	
Ustic Torriorthents-----	4
185:	
Ustic Torriorthents-----	4
186:	
Ustic Torriorthents-----	4S
187:	
Ustic Torriorthents-----	4M
Volborg-----	4M
188:	
Vaeda-----	3S
189:	
Vanda-----	3S
190:	
Vanstel-----	1
191:	
Volborg-----	4
192:	
Volborg-----	4M
193:	
Volborg-----	4M
Rock outcrop-----	4
194:	
Weingart-----	4S
195:	
Weingart-----	4S
Neldore-----	4

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
196:	
Weingart-----	4S
Niler-----	4M
Rock outcrop-----	4
197:	
Yamac-----	1
198:	
Yamac-----	1
199:	
Yamac-----	1
200:	
Yamac-----	1
Abor-----	4
201:	
Yamac-----	1
Birney-----	3M
202:	
Yamac-----	1
Birney-----	3M
203:	
Yamac-----	4
Birney-----	4
204:	
Yamac-----	4
Birney-----	4
Cabbart-----	4
205:	
Yamac-----	1
Busby-----	2M
206:	
Yamac-----	1
Busby-----	2M
207:	
Yamac-----	1
Cabbart-----	4
208:	
Yamac-----	1
Delpoint-----	2M
209:	
Yamac-----	1
Redcreek-----	3M
210:	
Yamac-----	1
Rominell-----	4S
211:	
Yawdim-----	3M

WINDBREAK SUITABILITY GROUPS--Continued

Soil name and map symbol	Windbreak suitability group
212:	
Yawdim-----	4
Cabbart-----	4
Kobar-----	4
213:	
Yawdim-----	3M
Orinoco-----	3S
214:	
Zatoville-----	3S
215:	
Zatoville-----	3S
216:	
Zatoville-----	4S
217:	
Zatoville-----	3S
Orinoco-----	3S
W:	
Water-----	4

WINDBREAK SUITABILITY GROUP SPECIES LIST

(The symbol < means less than; > means greater than. Absence of an entry indicates that trees generally do not grow to the indicated height. Soils in windbreak suitability group 4 are not generally suited for windbreak development)

Windbreak suitability group	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
1-----	Western sandcherry, Nanking cherry	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, blue spruce, blue chokecherry, lilac	Russian-olive, green ash, ponderosa pine, Siberian elm	---	---
2M-----	Western sandcherry, Nanking cherry	Siberian peashrub, green ash, Rocky Mountain juniper, Siberian crabapple, ponderosa pine, blue spruce, common chokecherry, lilac	Russian-olive, Siberian elm	---	---
2W-----	Western sandcherry, skunkbush sumac	Rocky Mountain juniper, Tatarian honeysuckle, Siberian crabapple, common chokecherry, lilac	Russian-olive, ponderosa pine	Golden willow, Siberian elm	Plains cottonwood
3M-----	Western sandcherry, Nanking cherry	Siberian peashrub, green ash, Rocky Mountain juniper, Siberian crabapple, ponderosa pine, blue spruce, common chokecherry, lilac	Russian-olive, Siberian elm	---	---
3S-----	Skunkbush sumac	Siberian peashrub, Rocky Mountain juniper, ponderosa pine, common chokecherry, silver buffaloberry	Russian-olive, Siberian elm	---	---
3W-----	Skunkbush sumac	Rocky Mountain juniper, Tatarian honeysuckle, lilac, common chokecherry	Russian-olive	Golden willow	Plains cottonwood

Range

About 2.8 million acres in the survey area is used as rangeland, and an additional 225,000 acres is forest land understory used for grazing. More than 90 percent of the survey area is used for grazing. This acreage provides forage for nearly 100,000 head of cattle and 12,000 head of sheep (8). The sale of livestock is the largest source of cash income derived from agricultural products in the survey area.

Most grazing is on native range. The range is used primarily for grazing by domestic livestock; however, it also is used as wildlife habitat, recreational areas, or watershed and has esthetic value.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on range are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Range is defined as land on which the native vegetation (the climax plant community, or the natural potential plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Range receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Grazed forest land is defined as land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significant impairment of other forest values.

Native pasture is defined as land on which the potential (climax) vegetation is forest but which is used and managed primarily for the production of native forage plants. Native pasture includes cutover forest land and forest land that has been cleared and is managed for native or naturalized forage plants.

The table "Rangeland Productivity and Characteristic Plant Communities" at the end of this section shows, for each listed soil, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the

average percentage of each species. Only those soils that are used as rangeland or are suited to use as rangeland are listed. Explanation of the column headings in this table follows.

Range site is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants.

Many different range sites are in the survey area. Over time, the combination of plants best suited to a particular soil and climate has become established. If the soil is not excessively disturbed, this group of plants is the natural plant community for the site. Natural plant communities are not static but vary slightly from year to year and place to place.

The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important. The "Field Office Technical Guide," which is available at local offices of the Natural Resources Conservation Service, can provide specific information about range sites.

Total production is the amount of vegetation that can be expected to grow annually on well managed range that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruit of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of

air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation consists of the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil. The plants are listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range Condition

Range condition is based on a comparison of the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the natural community, the better the range condition.

Abnormal disturbances that change the natural plant community include repeated overuse by livestock, excessive burning, erosion, and plowing. Grazing animals select the most palatable plants. These plants will eventually die if they are continually grazed. A very severe disturbance can completely destroy the natural community. Under these conditions, the less desirable plants, such as annuals and weedlike plants, can invade. If the plant community has not deteriorated significantly, it eventually can return to dominantly natural plants if proper grazing management is applied.

Four range condition classes are used to show the degree of deterioration of the natural plant community.

An area of rangeland is in *excellent condition* if more than 75 percent of the present plant community is the same as the natural plant community. It is in *good condition* if the natural plants make up 51 to 75 percent of the present plant community, in *fair condition* if those plants make up 26 to 50 percent, and in *poor condition* if they make up less than 25 percent.

Knowledge of the range site and condition is necessary as a basis for planning and applying the management needed to maintain or improve the desired plant community for selected uses. Such information is needed to determine management objectives, proper grazing systems and stocking rates, suitable wildlife management practices, the potential for recreational uses, and the condition of watersheds.

Rangeland Management

Rangeland management requires a knowledge of the kinds of soil and of the potential natural plant

community. It also requires an evaluation of the present range condition.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, reduction of less desirable species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management is the most important part of any rangeland management program. Proper grazing use, timely deferment of grazing, and planned rotation grazing systems are key practices. Research and the experience of ranchers have shown that if no more than one-half of the current year's growth is grazed, a plant community in good or excellent condition can be maintained and one in fair condition can be improved. The remaining one-half enables plants to make and store food for regrowth and root development. As a result, the desirable plants remain healthy and are not replaced by less desirable grasses and weeds. Also, the plant cover protects the soil from water erosion and soil blowing, improves tilth, increases the rate of water infiltration, and helps to control runoff.

Certain practices commonly are needed to obtain a uniform distribution of grazing. These include developing livestock watering facilities, fencing, properly locating salt and mineral supplements, constructing livestock trails in steeply sloping areas, and riding or herding.

Various kinds of grazing systems can be used in range management. No single grazing system is best under all conditions. The grazing system should increase the quantity and improve the quality of the range vegetation, should meet the needs of the individual operator, and should be designed according to the topography, the type of grazing animals, and the resource management objectives.

Special improvement practices are needed in areas where management practices do not achieve the desired results or where recovery is too slow under forage management alone. These include range seeding, brush management, water spreading, prescribed burning, and mechanical treatment.

Some soils are suited to mechanical treatment for range improvement. On other soils, however, only proper grazing management can improve the range. Many soils in capability classes 1 through 4 are suited to such practices as seeding, mechanical brush and weed control, and water spreading. Those in capability

classes 7 and 8, however, are not suitable. Many soils in capability classes 1 through 4 are suited to tillage for seedbed preparation before native or introduced forage plant species are seeded. Soils in capability class 6 may be suited to limited surface disturbance, such as scarification, for the purpose of seeding and as a means of increasing the rate of water infiltration for seed germination.

Where feasible, mechanical renovation practices, such as shallow chiseling, can speed recovery of the desired plants. These practices open up the surface and thus allow the absorption of more moisture and production of the more desirable plants. Mechanical renovation, brush management, and timely deferment of grazing allow recovery of the desired plants.

Seeding may be needed in areas where the less desirable plants are dominant. A clean, firm seedbed should be prepared, suitable species should be selected for seeding, and rest periods should be long enough to allow the new plants to become established.

Special improvement practices can be effective only if the management system helps to keep the desirable plants healthy.

Forest Land Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some forest land can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

The typical canopy density in the survey area is 50 percent for Barvon, Glendive, Hanly, Havre, and Lamedeer soils; 40 percent for Barvon, dry, soils, Lamedeer, dry, soils, and Spang, moist, soils; 30 percent for Birney, moist, soils, Bitton, moist, soils, Cabba soils, and Delpoint, moist, soils; and 20 percent for Cabbart, Kirby, and Ringling soils.

The understory plant communities on uplands in this survey area can be grouped into three main ecological types. The dry areas are mainly at the lower elevations, and the major soils are Birney, moist, and Delpoint, moist, soils. The understory consists mainly of grasses, such as bluebunch wheatgrass and green needlegrass. One or two kinds of shrubs, such as skunkbush sumac

and common snowberry, may also be present but typically in minor proportions. The soils have a moderate potential for the production of understory forage. On sites that are overstocked with trees, thinning the overstory generally increases the production of forage.

The moist areas are mainly at the higher elevations, such as on the Lame Deer-Ashland Divide. Barvon and Lamedeer are the major soils. The understory is typically dominated by shrubs, such as russet buffaloberry, Saskatoon serviceberry, common chokecherry, and kinnikinnick. Grasses are generally of minor importance in these areas. The soils have a limited potential for understory forage production. Thinning the tree canopy on these sites generally does not substantially increase the production of forage because the understory is dominated by shrubs that are of limited grazing value to domestic livestock.

A third type of understory is at medium elevations between the dry and moist areas. Barvon, dry, Bitton, moist, and Lamedeer, dry, are the major soils. The understory is dominated by grasses, such as big bluestem, Columbia needlegrass, Idaho fescue, and bluebunch wheatgrass. The areas have a significant number of shrubs, mainly common chokecherry and common snowberry. Other shrubs, such as Saskatoon serviceberry and Oregongrape, may also be present but typically in minor proportions. The soils have a moderate or high potential for the production of understory forage. On sites that are overstocked with trees, thinning the overstory generally increases the production of forage.

The table "Understory Vegetation and Habitat Types" at the end of this section shows, for each soil suitable for forest land, the potential for producing understory vegetation. The *total production* of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable, normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimal part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

The table also lists the common names of the *characteristic vegetation* on each soil and the *composition*, by percentage of air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a canopy density that is most nearly typical of forest land in which the production of wood crops is highest.

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

(Only the soils that support rangeland vegetation suitable for grazing are listed. Ppt means precipitation)

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
1: Abor-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,300	Green needlegrass-----	35
		Unfavorable	900	Other perennial grasses-----	10
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
2: Abor-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,300	Green needlegrass-----	35
		Unfavorable	900	Other perennial grasses-----	10
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
3: Abor-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,300	Green needlegrass-----	35
		Unfavorable	900	Other perennial grasses-----	10
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
Marvan-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	30
		Unfavorable	900	Fourwing saltbush-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	5
				Big sagebrush-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Greasewood-----	1
4: Abor-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,300	Green needlegrass-----	35
		Unfavorable	900	Other perennial grasses-----	10
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
5: Absher-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,200	Western wheatgrass-----	30
		Normal	900	Green needlegrass-----	20
		Unfavorable	600	Montana wheatgrass-----	5
				Fourwing saltbush-----	5
				Alkali sacaton-----	5
				Needleandthread-----	5
				Other perennial forbs-----	5
				Greasewood-----	5
				Winterfat-----	2
				Big sagebrush-----	1
Nobe-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	200	Western wheatgrass-----	25
		Normal	150	Alkali sacaton-----	25
		Unfavorable	75	Greasewood-----	15
				Fourwing saltbush-----	15
				Inland saltgrass-----	10
			Alkaligrass-----	5	
6: Antwerp-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	500	Alkali sacaton-----	25
		Normal	350	Western wheatgrass-----	25
		Unfavorable	200	Fourwing saltbush-----	20
				Other shrubs-----	10
				Montana wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Sandberg bluegrass-----	5	
7: Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sideoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
				Other shrubs-----	2
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
			Juniper-----	1	
8: Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sideoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
			Other shrubs-----	2	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
8:					
Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sidecoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
9:					
Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sidecoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
				Other shrubs-----	2
Kirby-----	Very shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	700	Bluebunch wheatgrass-----	45
		Normal	600	Little bluestem-----	15
		Unfavorable	400	Other perennial forbs-----	10
				Plains muhly-----	5
				Needleandthread-----	5
				Sidecoats grama-----	5
				Skunkbush sumac-----	5
				Juniper-----	1
10:					
Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sidecoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
				Other shrubs-----	2
Kirby-----	Very shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	700	Bluebunch wheatgrass-----	45
		Normal	600	Little bluestem-----	15
		Unfavorable	400	Other perennial forbs-----	10
				Plains muhly-----	5
				Needleandthread-----	5
				Sidecoats grama-----	5
				Skunkbush sumac-----	5
				Juniper-----	1

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
10: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
			Other perennial forbs-----	5	
			Juniper-----	1	
11: Assinniboine----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Prairie sandreed-----	25
		Normal	1,200	Bluebunch wheatgrass-----	15
		Unfavorable	900	Little bluestem-----	15
				Sand bluestem-----	10
				Western wheatgrass-----	10
				Other perennial grasses-----	5
				Needleandthread-----	5
			Sideoats grama-----	5	
			Sand dropseed-----	5	
			Other shrubs-----	5	
14: Barvon.					
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
			Sedge-----	5	
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
			Needleandthread-----	10	
15: Belfield-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,500	Western wheatgrass-----	30
		Normal	2,100	Green needlegrass-----	20
		Unfavorable	1,600	Bluebunch wheatgrass-----	15
				Other perennial forbs-----	10
				Other perennial grasses-----	5
				Idaho fescue-----	5
				Other perennial grasslikes-----	5
			Big sagebrush-----	5	
			Other shrubs-----	5	
16: Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
			Juniper-----	2	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
18: Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
				Plains muhly-----	5
				Green needlegrass-----	5
				Sideoats grama-----	5
				Western wheatgrass-----	5
Cooers-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	25
		Normal	1,300	Little bluestem-----	15
		Unfavorable	1,000	Green needlegrass-----	10
				Needleandthread-----	10
				Western wheatgrass-----	10
				Plains muhly-----	5
				Other perennial grasses-----	5
				Threadleaf sedge-----	5
			Other shrubs-----	5	
			Other perennial forbs-----	5	
Kirby-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	40
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	10
				Other perennial forbs-----	10
				Needleandthread-----	5
				Plains muhly-----	5
			Skunkbush sumac-----	1	
19: Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
				Plains muhly-----	5
				Green needlegrass-----	5
				Sideoats grama-----	5
				Western wheatgrass-----	5
Kirby-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	40
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	10
				Other perennial forbs-----	10
				Needleandthread-----	5
				Plains muhly-----	5
			Skunkbush sumac-----	1	
20: Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
			Juniper-----	2	
Kirby-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	40
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	10
				Other perennial forbs-----	10
				Needleandthread-----	5
			Plains muhly-----	5	
			Skunkbush sumac-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
20: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
21: Birney.					
Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sideoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
				Other shrubs-----	2
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
22: Birney, moist.					
Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
				Juniper-----	2
Kirby-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	700	Little bluestem-----	40
		Normal	600	Bluebunch wheatgrass-----	20
		Unfavorable	400	Sideoats grama-----	10
				Other perennial forbs-----	10
				Plains muhly-----	5
			Needleandthread-----	5	
			Skunkbush sumac-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
23: Bitton-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Bluebunch wheatgrass-----	20
		Normal	1,400	Big bluestem-----	20
		Unfavorable	900	Little bluestem-----	15
				Sideoats grama-----	10
				Idaho fescue-----	10
				Porcupinegrass-----	5
				Other perennial forbs-----	5
				Plains muhly-----	5
				Other shrubs-----	5
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
			Sedge-----	5	
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
			Plains muhly-----	5	
			Skunkbush sumac-----	5	
24: Bitton-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Bluebunch wheatgrass-----	20
		Normal	1,400	Big bluestem-----	20
		Unfavorable	900	Little bluestem-----	15
				Sideoats grama-----	10
				Idaho fescue-----	10
				Porcupinegrass-----	5
				Other perennial forbs-----	5
				Plains muhly-----	5
				Other shrubs-----	5
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
			Sedge-----	5	
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
			Plains muhly-----	5	
			Skunkbush sumac-----	5	
25: Bitton-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Bluebunch wheatgrass-----	20
		Normal	1,400	Big bluestem-----	20
		Unfavorable	900	Little bluestem-----	15
				Sideoats grama-----	10
				Idaho fescue-----	10
				Porcupinegrass-----	5
				Other perennial forbs-----	5
				Plains muhly-----	5
				Other shrubs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
25: Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	5
26: Bitton-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Bluebunch wheatgrass-----	40
		Normal	1,800	Idaho fescue-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Little bluestem-----	10
				Other perennial forbs-----	5
Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
27: Bitton-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Bluebunch wheatgrass-----	40
		Normal	1,800	Idaho fescue-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Little bluestem-----	10
				Other perennial forbs-----	5
Twin Creek-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Big bluestem-----	25
		Normal	2,400	Bluebunch wheatgrass-----	20
		Unfavorable	1,800	Little bluestem-----	15
				Green needlegrass-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
28: Bitton-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Bluebunch wheatgrass-----	40
		Normal	1,800	Idaho fescue-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Little bluestem-----	10
				Other perennial forbs-----	5
Twin Creek-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Big bluestem-----	25
		Normal	2,400	Bluebunch wheatgrass-----	20
		Unfavorable	1,800	Little bluestem-----	15
				Green needlegrass-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
29: Bitton.					
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
				Sedge-----	5
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
				Needleandthread-----	10
30: Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	800	Bluebunch wheatgrass-----	25
		Normal	500	Idaho fescue-----	20
		Unfavorable	300	Little bluestem-----	10
				Arrowleaf balsamroot-----	5
				Needleandthread-----	5
				Skunkbush sumac-----	5
				Sideoats grama-----	5
				Common snowberry-----	5
31: Bitton.					
Lamedeer.					
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	5
32: Bitton.					
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	5
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
				Needleandthread-----	10

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
33: Bonfri-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	40
		Normal	1,200	Green needlegrass-----	20
		Unfavorable	900	Needleandthread-----	15
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Rough fescue-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
				Idaho fescue-----	5
Bullock-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Western wheatgrass-----	35
		Normal	700	Needleandthread-----	20
		Unfavorable	400	Thickspike wheatgrass-----	10
				Green needlegrass-----	10
				Other perennial forbs-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
			Other shrubs-----	5	
			Montana wheatgrass-----	5	
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
			Other perennial forbs-----	5	
			Juniper-----	1	
34: Bonfri-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	40
		Normal	1,200	Green needlegrass-----	20
		Unfavorable	900	Needleandthread-----	15
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Rough fescue-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
				Idaho fescue-----	5
Galbreth-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	30
		Normal	900	Prairie sandreed-----	10
		Unfavorable	600	Little bluestem-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
				Indian ricegrass-----	5
				Green needlegrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sideoats grama-----	5
			Other shrubs-----	5	
			Plains muhly-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
35: Bonfri-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	40
		Normal	1,200	Green needlegrass-----	20
		Unfavorable	900	Needleandthread-----	15
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Rough fescue-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
				Idaho fescue-----	5
Marmarth-----		Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Needleandthread-----
	Normal		1,600	Prairie sandreed-----	25
	Unfavorable		1,000	Western wheatgrass-----	20
				Other perennial forbs-----	10
				Threadleaf sedge-----	10
Bullock-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Western wheatgrass-----	35
		Normal	700	Needleandthread-----	20
		Unfavorable	400	Thickspike wheatgrass-----	10
				Green needlegrass-----	10
				Other perennial forbs-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
37: Brunelda-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	25
		Normal	1,100	Thickspike wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Montana wheatgrass-----	10
				Other perennial forbs-----	5
				Big sagebrush-----	5
				Other perennial grasses-----	5
				Blue grama-----	4
				Sandberg bluegrass-----	2
				Winterfat-----	2
		Fourwing saltbush-----	2		
38: Brunelda-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	25
		Normal	1,100	Thickspike wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Montana wheatgrass-----	10
				Other perennial forbs-----	5
				Big sagebrush-----	5
				Other perennial grasses-----	5
				Blue grama-----	4
				Sandberg bluegrass-----	2
				Winterfat-----	2
		Fourwing saltbush-----	2		
Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Other perennial grasses-----	15
		Unfavorable	500	Green needlegrass-----	15
				Needleandthread-----	10
				Big sagebrush-----	5
			Alkali sacaton-----	5	
			Other perennial forbs-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
39: Brunelda-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	25
		Normal	1,100	Thickspike wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Montana wheatgrass-----	10
				Other perennial forbs-----	5
				Big sagebrush-----	5
				Other perennial grasses-----	5
				Blue grama-----	4
				Sandberg bluegrass-----	2
				Winterfat-----	2
			Fourwing saltbush-----	2	
Vaeda-----	Saline upland, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	800	Western wheatgrass-----	45
		Normal	400	Fourwing saltbush-----	15
		Unfavorable	250	Green needlegrass-----	10
				Other annual forbs-----	5
				Saltgrass-----	5
				Big sagebrush-----	5
				Sandberg bluegrass-----	5
				Other perennial forbs-----	5
			Other perennial grasses-----	5	
			Greasewood-----	5	
Nobe-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	200	Western wheatgrass-----	25
		Normal	150	Alkali sacaton-----	25
		Unfavorable	75	Greasewood-----	15
				Fourwing saltbush-----	15
				Inland saltgrass-----	10
			Alkaligrass-----	5	
40: Bryant-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Western wheatgrass-----	25
		Normal	2,200	Other perennial grasses-----	15
		Unfavorable	1,600	Green needlegrass-----	15
				Other perennial forbs-----	10
				Needleandthread-----	10
				Other shrubs-----	5
			Bluebunch wheatgrass-----	5	
41: Bryant-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Western wheatgrass-----	25
		Normal	2,200	Other perennial grasses-----	15
		Unfavorable	1,600	Green needlegrass-----	15
				Other perennial forbs-----	10
				Needleandthread-----	10
				Other shrubs-----	5
			Bluebunch wheatgrass-----	5	
42: Bullock-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Western wheatgrass-----	35
		Normal	700	Needleandthread-----	20
		Unfavorable	400	Thickspike wheatgrass-----	10
				Green needlegrass-----	10
				Other perennial forbs-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
			Montana wheatgrass-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
42: Rallod-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Western wheatgrass-----	50
		Normal	700	Thickspike wheatgrass-----	15
		Unfavorable	400	Low sagebrush-----	5
				Fourwing saltbush-----	5
		Needleandthread-----	5		
			Winterfat-----	5	
			Other perennial forbs-----	5	
43: Bullock-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Western wheatgrass-----	35
		Normal	700	Needleandthread-----	20
		Unfavorable	400	Thickspike wheatgrass-----	10
				Green needlegrass-----	10
				Other perennial forbs-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
		Other shrubs-----	5		
		Montana wheatgrass-----	5		
Rominell-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,050	Western wheatgrass-----	35
		Normal	600	Needleandthread-----	20
		Unfavorable	500	Green needlegrass-----	10
				Thickspike wheatgrass-----	10
				Blue grama-----	5
				Montana wheatgrass-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
		Winterfat-----	3		
		Big sagebrush-----	2		
44: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
		Western wheatgrass-----	5		
45: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
		Western wheatgrass-----	5		
46: Busby-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	35
		Normal	1,300	Western wheatgrass-----	15
		Unfavorable	1,000	Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Green needlegrass-----	5
				Other perennial grasses-----	5
				Big sagebrush-----	5
		Sedge-----	3		

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
47: Rock outcrop.					
Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	5
48: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	5
Twilight-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Prairie sandreed-----	35
		Normal	1,400	Little bluestem-----	20
		Unfavorable	1,100	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	5
Blackhall-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	25
		Normal	900	Prairie sandreed-----	15
		Unfavorable	600	Little bluestem-----	15
				Needleandthread-----	10
				Plains muhly-----	5
				Sedge-----	5
				Indian ricegrass-----	5
				Other perennial forbs-----	5
				Skunkbush sumac-----	5
				Western wheatgrass-----	5
49: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	5
Twilight-----	Thin sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,300	Prairie sandreed-----	25
		Normal	1,000	Little bluestem-----	25
		Unfavorable	800	Big bluestem-----	10
				Needleandthread-----	10
				Plains muhly-----	5
				Sedge-----	5
				Other perennial forbs-----	5
				Skunkbush sumac-----	5
				Bluebunch wheatgrass-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition	
		Kind of year	Dry weight			
			Lb/acre		Pct	
49: Blackhall-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	25	
		Normal	900	Prairie sandreed-----	15	
		Unfavorable		600	Little bluestem-----	15
					Needleandthread-----	10
					Plains muhly-----	5
					Sedge-----	5
					Indian ricegrass-----	5
					Other perennial forbs-----	5
					Skunkbush sumac-----	5
			Western wheatgrass-----	5		
50: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35	
		Normal	1,500	Little bluestem-----	20	
		Unfavorable		1,200	Needleandthread-----	15
					Bluebunch wheatgrass-----	5
					Indian ricegrass-----	5
					Big bluestem-----	5
					Other perennial forbs-----	5
			Western wheatgrass-----	5		
Yetull-----	Sands, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,400	Prairie sandreed-----	30	
		Normal	2,000	Indian ricegrass-----	10	
		Unfavorable		1,600	Sand bluestem-----	10
					Other perennial forbs-----	10
					Little bluestem-----	10
					Other perennial grasses-----	10
					Other shrubs-----	5
			Needleandthread-----	5		
51: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35	
		Normal	1,500	Little bluestem-----	20	
		Unfavorable		1,200	Needleandthread-----	15
					Bluebunch wheatgrass-----	5
					Indian ricegrass-----	5
					Big bluestem-----	5
					Other perennial forbs-----	5
			Western wheatgrass-----	5		
Yetull-----	Sands, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,400	Prairie sandreed-----	30	
		Normal	2,000	Indian ricegrass-----	10	
		Unfavorable		1,600	Sand bluestem-----	10
					Other perennial forbs-----	10
					Little bluestem-----	10
					Other perennial grasses-----	10
					Other shrubs-----	5
			Needleandthread-----	5		
52: Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35	
		Normal	1,300	Sideoats grama-----	15	
		Unfavorable		700	Other perennial forbs-----	10
					Green needlegrass-----	10
					Western wheatgrass-----	10
			Needleandthread-----	10		

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
52: Wayden-----	Shallow clay, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Bluebunch wheatgrass-----	20
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,100	Western wheatgrass-----	15
				Little bluestem-----	10
				Other perennial forbs-----	10
				Idaho fescue-----	10
				Plains muhly-----	5
			Silver sagebrush-----	3	
			Winterfat-----	2	
Rock outcrop.					
53: Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
				Needleandthread-----	10
Wayden-----	Shallow clay, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Bluebunch wheatgrass-----	20
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,100	Western wheatgrass-----	15
				Little bluestem-----	10
				Other perennial forbs-----	10
				Idaho fescue-----	10
				Plains muhly-----	5
			Silver sagebrush-----	3	
			Winterfat-----	2	
Sagedale.					
54: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	35
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sideoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
			Other shrubs-----	2	
Rock outcrop.					

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
55: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
Rock outcrop.					
56: Cambeth-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	25
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
				Other shrubs-----	2
57: Cambeth-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	25
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
				Other shrubs-----	2
58: Cambeth-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	25
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
				Other shrubs-----	2

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
58: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
59: Cambeth-----		Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----
	Normal		1,300	Green needlegrass-----	20
	Unfavorable		1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
			Other shrubs-----	2	
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
60: Cambeth-----		Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----
	Normal		1,300	Green needlegrass-----	20
	Unfavorable		1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
			Other shrubs-----	2	
Niler-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	40
		Normal	700	Western wheatgrass-----	15
		Unfavorable	400	Needleandthread-----	15
				Other perennial forbs-----	10
				Big sagebrush-----	5
				Threadleaf sedge-----	5
			Fourwing saltbush-----	5	
			Other perennial grasses-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
61: Castner-----	Very shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Bluebunch wheatgrass-----	35
		Normal	1,400	Little bluestem-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Sideoats grama-----	10
				Other perennial grasses-----	10
				Western wheatgrass-----	5
				Plains muhly-----	5
				Other shrubs-----	5
Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
62: Chinook-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,400	Needleandthread-----	20
		Unfavorable	1,000	Little bluestem-----	10
				Western wheatgrass-----	5
				Other perennial forbs-----	5
				Yucca-----	5
				Big bluestem-----	5
				Sand dropseed-----	5
				Indian ricegrass-----	5
63: Chinook-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,400	Needleandthread-----	10
		Unfavorable	1,000	Little bluestem-----	10
				Bluebunch wheatgrass-----	5
				Plains muhly-----	5
				Thickspike wheatgrass-----	5
				Other perennial forbs-----	5
				Sideoats grama-----	5
				Sand dropseed-----	5
				Threadleaf sedge-----	5
			Other perennial grasses-----	4	
			Yucca-----	2	
			Other shrubs-----	1	
64: Coopers-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	25
		Normal	1,300	Little bluestem-----	15
		Unfavorable	1,000	Green needlegrass-----	10
				Needleandthread-----	10
				Western wheatgrass-----	10
				Plains muhly-----	5
				Other perennial grasses-----	5
				Threadleaf sedge-----	5
				Other shrubs-----	5
				Other perennial forbs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
65: Coopers-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	25
		Normal	1,300	Little bluestem-----	15
		Unfavorable	1,000	Green needlegrass-----	10
			Needleandthread-----	10	
			Western wheatgrass-----	10	
			Plains muhly-----	5	
			Other perennial grasses-----	5	
			Threadleaf sedge-----	5	
			Other shrubs-----	5	
			Other perennial forbs-----	5	
Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
			Plains muhly-----	5	
			Green needlegrass-----	5	
			Sidecoats grama-----	5	
Western wheatgrass-----	5				
66: Coopers-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	25
		Normal	1,300	Little bluestem-----	15
		Unfavorable	1,000	Green needlegrass-----	10
			Needleandthread-----	10	
			Western wheatgrass-----	10	
			Plains muhly-----	5	
			Other perennial grasses-----	5	
			Threadleaf sedge-----	5	
			Other shrubs-----	5	
			Other perennial forbs-----	5	
Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
			Little bluestem-----	10	
			Needleandthread-----	10	
			Other perennial forbs-----	5	
Plains muhly-----	5				
67: Creed-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,500	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	15
		Unfavorable	800	Needleandthread-----	15
			Winterfat-----	10	
			Other perennial forbs-----	5	
			Other perennial grasses-----	5	
			Bluebunch wheatgrass-----	5	
Threadleaf sedge-----	5				
68: Davidell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,400	Green needlegrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
			Bluebunch wheatgrass-----	5	
			Other perennial grasses-----	5	
			Fourwing saltbush-----	5	
			Other perennial forbs-----	5	
			Alkali sacaton-----	5	
Other shrubs-----	1				
Greasewood-----	1				

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
69: Davidell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,400	Green needlegrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	5
				Other perennial grasses-----	5
				Fourwing saltbush-----	5
				Other perennial forbs-----	5
				Alkali sacaton-----	5
				Other shrubs-----	1
				Greasewood-----	1
70: Davidell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,400	Green needlegrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	5
				Other perennial grasses-----	5
				Fourwing saltbush-----	5
				Other perennial forbs-----	5
				Alkali sacaton-----	5
				Other shrubs-----	1
				Greasewood-----	1
Antwerp-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	500	Alkali sacaton-----	25
		Normal	350	Western wheatgrass-----	25
		Unfavorable	200	Fourwing saltbush-----	20
				Other shrubs-----	10
				Montana wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Sandberg bluegrass-----	5	
71: Degrand-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,900	Prairie sandreed-----	25
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,100	Needleandthread-----	15
				Thickspike wheatgrass-----	10
				Sand dropseed-----	10
				Other perennial forbs-----	5
			Western wheatgrass-----	5	
72: Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
			Other shrubs-----	5	
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Flains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
73:					
Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
74:					
Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
75: Delpoint-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Western wheatgrass-----	25
		Normal	1,300	Needleandthread-----	20
		Unfavorable	900	Green needlegrass-----	15
				Little bluestem-----	10
				Other perennial grasses-----	5
				Prairie junegrass-----	5
				Other perennial grasslikes-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Bluebunch wheatgrass-----	5
Galbreth-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	30
		Normal	900	Prairie sandreed-----	10
		Unfavorable	600	Little bluestem-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
				Indian ricegrass-----	5
				Green needlegrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sideoats grama-----	5
			Other shrubs-----	5	
			Plains muhly-----	5	
76: Delpoint, moist.					
Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
			Other shrubs-----	5	
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
			Juniper-----	1	
77: Delpoint, moist.					
Delpoint-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,400	Western wheatgrass-----	20
		Normal	900	Bluebunch wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	5
				Other perennial grasslikes-----	5
				Other perennial grasses-----	5
			Other shrubs-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
77: Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
78: Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
				Sedge-----	5
Bitton-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Bluebunch wheatgrass-----	20
		Normal	1,400	Big bluestem-----	20
		Unfavorable	900	Little bluestem-----	15
				Sideoats grama-----	10
				Idaho fescue-----	10
				Porcupinegrass-----	5
				Other perennial forbs-----	5
				Plains muhly-----	5
				Other shrubs-----	5
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
				Needleandthread-----	10
79: Evanston-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	25
		Normal	1,500	Other perennial grasses-----	15
		Unfavorable	1,000	Little bluestem-----	15
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	10
				Needleandthread-----	10
				Silver sagebrush-----	5
				Green needlegrass-----	5
				Lomatium-----	1
80: Fergus variant--	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,400	Little bluestem-----	20
		Normal	2,000	Bluebunch wheatgrass-----	20
		Unfavorable	1,400	Green needlegrass-----	15
				Big bluestem-----	10
				Western wheatgrass-----	5
				Idaho fescue-----	5
				Sideoats grama-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sedge-----	5
				Other shrubs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
					Pct
		Lb/acre			
80: Twin Creek-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Big bluestem-----	25
		Normal	2,400	Bluebunch wheatgrass-----	20
		Unfavorable	1,800	Little bluestem-----	15
				Green needlegrass-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
81: Floweree-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,500	Green needlegrass-----	10
		Unfavorable	1,000	Needleandthread-----	10
				Winterfat-----	5
				Threadleaf sedge-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Bluebunch wheatgrass-----	5
82: Floweree-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,500	Green needlegrass-----	10
		Unfavorable	1,000	Needleandthread-----	10
				Winterfat-----	5
				Threadleaf sedge-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Bluebunch wheatgrass-----	5
83: Floweree-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,500	Green needlegrass-----	10
		Unfavorable	1,000	Needleandthread-----	10
				Winterfat-----	5
				Threadleaf sedge-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Bluebunch wheatgrass-----	5
Vanstel-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Other perennial grasses-----	10
				Green needlegrass-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
85: Forelle-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Other perennial grasses-----	10
				Other perennial forbs-----	5
				Bluebunch wheatgrass-----	5
86: Forelle-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Other perennial grasses-----	10
				Other perennial forbs-----	5
				Bluebunch wheatgrass-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
86: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Other perennial grasses-----	15
		Unfavorable	500	Green needlegrass-----	15
				Needleandthread-----	10
				Big sagebrush-----	5
				Alkali sacaton-----	5
			Other perennial forbs-----	5	
87: Galbreth-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	30
		Normal	900	Prairie sandreed-----	10
		Unfavorable	600	Little bluestem-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
				Indian ricegrass-----	5
				Green needlegrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sideoats grama-----	5
			Other shrubs-----	5	
			Plains muhly-----	5	
88: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Other perennial grasses-----	15
		Unfavorable	500	Green needlegrass-----	15
				Needleandthread-----	10
				Big sagebrush-----	5
				Alkali sacaton-----	5
			Other perennial forbs-----	5	
89: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Other perennial grasses-----	15
		Unfavorable	500	Green needlegrass-----	15
				Needleandthread-----	10
				Big sagebrush-----	5
				Alkali sacaton-----	5
			Other perennial forbs-----	5	
90: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Other perennial grasses-----	15
		Unfavorable	500	Green needlegrass-----	15
				Needleandthread-----	10
				Big sagebrush-----	5
				Alkali sacaton-----	5
			Other perennial forbs-----	5	
Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
			Other shrubs-----	10	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition	
		Kind of year	Dry weight			
		Lb/acre		Pct		
91: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30	
		Normal	800	Other perennial grasses-----	15	
		Unfavorable	500	Green needlegrass-----	15	
				Needleandthread-----	10	
				Big sagebrush-----	5	
				Alkali sacaton-----	5	
				Other perennial forbs-----	5	
Kobar-----		Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
			Normal	1,300	Green needlegrass-----	20
	Unfavorable		900	Other perennial forbs-----	10	
				Bluebunch wheatgrass-----	10	
			Other shrubs-----	10		
92: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30	
		Normal	800	Other perennial grasses-----	15	
		Unfavorable	500	Green needlegrass-----	15	
				Needleandthread-----	10	
				Big sagebrush-----	5	
				Alkali sacaton-----	5	
			Other perennial forbs-----	5		
Marvan-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30	
		Normal	1,100	Green needlegrass-----	30	
		Unfavorable	900	Fourwing saltbush-----	5	
				Thickspike wheatgrass-----	5	
				Winterfat-----	5	
				Big sagebrush-----	5	
				Other perennial forbs-----	5	
				Other perennial grasses-----	5	
			Greasewood-----	1		
93: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30	
		Normal	800	Other perennial grasses-----	15	
		Unfavorable	500	Green needlegrass-----	15	
				Needleandthread-----	10	
				Big sagebrush-----	5	
				Alkali sacaton-----	5	
			Other perennial forbs-----	5		
Vanda-----	Dense clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	50	
		Normal	900	Big sagebrush-----	10	
		Unfavorable	600	Other perennial forbs-----	5	
				Wild sarsaparilla-----	5	
				Other perennial grasses-----	5	
				Green needlegrass-----	5	
				Nuttall alkaligrass-----	5	
				Alkali sacaton-----	5	
			Bottlebrush squirreltail-----	5		
			Greasewood-----	1		

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
94: Gerdrum-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,500	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	15
		Unfavorable	800	Montana wheatgrass-----	10
				Needleandthread-----	10
				Thickspike wheatgrass-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
				Winterfat-----	5
				Other perennial forbs-----	5
				Fourwing saltbush-----	3
			Big sagebrush-----	2	
Volborg-----	Shale, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	300	Slenderbush eriogonum-----	25
		Normal	200	Fourwing saltbush-----	20
		Unfavorable	100	Western wheatgrass-----	20
				Montana wheatgrass-----	10
				Rubber rabbitbrush-----	10
			Longleaf sagebrush-----	5	
			Other perennial forbs-----	5	
95: Glendive-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	25
		Normal	1,400	Green needlegrass-----	15
		Unfavorable	900	Little bluestem-----	10
				Needleandthread-----	10
				Thickspike wheatgrass-----	5
				Prairie sandreed-----	5
				Winterfat-----	3
				Rose-----	3
				Common snowberry-----	2
				Silver sagebrush-----	2
			Common chokecherry-----	1	
			Silver buffaloberry-----	1	
96: Hanly-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Needleandthread-----	20
		Normal	1,600	Little bluestem-----	20
		Unfavorable	1,200	Western wheatgrass-----	15
				Prairie sandreed-----	15
				Green needlegrass-----	5
				Sand bluestem-----	5
			Indian ricegrass-----	5	
Glendive-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	25
		Normal	1,400	Green needlegrass-----	15
		Unfavorable	900	Little bluestem-----	10
				Needleandthread-----	10
				Thickspike wheatgrass-----	5
				Prairie sandreed-----	5
				Winterfat-----	3
				Rose-----	3
				Common snowberry-----	2
				Silver sagebrush-----	2
			Common chokecherry-----	1	
			Silver buffaloberry-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
97: Harlem-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	2,200	Green needlegrass-----	40
		Normal	1,600	Western wheatgrass-----	35
		Unfavorable	1,200	Other perennial forbs-----	10
				Other perennial grasses-----	5
				Silver sagebrush-----	5
				Rose-----	1
				Common snowberry-----	1
98: Harlem-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	2,200	Green needlegrass-----	40
		Normal	1,600	Western wheatgrass-----	35
		Unfavorable	1,200	Other perennial forbs-----	10
				Other perennial grasses-----	5
				Silver sagebrush-----	5
				Rose-----	1
				Common snowberry-----	1
99: Havre-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,200	Western wheatgrass-----	25
		Normal	1,800	Needleandthread-----	20
		Unfavorable	1,400	Green needlegrass-----	20
				Bluebunch wheatgrass-----	10
				Silver sagebrush-----	5
				Big bluestem-----	5
100: Havre-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,200	Western wheatgrass-----	25
		Normal	1,800	Needleandthread-----	20
		Unfavorable	1,400	Green needlegrass-----	20
				Bluebunch wheatgrass-----	10
				Silver sagebrush-----	5
				Big bluestem-----	5
101: Havre-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,200	Western wheatgrass-----	35
		Normal	1,800	Green needlegrass-----	25
		Unfavorable	1,400	Silver sagebrush-----	5
102: Havre-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Green needlegrass-----	30
		Normal	1,500	Western wheatgrass-----	25
		Unfavorable	1,000	Other perennial forbs-----	10
				Canada wildrye-----	5
				Silver sagebrush-----	5
				Slender wheatgrass-----	5
				Little bluestem-----	5
				Common snowberry-----	3
103: Havre-----	Overflow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	3,000	Alkali sacaton-----	20
		Normal	2,500	Alkaligrass-----	20
		Unfavorable	1,800	Western wheatgrass-----	15
				Alkali cordgrass-----	10
				Other perennial grasses-----	10
				Other shrubs-----	10
				Basin wildrye-----	5
				Inland saltgrass-----	5
				Sedge-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
104: Havre-----	Overflow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	3,000	Western wheatgrass-----	20
		Normal	2,000	Slender wheatgrass-----	10
		Unfavorable	1,000	Green needlegrass-----	10
				Big bluestem-----	10
				Canada wildrye-----	5
				Common snowberry-----	5
				Common chokecherry-----	5
			Needleandthread-----	5	
			Silver sagebrush-----	1	
Harlem-----	Overflow, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	3,000	Green needlegrass-----	20
		Normal	2,500	Western wheatgrass-----	15
		Unfavorable	2,000	Nebraska sedge-----	10
				Prairie cordgrass-----	10
				Slender wheatgrass-----	10
				Canada wildrye-----	10
				Other perennial forbs-----	5
			Rose-----	5	
			Silver buffaloberry-----	5	
			Redosier dogwood-----	2	
			Common snowberry-----	2	
Glendive-----	Overflow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	3,000	Big bluestem-----	20
		Normal	2,500	Green needlegrass-----	15
		Unfavorable	2,000	Prairie sandreed-----	10
				Western wheatgrass-----	10
				Switchgrass-----	10
				Common chokecherry-----	5
				Needleandthread-----	5
			Little bluestem-----	5	
			Silver buffaloberry-----	5	
			Common snowberry-----	3	
			Rose-----	1	
105: Ivanell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Green needlegrass-----	30
		Normal	1,400	Western wheatgrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Other perennial forbs-----	5
			Other shrubs-----	5	
			Winterfat-----	5	
106: Ivanell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Green needlegrass-----	30
		Normal	1,400	Western wheatgrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Other perennial forbs-----	5
			Other shrubs-----	5	
			Winterfat-----	5	
Davidell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,400	Green needlegrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	5
				Other perennial grasses-----	5
			Fourwing saltbush-----	5	
			Other perennial forbs-----	5	
			Alkali sacaton-----	5	
			Other shrubs-----	1	
			Greasewood-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
107:					
Ivanell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Green needlegrass-----	30
		Normal	1,400	Western wheatgrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
				Winterfat-----	5
Niler-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	40
		Normal	700	Western wheatgrass-----	15
		Unfavorable	400	Needleandthread-----	15
				Other perennial forbs-----	10
				Big sagebrush-----	5
				Threadleaf sedge-----	5
				Fourwing saltbush-----	5
				Other perennial grasses-----	5
108:					
Kirby-----	Very shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	700	Bluebunch wheatgrass-----	45
		Normal	600	Little bluestem-----	15
		Unfavorable	400	Other perennial forbs-----	10
				Plains muhly-----	5
				Needleandthread-----	5
				Sideoats grama-----	5
				Skunkbush sumac-----	5
				Juniper-----	1
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
109:					
Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10
110:					
Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10
111:					
Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
112: Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10
113: Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10
114: Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Green needlegrass-----	35
		Normal	1,300	Western wheatgrass-----	20
		Unfavorable	900	Thickspike wheatgrass-----	15
				Sandberg bluegrass-----	5
				Plains muhly-----	5
				Big sagebrush-----	5
				Other perennial forbs-----	5
			Winterfat-----	3	
115: Kobar-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
			Other perennial forbs-----	5	
			Juniper-----	1	
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
116: Kremlin-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Other perennial forbs-----	5
			Winterfat-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
117: Kremlin-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Other perennial forbs-----	5
			Winterfat-----	5	
121: Lamedeer. Bitton.					
Ringling-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,100	Bluebunch wheatgrass-----	30
		Normal	900	Little bluestem-----	25
		Unfavorable	600	Sideoats grama-----	10
				Idaho fescue-----	10
				Rough fescue-----	5
				Plains muhly-----	5
			Skunkbush sumac-----	5	
122: Lihen-----	Thin sandy, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	30
		Normal	1,400	Little bluestem-----	20
		Unfavorable	900	Big bluestem-----	15
				Needleandthread-----	10
				Sand bluestem-----	5
				Other perennial forbs-----	5
			Indian ricegrass-----	5	
			Sand dropseed-----	5	
123: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
			Big sagebrush-----	1	
124: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
			Big sagebrush-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
125: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
				Big sagebrush-----	1
126: Lonna-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,400	Green needlegrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Bluebunch wheatgrass-----	5
				Plains muhly-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Big sagebrush-----	3
			Winterfat-----	3	
127: Lonna-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,400	Green needlegrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Bluebunch wheatgrass-----	5
				Plains muhly-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Big sagebrush-----	3
			Winterfat-----	3	
128: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
			Big sagebrush-----	1	
Alona-----	Silty, saline, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,200	Green needlegrass-----	25
		Unfavorable	800	Inland saltgrass-----	10
				Fourwing saltbush-----	5
				Alkali bluegrass-----	5
				Blue grama-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Needleandthread-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
129: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sidecoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
				Big sagebrush-----	1
Alona-----	Silty, saline, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,200	Green needlegrass-----	25
		Unfavorable	800	Inland saltgrass-----	10
				Fourwing saltbush-----	5
				Alkali bluegrass-----	5
				Blue grama-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Needleandthread-----	5	
130: Lonna-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,400	Green needlegrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Bluebunch wheatgrass-----	5
				Plains muhly-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Big sagebrush-----	3
				Winterfat-----	3
Antwerp-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	500	Alkali sacaton-----	25
		Normal	350	Western wheatgrass-----	25
		Unfavorable	200	Fourwing saltbush-----	20
				Other shrubs-----	10
				Montana wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sandberg bluegrass-----	5
131: Lonna-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,400	Green needlegrass-----	30
		Unfavorable	1,000	Thickspike wheatgrass-----	10
				Bluebunch wheatgrass-----	5
				Plains muhly-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Big sagebrush-----	3
				Winterfat-----	3
Antwerp-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	500	Alkali sacaton-----	25
		Normal	350	Western wheatgrass-----	25
		Unfavorable	200	Fourwing saltbush-----	20
				Other shrubs-----	10
				Montana wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sandberg bluegrass-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
132: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
				Big sagebrush-----	1
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
			Juniper-----	1	
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
133: Lonna-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,600	Green needlegrass-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	10
				Sideoats grama-----	5
				Thickspike wheatgrass-----	5
				Little bluestem-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
				Big sagebrush-----	1
Cambeth-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	25
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	1,000	Bluebunch wheatgrass-----	10
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Threadleaf sedge-----	5
				Other perennial grasses-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
			Other shrubs-----	2	
134: Louscot-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	300	Fourwing saltbush-----	25
		Normal	200	Western wheatgrass-----	10
		Unfavorable	100	Low sagebrush-----	10
				Slenderbush eriogonum-----	10
				Longleaf sagebrush-----	10
				Other shrubs-----	5
				Rubber rabbitbrush-----	5
				Montana wheatgrass-----	5
			Other perennial grasses-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
135:					
Macar-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Big bluestem-----	25
		Normal	1,400	Bluebunch wheatgrass-----	20
		Unfavorable	1,000	Sideoats grama-----	10
				Other perennial forbs-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Green needlegrass-----	5
				Plains muhly-----	5
				Western wheatgrass-----	1
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
				Sedge-----	5
Rock outcrop.					
136:					
Marmarth-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Needleandthread-----	25
		Normal	1,600	Prairie sandreed-----	25
		Unfavorable	1,000	Western wheatgrass-----	20
				Other perennial forbs-----	10
				Threadleaf sedge-----	10
				Other shrubs-----	5
				Other perennial grasses-----	5
137:					
Marmarth-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Needleandthread-----	25
		Normal	1,600	Prairie sandreed-----	25
		Unfavorable	1,000	Western wheatgrass-----	20
				Other perennial forbs-----	10
				Threadleaf sedge-----	10
				Other shrubs-----	5
				Other perennial grasses-----	5
Galbreth-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	30
		Normal	900	Prairie sandreed-----	10
		Unfavorable	600	Little bluestem-----	10
				Needleandthread-----	10
				Western wheatgrass-----	5
				Indian ricegrass-----	5
				Green needlegrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Sideoats grama-----	5
				Other shrubs-----	5
				Plains muhly-----	5
138:					
Marvan-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	30
		Unfavorable	900	Fourwing saltbush-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	5
				Big sagebrush-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Greasewood-----	1

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
139: Marvan-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	30
		Unfavorable	900	Fourwing saltbush-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	5
				Big sagebrush-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Greasewood-----	1
140: Marvan-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	30
		Unfavorable	700	Thickspike wheatgrass-----	10
				Other perennial grasses-----	10
				Fourwing saltbush-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
141: Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
142: Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Abor-----	Thin clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	35
		Unfavorable	800	Bluebunch wheatgrass-----	10
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Greasewood-----	5
				Other shrubs-----	5
143: Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Abor-----	Thin clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	35
		Unfavorable	800	Bluebunch wheatgrass-----	10
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Greasewood-----	5
				Other shrubs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
144:					
Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Abor-----	Thin clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	35
		Normal	1,200	Green needlegrass-----	35
		Unfavorable	800	Bluebunch wheatgrass-----	10
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Greasewood-----	5
				Other shrubs-----	5
Rock outcrop.					
145:					
Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Neldore, saline-	Saline upland, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	600	Alkali bluegrass-----	30
		Normal	400	Western wheatgrass-----	15
		Unfavorable	200	Fourwing saltbush-----	13
				Other perennial grasses-----	10
				Thickspike wheatgrass-----	10
				Montana wheatgrass-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Greasewood-----	5
				Big sagebrush-----	2
146:					
Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Rock outcrop.					
147:					
Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Ustic Torriorthents.					
Neldore, saline.					

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
148: Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Volborg-----	Shale, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,000	Prairie sandreed-----	40
		Normal	800	Sun sedge-----	10
		Unfavorable	400	Western wheatgrass-----	10
				Little bluestem-----	10
				Prairie rose-----	5
				Rubber rabbitbrush-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Longleaf sagebrush-----	5
				Prairie thermopsis-----	3
				Yucca-----	1
149: Neldore-----	Shallow clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	30
		Normal	800	Green needlegrass-----	25
		Unfavorable	600	Thickspike wheatgrass-----	10
				Plains muhly-----	10
				Big sagebrush-----	10
				Little bluestem-----	10
				Other perennial grasses-----	5
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
150: Niler-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	40
		Normal	700	Western wheatgrass-----	15
		Unfavorable	400	Needleandthread-----	15
				Other perennial forbs-----	10
				Big sagebrush-----	5
				Threadleaf sedge-----	5
				Fourwing saltbush-----	5
				Other perennial grasses-----	5
151: Orinoco-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	25
		Unfavorable	500	Montana wheatgrass-----	10
				Thickspike wheatgrass-----	10
				Fourwing saltbush-----	5
				Bluebunch wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
152: Rahworth-----	Silty, saline, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,300	Alkali sacaton-----	15
		Unfavorable	900	Green needlegrass-----	10
				Needleandthread-----	10
				Bluebunch wheatgrass-----	5
				Fourwing saltbush-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Thickspike wheatgrass-----	5
				Winterfat-----	3
153: Rahworth-----	Silty, saline, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Western wheatgrass-----	40
		Normal	1,300	Alkali sacaton-----	10
		Unfavorable	900	Thickspike wheatgrass-----	10
				Green needlegrass-----	10
				Fourwing saltbush-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Big sagebrush-----	3
			Winterfat-----	3	
Davidell-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,400	Green needlegrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Bluebunch wheatgrass-----	5
				Other perennial grasses-----	5
				Fourwing saltbush-----	5
				Other perennial forbs-----	5
				Alkali sacaton-----	5
				Other shrubs-----	1
				Greasewood-----	1
Sumatra-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	600	Alkali sacaton-----	30
		Normal	500	Fourwing saltbush-----	20
		Unfavorable	300	Inland saltgrass-----	10
				Alkali bluegrass-----	5
				Thickspike wheatgrass-----	5
				Other shrubs-----	5
				Western wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Nuttall alkaligrass-----	5
			Bottlebrush squirreltail-----	3	
			Sandberg bluegrass-----	2	
156: Rominell-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,050	Western wheatgrass-----	35
		Normal	600	Needleandthread-----	20
		Unfavorable	500	Green needlegrass-----	10
				Thickspike wheatgrass-----	10
				Blue grama-----	5
				Montana wheatgrass-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
			Big sagebrush-----	2	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
157: Sagedale-----	Clayey, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,500	Green needlegrass-----	25
		Normal	2,100	Bluebunch wheatgrass-----	20
		Unfavorable	1,600	Western wheatgrass-----	20
				Big sagebrush-----	5
				Idaho fescue-----	5
				Sedge-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Little bluestem-----	5
			Other shrubs-----	5	
158: Sagedale-----	Clayey, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,500	Green needlegrass-----	25
		Normal	2,100	Bluebunch wheatgrass-----	20
		Unfavorable	1,600	Western wheatgrass-----	20
				Big sagebrush-----	5
				Idaho fescue-----	5
				Sedge-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Little bluestem-----	5
			Other shrubs-----	5	
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
			Needleandthread-----	10	
Wayden-----	Shallow clay, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Bluebunch wheatgrass-----	20
		Normal	1,500	Green needlegrass-----	20
		Unfavorable	1,100	Western wheatgrass-----	15
				Little bluestem-----	10
				Other perennial forbs-----	10
				Idaho fescue-----	10
				Plains muhly-----	5
			Silver sagebrush-----	3	
			Winterfat-----	2	
159: Savage-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	60
		Normal	1,300	Green needlegrass-----	18
		Unfavorable	900	Other shrubs-----	7
				Big sagebrush-----	5
				Other perennial grasses-----	5
			Blue grama-----	5	
160: Savage-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	60
		Normal	1,300	Green needlegrass-----	18
		Unfavorable	900	Other shrubs-----	7
				Big sagebrush-----	5
				Other perennial grasses-----	5
			Blue grama-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
161: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
162: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
163: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
164: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
Bitton-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Bluebunch wheatgrass-----	40
		Normal	1,800	Idaho fescue-----	15
		Unfavorable	1,200	Needleandthread-----	15
				Little bluestem-----	10
			Other perennial forbs-----	5	
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
			Needleandthread-----	10	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
165: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
Doney-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	20
		Normal	1,100	Western wheatgrass-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Porcupinegrass-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Sandberg bluegrass-----	5
				Blue grama-----	5
			Silver sagebrush-----	5	
			Prairie junegrass-----	5	
166: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5
Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
			Sedge-----	5	
Cabba-----	Shallow, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Little bluestem-----	35
		Normal	1,300	Sideoats grama-----	15
		Unfavorable	700	Other perennial forbs-----	10
				Green needlegrass-----	10
				Western wheatgrass-----	10
			Needleandthread-----	10	
167: Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
				Sideoats grama-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
167: Doney-----	Thin silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----	30
		Normal	800	Western wheatgrass-----	20
		Unfavorable	500	Little bluestem-----	15
				Needleandthread-----	10
				Other perennial forbs-----	10
				Sedge-----	5
Sagedale-----	Clayey, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,500	Green needlegrass-----	25
		Normal	2,100	Bluebunch wheatgrass-----	20
		Unfavorable	1,600	Western wheatgrass-----	20
				Big sagebrush-----	5
				Idaho fescue-----	5
				Sedge-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Little bluestem-----	5	
			Other shrubs-----	5	
168: Spang-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Prairie sandreed-----	35
		Normal	1,600	Little bluestem-----	20
		Unfavorable	1,000	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
			Other perennial forbs-----	5	
			Western wheatgrass-----	5	
169: Spang-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Prairie sandreed-----	35
		Normal	1,600	Little bluestem-----	20
		Unfavorable	1,000	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
			Other perennial forbs-----	5	
			Western wheatgrass-----	5	
Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
				Plains muhly-----	5
				Green needlegrass-----	5
			Sideoats grama-----	5	
			Western wheatgrass-----	5	
170: Spang.					
Birney, moist.					
Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
			Juniper-----	2	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
171: Spinekop-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Western wheatgrass-----	30
		Normal	1,300	Green needlegrass-----	25
		Unfavorable	900	Bluebunch wheatgrass-----	20
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
172: Straw-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Bluebunch wheatgrass-----	15
		Normal	2,200	Other perennial forbs-----	15
		Unfavorable	1,600	Green needlegrass-----	15
				Other perennial grasses-----	15
				Western wheatgrass-----	10
				Needleandthread-----	10
				Idaho fescue-----	5
			Big sagebrush-----	5	
			Little bluestem-----	5	
			Other shrubs-----	5	
Canburn-----	Subirrigated, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	6,000	Basin wildrye-----	20
		Normal	5,000	Prairie cordgrass-----	15
		Unfavorable	4,000	Bluejoint-----	15
				Northern reedgrass-----	15
				Nebraska sedge-----	10
				Canada wildrye-----	5
				Tufted hairgrass-----	5
				Slender wheatgrass-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	1
173: Sumatra-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	600	Alkali sacaton-----	30
		Normal	500	Fourwing saltbush-----	20
		Unfavorable	300	Inland saltgrass-----	10
				Alkali bluegrass-----	5
				Thickspike wheatgrass-----	5
				Other shrubs-----	5
				Western wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Nuttall alkaligrass-----	5
			Bottlebrush squirreltail-----	3	
			Sandberg bluegrass-----	2	
174: Sumatra-----	Saline upland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	600	Alkali sacaton-----	30
		Normal	500	Fourwing saltbush-----	20
		Unfavorable	300	Inland saltgrass-----	10
				Alkali bluegrass-----	5
				Thickspike wheatgrass-----	5
				Other shrubs-----	5
				Western wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Nuttall alkaligrass-----	5
			Bottlebrush squirreltail-----	3	
			Sandberg bluegrass-----	2	
Rock outcrop.					

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
175: Tinsley-----	Gravel, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	800	Bluebunch wheatgrass-----	30
		Normal	600	Plains muhly-----	15
		Unfavorable	400	Little bluestem-----	10
				Needleandthread-----	10
				Sand dropseed-----	10
				Yucca-----	5
				Sedge-----	5
				Western wheatgrass-----	5
				Indian ricegrass-----	5
176: Tinsley-----		Gravel, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	800	Bluebunch wheatgrass-----
	Normal		600	Plains muhly-----	15
	Unfavorable		400	Little bluestem-----	10
				Needleandthread-----	10
				Sand dropseed-----	10
				Yucca-----	5
				Sedge-----	5
				Western wheatgrass-----	5
				Indian ricegrass-----	5
Armells-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East		Favorable	1,200	Bluebunch wheatgrass-----
		Normal	800	Little bluestem-----	20
		Unfavorable	400	Sideoats grama-----	10
				Western wheatgrass-----	10
				Other perennial forbs-----	5
				Needleandthread-----	5
				Other perennial grasses-----	5
				Plains muhly-----	5
				Skunkbush sumac-----	3
				Other shrubs-----	2
Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
177: Tinsley-----	Gravel, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	800	Bluebunch wheatgrass-----	30
		Normal	600	Plains muhly-----	15
		Unfavorable	400	Little bluestem-----	10
				Needleandthread-----	10
				Sand dropseed-----	10
				Yucca-----	5
				Sedge-----	5
				Western wheatgrass-----	5
				Indian ricegrass-----	5
Cabbart-----		Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----
	Normal		800	Bluebunch wheatgrass-----	20
	Unfavorable		600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
			Juniper-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
		Lb/acre		Pct	
178: Twilight-----	Thin sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,300	Prairie sandreed-----	25
		Normal	1,000	Little bluestem-----	25
		Unfavorable	800	Big bluestem-----	10
				Needleandthread-----	10
				Plains muhly-----	5
				Sedge-----	5
				Other perennial forbs-----	5
				Skunkbush sumac-----	5
				Bluebunch wheatgrass-----	5
Blackhall-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	25
		Normal	900	Prairie sandreed-----	15
		Unfavorable	600	Little bluestem-----	15
				Needleandthread-----	10
				Plains muhly-----	5
				Sedge-----	5
				Indian ricegrass-----	5
				Other perennial forbs-----	5
			Skunkbush sumac-----	5	
			Western wheatgrass-----	5	
179: Twin Creek-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Big bluestem-----	25
		Normal	2,400	Bluebunch wheatgrass-----	20
		Unfavorable	1,800	Little bluestem-----	15
				Green needlegrass-----	10
				Needleandthread-----	10
			Western wheatgrass-----	5	
Shambo-----	Silty, 15- to 19-inch Ppt zone, sedimentary plains, East	Favorable	2,600	Green needlegrass-----	15
		Normal	2,200	Big bluestem-----	10
		Unfavorable	1,600	Bluebunch wheatgrass-----	10
				Western wheatgrass-----	10
				Idaho fescue-----	10
				Needleandthread-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
			Sideoats grama-----	5	
188: Vaeda-----	Saline upland, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	800	Western wheatgrass-----	45
		Normal	400	Fourwing saltbush-----	15
		Unfavorable	250	Green needlegrass-----	10
				Other annual forbs-----	5
				Saltgrass-----	5
				Big sagebrush-----	5
				Sandberg bluegrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
			Greasewood-----	5	
189: Vanda-----	Dense clay, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,100	Western wheatgrass-----	50
		Normal	900	Big sagebrush-----	10
		Unfavorable	600	Other perennial forbs-----	5
				Wild sarsaparilla-----	5
				Other perennial grasses-----	5
				Green needlegrass-----	5
				Nuttall alkaligrass-----	5
				Alkali sacaton-----	5
				Bottlebrush squirreltail-----	5
			Greasewood-----	1	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
190: Vanstel-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Needleandthread-----	10
				Other perennial grasses-----	10
				Green needlegrass-----	10
				Little bluestem-----	10
				Other perennial forbs-----	5
			Other shrubs-----	5	
191: Volborg-----	Shale, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,000	Prairie sandreed-----	40
		Normal	800	Sun sedge-----	10
		Unfavorable	400	Western wheatgrass-----	10
				Little bluestem-----	10
				Prairie rose-----	5
				Rubber rabbitbrush-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
			Longleaf sagebrush-----	5	
			Prairie thermopsis-----	3	
			Yucca-----	1	
192: Volborg-----	Shale, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	300	Slenderbush eriogonum-----	25
		Normal	200	Fourwing saltbush-----	20
		Unfavorable	100	Western wheatgrass-----	20
				Montana wheatgrass-----	10
				Rubber rabbitbrush-----	10
				Longleaf sagebrush-----	5
			Other perennial forbs-----	5	
193: Volborg-----	Shale, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	300	Slenderbush eriogonum-----	25
		Normal	200	Fourwing saltbush-----	20
		Unfavorable	100	Western wheatgrass-----	20
				Montana wheatgrass-----	10
				Rubber rabbitbrush-----	10
				Longleaf sagebrush-----	5
			Other perennial forbs-----	5	
Rock outcrop.					
194: Weingart-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,200	Western wheatgrass-----	25
		Normal	1,000	Green needlegrass-----	20
		Unfavorable	700	Fourwing saltbush-----	10
				Needleandthread-----	10
				Thickspike wheatgrass-----	10
				Other perennial grasses-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
			Winterfat-----	5	
195: Weingart-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	800	Western wheatgrass-----	40
		Normal	600	Green needlegrass-----	20
		Unfavorable	400	Fourwing saltbush-----	10
				Thickspike wheatgrass-----	10
				Other perennial grasses-----	10
				Other perennial forbs-----	5
			Other shrubs-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
195: Neldore.					
196: Weingart-----	Clay pan, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,200	Western wheatgrass-----	25
		Normal	1,000	Green needlegrass-----	20
		Unfavorable	700	Fourwing saltbush-----	10
				Needleandthread-----	10
				Thickspike wheatgrass-----	10
				Other perennial grasses-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
				Winterfat-----	5
Niler-----		Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Bluebunch wheatgrass-----
	Normal		700	Western wheatgrass-----	15
	Unfavorable		400	Needleandthread-----	15
				Other perennial forbs-----	10
				Big sagebrush-----	5
				Threadleaf sedge-----	5
				Fourwing saltbush-----	5
Rock outcrop.			Other perennial grasses-----	5	
197: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
198: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
199: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
200: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
			Plains muhly-----	5	

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
200:					
Abor-----	Thin clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	35
		Normal	1,300	Green needlegrass-----	35
		Unfavorable	900	Other perennial grasses-----	10
				Bluebunch wheatgrass-----	10
				Other perennial forbs-----	5
				Other shrubs-----	5
201:					
Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
				Plains muhly-----	5
				Green needlegrass-----	5
				Sideoats grama-----	5
				Western wheatgrass-----	5
202:					
Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
Birney-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,600	Bluebunch wheatgrass-----	30
		Normal	1,200	Little bluestem-----	25
		Unfavorable	800	Needleandthread-----	10
				Plains muhly-----	5
				Green needlegrass-----	5
				Sideoats grama-----	5
				Western wheatgrass-----	5
203:					
Yamac-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	25
		Normal	1,200	Little bluestem-----	20
		Unfavorable	800	Western wheatgrass-----	10
				Plains muhly-----	10
				Green needlegrass-----	10
				Sideoats grama-----	10
				Needleandthread-----	5
				Other perennial forbs-----	5
Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
				Juniper-----	2

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
204: Yamac-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,500	Bluebunch wheatgrass-----	25
		Normal	1,200	Little bluestem-----	20
		Unfavorable	800	Western wheatgrass-----	10
				Plains muhly-----	10
				Green needlegrass-----	10
				Sideoats grama-----	10
				Needleandthread-----	5
				Other perennial forbs-----	5
Birney-----	Thin silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Little bluestem-----	30
		Normal	900	Bluebunch wheatgrass-----	25
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Skunkbush sumac-----	5
				Needleandthread-----	5
				Juniper-----	2
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
205: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
				Western wheatgrass-----	5
206: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
206: Busby-----	Sandy, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,800	Prairie sandreed-----	35
		Normal	1,500	Little bluestem-----	20
		Unfavorable	1,200	Needleandthread-----	15
				Bluebunch wheatgrass-----	5
				Indian ricegrass-----	5
				Big bluestem-----	5
				Other perennial forbs-----	5
			Western wheatgrass-----	5	
207: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
			Plains muhly-----	5	
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
			Juniper-----	1	
208: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5
Delpoint-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Western wheatgrass-----	25
		Normal	1,300	Needleandthread-----	20
		Unfavorable	900	Green needlegrass-----	15
				Little bluestem-----	10
				Other perennial grasses-----	5
				Prairie junegrass-----	5
				Other perennial grasslikes-----	5
				Other perennial forbs-----	5
				Other shrubs-----	5
				Bluebunch wheatgrass-----	5
209: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
				Plains muhly-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
209: Redcreek-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Bluebunch wheatgrass-----	30
		Normal	900	Western wheatgrass-----	10
		Unfavorable	600	Green needlegrass-----	10
				Needleandthread-----	10
				Sideoats grama-----	5
				Other perennial forbs-----	5
				Blue grama-----	5
				Other perennial grasses-----	5
				Little bluestem-----	5
				Other shrubs-----	5
			Threadleaf sedge-----	5	
210: Yamac-----	Silty, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	2,000	Western wheatgrass-----	25
		Normal	1,500	Bluebunch wheatgrass-----	25
		Unfavorable	1,000	Green needlegrass-----	15
				Little bluestem-----	10
				Needleandthread-----	10
				Other perennial forbs-----	5
			Plains muhly-----	5	
Rominell-----	Clay pan, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,050	Western wheatgrass-----	35
		Normal	600	Needleandthread-----	20
		Unfavorable	500	Green needlegrass-----	10
				Thickspike wheatgrass-----	10
				Blue grama-----	5
				Montana wheatgrass-----	5
				Other perennial grasses-----	5
				Other perennial forbs-----	5
				Winterfat-----	3
			Big sagebrush-----	2	
211: Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
212: Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
Cabbart-----	Shallow, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,000	Little bluestem-----	25
		Normal	800	Bluebunch wheatgrass-----	20
		Unfavorable	600	Sideoats grama-----	15
				Plains muhly-----	10
				Needleandthread-----	10
				Green needlegrass-----	5
				Skunkbush sumac-----	5
				Other perennial forbs-----	5
				Juniper-----	1
Kobar-----	Thin clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,800	Western wheatgrass-----	40
		Normal	1,300	Green needlegrass-----	20
		Unfavorable	900	Other perennial forbs-----	10
				Bluebunch wheatgrass-----	10
				Other shrubs-----	10

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
213:					
Yawdim-----	Shallow clay, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,200	Western wheatgrass-----	40
		Normal	1,000	Bluebunch wheatgrass-----	20
		Unfavorable	700	Green needlegrass-----	20
				Big sagebrush-----	5
				Other perennial forbs-----	5
Orinoco-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	25
		Unfavorable	500	Montana wheatgrass-----	10
				Thickspike wheatgrass-----	10
				Fourwing saltbush-----	5
				Bluebunch wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5
214:					
Zatoville-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Western wheatgrass-----	30
		Normal	1,200	Green needlegrass-----	25
		Unfavorable	700	Montana wheatgrass-----	10
				Fourwing saltbush-----	10
				Thickspike wheatgrass-----	10
				Big sagebrush-----	5
				Other perennial forbs-----	5
215:					
Zatoville-----	Saline lowland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	3,500	Western wheatgrass-----	20
		Normal	2,700	Alkali sacaton-----	20
		Unfavorable	1,800	Alkali cordgrass-----	15
				Nuttall alkaligrass-----	10
				Greasewood-----	10
				Other shrubs-----	5
				Inland saltgrass-----	5
				Basin wildrye-----	5
				Sedge-----	5
				Other perennial grasses-----	5
216:					
Zatoville-----	Saline lowland, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	3,500	Western wheatgrass-----	20
		Normal	2,700	Nuttall alkaligrass-----	15
		Unfavorable	1,800	Alkali sacaton-----	15
				Alkali cordgrass-----	10
				Greasewood-----	10
				Other shrubs-----	5
				Inland saltgrass-----	5
				Other perennial forbs-----	5
				Sedge-----	5
				Other perennial grasses-----	5
217:					
Zatoville-----	Clayey, 10- to 14-inch Ppt zone, sedimentary plains, East	Favorable	1,700	Western wheatgrass-----	30
		Normal	1,200	Green needlegrass-----	25
		Unfavorable	700	Montana wheatgrass-----	10
				Fourwing saltbush-----	10
				Thickspike wheatgrass-----	10
				Big sagebrush-----	5
				Other perennial forbs-----	5

RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
		Lb/acre		Pct	
217: Orinoco-----	Clayey, 10- to 14-inch Ppt zone, Pierre Shale plains	Favorable	1,600	Western wheatgrass-----	30
		Normal	1,100	Green needlegrass-----	25
		Unfavorable	500	Montana wheatgrass-----	10
				Thickspike wheatgrass-----	10
				Fourwing saltbush-----	5
				Bluebunch wheatgrass-----	5
				Other perennial forbs-----	5
				Other perennial grasses-----	5
				Other shrubs-----	5

UNDERSTORY VEGETATION

(Absence of an entry indicates that data were not available)

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
13:				
Barvon-----	Favorable	700	Common chokecherry-----	20
	Normal	600	Unnamed perennial forbs-----	15
	Unfavorable	500	Common snowberry-----	10
			Heartleaf arnica-----	10
			Saskatoon serviceberry-----	10
			Idaho fescue-----	5
			Oregongrape-----	5
			Russet buffaloberry-----	5
			Bluebunch wheatgrass-----	1
			Columbia needlegrass-----	1
Lamedeer-----	Favorable	800	Russet buffaloberry-----	25
	Normal	600	Common chokecherry-----	15
	Unfavorable	400	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Kinnikinnick-----	5
			Oregongrape-----	5
Lamedeer, dry----	Favorable	800	Columbia needlegrass-----	15
	Normal	600	Idaho fescue-----	15
	Unfavorable	400	Common chokecherry-----	10
			Common snowberry-----	10
			Arrowleaf balsamroot-----	5
			Big bluestem-----	5
			Bluebunch wheatgrass-----	5
			Oregongrape-----	5
			Saskatoon serviceberry-----	5
			Little bluestem-----	1
			Russet buffaloberry-----	1
			White spirea-----	1
14:				
Barvon-----	Favorable	700	Idaho fescue-----	25
	Normal	600	Bluebunch wheatgrass-----	15
	Unfavorable	500	Arrowleaf balsamroot-----	10
			Unnamed perennial forbs-----	10
			Big bluestem-----	5
			Columbia needlegrass-----	5
			Common chokecherry-----	5
			Common snowberry-----	5
			Little bluestem-----	5
			Sideoats grama-----	5
			Oregongrape-----	1
			Saskatoon serviceberry-----	1
Doney .				
Cabba .				

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
17:				
Birney-----	Favorable	800	Bluebunch wheatgrass-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	400	Columbia needlegrass-----	10
			Common snowberry-----	5
			Green needlegrass-----	5
			Little bluestem-----	5
			Plains muhly-----	5
			Sidecoats grama-----	5
			Juniper-----	2
			Skunkbush sumac-----	2
			Common chokecherry-----	1
Cabbart-----	Favorable	800	Bluebunch wheatgrass-----	25
	Normal	600	Little bluestem-----	15
	Unfavorable	400	Green needlegrass-----	10
			Sidecoats grama-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Juniper-----	5
			Needleandthread-----	5
			Skunkbush sumac-----	5
			Western wheatgrass-----	5
			Unnamed shrubs-----	1
21:				
Birney-----	Favorable	800	Bluebunch wheatgrass-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	400	Columbia needlegrass-----	10
			Common snowberry-----	5
			Green needlegrass-----	5
			Little bluestem-----	5
			Plains muhly-----	5
			Sidecoats grama-----	5
			Juniper-----	2
			Skunkbush sumac-----	2
			Common chokecherry-----	1
Armells.				
Cabbart.				
22:				
Birney, moist----	Favorable	800	Bluebunch wheatgrass-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	400	Columbia needlegrass-----	10
			Common snowberry-----	5
			Green needlegrass-----	5
			Little bluestem-----	5
			Plains muhly-----	5
			Sidecoats grama-----	5
			Juniper-----	2
			Skunkbush sumac-----	2
			Common chokecherry-----	1
Birney.				
Kirby.				

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
29:				
Bitton-----	Favorable	1,400	Big bluestem-----	20
	Normal	1,100	Little bluestem-----	15
	Unfavorable	800	Bluebunch wheatgrass-----	10
			Columbia needlegrass-----	10
			Common chokecherry-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Idaho fescue-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
Doney.				
Cabba.				
30:				
Bitton-----	Favorable	1,400	Big bluestem-----	20
	Normal	1,100	Little bluestem-----	15
	Unfavorable	800	Bluebunch wheatgrass-----	10
			Columbia needlegrass-----	10
			Common chokecherry-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Idaho fescue-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
Lamedeer-----	Favorable	800	Columbia needlegrass-----	15
	Normal	600	Idaho fescue-----	15
	Unfavorable	400	Common chokecherry-----	10
			Common snowberry-----	10
			Arrowleaf balsamroot-----	5
			Big bluestem-----	5
			Bluebunch wheatgrass-----	5
			Oregongrape-----	5
			Saskatoon serviceberry-----	5
			Little bluestem-----	1
			Russet buffaloberry-----	1
			White spirea-----	1
Ringling.				
31:				
Bitton-----	Favorable	1,400	Big bluestem-----	20
	Normal	1,100	Little bluestem-----	15
	Unfavorable	800	Bluebunch wheatgrass-----	10
			Columbia needlegrass-----	10
			Common chokecherry-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Idaho fescue-----	5
			Needleandthread-----	5
			Sideoats grama-----	5

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
31:				
Lamedeer-----	Favorable	800	Columbia needlegrass-----	15
	Normal	600	Idaho fescue-----	15
	Unfavorable	400	Common chokecherry-----	10
			Common snowberry-----	10
			Arrowleaf balsamroot-----	5
			Big bluestem-----	5
			Bluebunch wheatgrass-----	5
			Oregongrape-----	5
			Saskatoon serviceberry-----	5
			Little bluestem-----	1
			Russet buffaloberry-----	1
			White spirea-----	1
Ringling.				
32:				
Bitton-----	Favorable	1,400	Big bluestem-----	20
	Normal	1,100	Little bluestem-----	15
	Unfavorable	800	Bluebunch wheatgrass-----	10
			Columbia needlegrass-----	10
			Common chokecherry-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Idaho fescue-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
Ringling.				
Cabba.				
76:				
Delpoint, moist--	Favorable	700	Unnamed perennial forbs-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	500	Bluebunch wheatgrass-----	10
			Green needlegrass-----	10
			Little bluestem-----	10
			Common chokecherry-----	5
			Common snowberry-----	5
			Juniper-----	5
			Sideoats grama-----	5
			Skunkbush sumac-----	5
			Western wheatgrass-----	5
Delpoint.				
Cabbart.				
77:				
Delpoint, moist--	Favorable	700	Unnamed perennial forbs-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	500	Bluebunch wheatgrass-----	10
			Green needlegrass-----	10
			Little bluestem-----	10
			Common chokecherry-----	5
			Common snowberry-----	5
			Juniper-----	5
			Sideoats grama-----	5
			Skunkbush sumac-----	5
			Western wheatgrass-----	5

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		<u>Lb/acre</u>		<u>Pct</u>
77: Delpoint.				
Cabbart.				
100: Havre-----	Favorable	2,200	Western wheatgrass-----	25
	Normal	1,800	Green needlegrass-----	20
	Unfavorable	1,400	Needleandthread-----	20
			Bluebunch wheatgrass-----	10
			Big bluestem-----	5
			Silver sagebrush-----	5
101: Havre-----	Favorable	2,200	Western wheatgrass-----	35
	Normal	1,800	Green needlegrass-----	25
	Unfavorable	1,400	Silver sagebrush-----	5
104: Havre-----	Favorable	3,000	Western wheatgrass-----	20
	Normal	2,000	Big bluestem-----	10
	Unfavorable	1,000	Green needlegrass-----	10
			Slender wheatgrass-----	10
			Canada wildrye-----	5
			Common chokecherry-----	5
			Common snowberry-----	5
			Needleandthread-----	5
			Silver sagebrush-----	1
Harlem.				
Glendive.				
118: Lamedeer-----	Favorable	800	Russet buffaloberry-----	25
	Normal	600	Common chokecherry-----	15
	Unfavorable	400	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Kinnikinnick-----	5
			Oregongrape-----	5
Lamedeer, dry----	Favorable	800	Columbia needlegrass-----	15
	Normal	600	Idaho fescue-----	15
	Unfavorable	400	Common chokecherry-----	10
			Common snowberry-----	10
			Arrowleaf balsamroot-----	5
			Big bluestem-----	5
			Bluebunch wheatgrass-----	5
			Oregongrape-----	5
			Saskatoon serviceberry-----	5
			Little bluestem-----	1
			Russet buffaloberry-----	1
			White spirea-----	1

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		
118:				
Ringling-----	Favorable	800	Bluebunch wheatgrass-----	25
	Normal	500	Idaho fescue-----	20
	Unfavorable	300	Arrowleaf balsamroot-----	10
			Little bluestem-----	10
			Common snowberry-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
			Skunkbush sumac-----	5
119:				
Lamedeer-----	Favorable	800	Russet buffaloberry-----	25
	Normal	600	Common chokecherry-----	15
	Unfavorable	400	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Kinnikinnick-----	5
			Oregongrape-----	5
Twin Creek-----	Favorable	1,000	Russet buffaloberry-----	25
	Normal	900	Common chokecherry-----	15
	Unfavorable	800	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Little bluestem-----	5
Ringling-----	Favorable	800	Bluebunch wheatgrass-----	25
	Normal	500	Idaho fescue-----	20
	Unfavorable	300	Arrowleaf balsamroot-----	10
			Little bluestem-----	10
			Common snowberry-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
			Skunkbush sumac-----	5
120:				
Lamedeer-----	Favorable	800	Russet buffaloberry-----	25
	Normal	600	Common chokecherry-----	15
	Unfavorable	400	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Kinnikinnick-----	5
			Oregongrape-----	5
Twin Creek-----	Favorable	1,000	Russet buffaloberry-----	25
	Normal	900	Common chokecherry-----	15
	Unfavorable	800	Saskatoon serviceberry-----	10
			White spirea-----	10
			Columbia needlegrass-----	5
			Common snowberry-----	5
			Heartleaf arnica-----	5
			Idaho fescue-----	5
			Little bluestem-----	5

UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
120:				
Ringling-----	Favorable	800	Bluebunch wheatgrass-----	25
	Normal	500	Idaho fescue-----	20
	Unfavorable	300	Arrowleaf balsamroot-----	10
			Little bluestem-----	10
			Common snowberry-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
			Skunkbush sumac-----	5
121:				
Lamedeer-----	Favorable	800	Columbia needlegrass-----	15
	Normal	600	Idaho fescue-----	15
	Unfavorable	400	Common chokecherry-----	10
			Common snowberry-----	10
			Arrowleaf balsamroot-----	5
			Big bluestem-----	5
			Bluebunch wheatgrass-----	5
			Oregongrape-----	5
			Saskatoon serviceberry-----	5
			Little bluestem-----	1
			Russet buffaloberry-----	1
			White spirea-----	1
Bitton-----	Favorable	1,400	Big bluestem-----	20
	Normal	1,100	Little bluestem-----	15
	Unfavorable	800	Bluebunch wheatgrass-----	10
			Columbia needlegrass-----	10
			Common chokecherry-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Idaho fescue-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
Ringling.				
170:				
Spang-----	Favorable	1,000	Prairie sandreed-----	20
	Normal	900	Little bluestem-----	15
	Unfavorable	700	Big bluestem-----	10
			Bluebunch wheatgrass-----	10
			Skunkbush sumac-----	10
			Unnamed perennial forbs-----	10
			Common snowberry-----	5
			Needleandthread-----	5
			Sideoats grama-----	5
			Indian ricegrass-----	1
			Rocky Mountain juniper-----	1
Birney, moist----	Favorable	800	Bluebunch wheatgrass-----	20
	Normal	600	Big bluestem-----	15
	Unfavorable	400	Columbia needlegrass-----	10
			Common snowberry-----	5
			Green needlegrass-----	5
			Little bluestem-----	5
			Plains muhly-----	5
			Sideoats grama-----	5
			Juniper-----	2
			Skunkbush sumac-----	2
			Common chokecherry-----	1
Birney.				

Forest Land

Approximately 220,000 acres in the survey area has potential as forest land, and about 185,000 acres is presently forested. Most of the potential forest land has been cleared of hardwoods and is used as cropland or pasture. Of the 185,000 acres presently forested, 165,000 acres is commercial forest land. More than 90 percent of the forest land is grazed (5). Conifer forest makes up 95 percent of the forested acreage.

Most of the forest land is on uplands in the southern part of the survey area. The most common tree species is ponderosa pine. Rocky Mountain juniper is also present in the upland areas, but it occurs most frequently in the drier forested environments. Green ash is common along drainageways. Forested land is also on alluvial soils along the Yellowstone River and its tributaries. The most common tree species growing along these streams is plains cottonwood, but green ash and Russian-olive are also common.

The main soils that support ponderosa pine are Barvon; Barvon, dry; Bitton, moist; Delpoint, moist; Lamedeer, dry; Ringling; Spang, moist; and Twin Creek, moist. Cottonwood commonly grows on Glendive, Hanly, and Havre soils.

Cottonwood forests have been removed from an undetermined acreage for the development of cropland and pasture. The stands of plains cottonwood in the river bottoms are even aged (mostly 60 to 80 years of age). Natural cottonwood reproduction is infrequent in the forest understory. The main tree species that reproduces in the forest understory is Russian-olive. Green ash reproduction is also common. Unless a major flood occurs, which would create conditions suitable for the regeneration of plains cottonwood from seed, Russian-olive and, to some degree, green ash will become the dominant overstory species.

Ponderosa pine is the major commercial species in the survey area for the manufacture of wood products. Rocky Mountain juniper is used mainly for fence posts. Cottonwood has limited commercial value but is used for firewood, boards for corrals, crates, and pallets.

The tables "Forest Land Productivity" and "Forest Land Management" can be used by forest managers in

planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. Estimates of the productivity of the soils are based on published data (3).

Woodland Ordination System

The table "Forest Land Management" lists the ordination (woodland suitability) symbol for each soil. The ordination system is a nationwide uniform system of labeling soils or groups of soils that are similar in use and management. The primary factors evaluated in the woodland ordination system are productivity of the forest overstory tree species and the principal soil properties resulting in hazards and limitations that affect forest management. There are three parts of the ordination system—class, subclass, and group. The class and subclass are referred to as the ordination symbol.

Ordination Class Symbol

The first element of the ordination symbol is a number that denotes potential productivity in terms of cubic meters of wood per hectare per year for the indicator tree species. The larger the number, the greater the potential productivity. Potential productivity is based on site index and the corresponding culmination of mean annual increment. For example, the number 1 indicates a potential production of 1 cubic meter of wood per hectare per year (14.3 cubic feet per acre per year) and 10 indicates a potential production of 10 cubic meters of wood per hectare per year (143 cubic feet per acre per year).

Indicator species is a species that is common in the area and is generally, but not necessarily, the most productive on the soil. It is the species that determines the ordination class. It is the first species listed for a particular map unit in the table "Forest Land Productivity." This table shows the productivity for all species where data have been collected.

Site index is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a

specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The site indexes shown in the table "Forest Land Productivity" are averages based on measurements made at sites that are representative of the soil series. When the site index and forest land productivity of different soils are compared, the values for the same tree species should be compared. The higher the site index number, the more productive the soil for that species. Site index values are used in conjunction with yield tables to determine average annual yields. Indirectly, they are used to determine the productivity class in the ordination class symbol.

Ordination Subclass Symbol

The second element of the ordination symbol, or subclass, is a capital letter that indicates certain soil or physiographic characteristics that contribute to important hazards or limitations to be considered in management. The subclasses are defined as follows:

Subclass X indicates that forest land use and management are limited by stones or rocks.

Subclass W indicates that forest land use and management are significantly limited by excess water, either seasonally or throughout the year. Restricted drainage, a high water table, or flooding can adversely affect either stand development or management.

Subclass T indicates that the root zone has toxic substances. Excessive alkalinity, acidity, sodium salts, or other toxic substances impede the development of desirable species.

Subclass D indicates that forest land use and management are limited by a restricted rooting depth. The rooting depth is restricted by hard bedrock, a hardpan, or other restrictive layers in the soil.

Subclass C indicates that forest land use and management are limited by the kind or amount of clay in the upper part of the soil.

Subclass S indicates that the soil is sandy, has a low available water capacity, and normally has a low content of available plant nutrients. The use of equipment is limited during dry periods.

Subclass F indicates that forest land use and management are limited by a high content of rock fragments that are larger than 2 millimeters and smaller than 10 inches. This subclass includes flaggy soils.

Subclass R indicates that forest land use and management are limited by excessive slope.

Subclass A indicates that no significant limitations affect forest land use and management.

Forest Land Management and Productivity

Information about the productivity and management of the forested map units in the survey area is given in

the tables "Forest Land Management" and "Forest Land Productivity."

Management Concerns

In the table "Forest Land Management," the soils are rated for the equipment limitation, seedling mortality, the windthrow hazard, and plant competition.

The *equipment limitation* is *slight* if the use of equipment is not limited to a particular kind of equipment or time of year; *moderate* if there is a short seasonal limitation or a need for some modification in the management of equipment; and *severe* if there is a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings are for seedlings that are from a good planting stock and that are properly planted during a period of average rainfall. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Windthrow hazard is *slight* if trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate* if some trees are blown down during periods of excessive soil wetness and strong winds; and *severe* if many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

Plant competition is *slight* if there is little or no competition from other plants; *moderate* if plant competition is expected to hinder the development of a fully stocked stand of desirable trees; and *severe* if plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed for the control of undesirable plants.

Potential Productivity

The potential productivity of merchantable or *common trees* is expressed as a site index, which is described under the heading "Ordination Class Symbol." Commonly grown trees are those that forest land managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The column *trees that stands are commonly managed for* in the table "Forest Land Productivity" lists trees that are suitable for commercial wood production and that are suited to the soils.

Forest Access Road Limitations and Hazards

The major management concerns affecting the use of the detailed soil map units in the survey area for forest access roads are listed in the table "Main Forest

Access Road Limitations and Hazards.” The significance of each limitation or hazard and the criteria used to determine the limitation or hazard are described in this section.

Areas of rock outcrop and depth to bedrock can increase the cost of road construction and influence route planning. Constructing the roads is difficult because of the need for rock removal and for additional soil material to provide a suitable road surface.

Boulders increase the cost of road construction and influence route planning. Construction is difficult mainly because of the need for extraction and disposal of the boulders.

Dustiness of the road surface material may cause safety problems and accelerate equipment wear. Dust-abatement measures are needed during dry periods.

The erodibility of the soil material in the roadbed influences the probability of *erosion by water* resulting from the channeling of runoff in the roadway. Erosion can result in the sedimentation of streams. It can be controlled by reducing road grades and controlling runoff onto and off of the road surface through the installation of drainage measures.

Flooding in the area where a road is constructed may restrict use, result in damage to the roadway, and result in the sedimentation of waterways. The hazard of flooding can be reduced by installing a drainage system, elevating the roadbed, and using riprap and diversions.

Low soil strength of the soil material used to construct the road surface can result in rutting, in drainage problems, and in poor trafficability during wet periods. The road should be used only during dry periods or when the surface is frozen. Surfacing with material of suitable strength and installing a drainage system can help to overcome this limitation.

Roadbed material that has a high *shrink-swell potential* shrinks and swells markedly during dry and wet periods. Excessive shrinking and swelling can damage the road surface or other features, such as bridge abutments, culverts, and erosion-control structures.

A steep *slope* results in increased construction and maintenance costs and increased sedimentation because of the large cuts necessary to create an adequate roadbed. Seeding the cut slope to suitable vegetation minimizes sedimentation. Large cuts can increase instability of the slope. Where slumping is a hazard, slope failure can become a significant maintenance and environmental problem. Areas where the slope is steep should not be used as sites for roads.

Slumping causes safety problems and increases maintenance costs. Frequent clearing of slumped soil in the roadbed or rebuilding of the roadway may be needed to keep the road serviceable and drainage systems functioning.

Stones cause problems in maintaining a smooth road surface that has good trafficability. Unless the stones are removed, additions of suitable stone-free material may be needed when the road is surfaced.

Roads built across soils that have a *water table* may require substantial ballast, fabric, internal drainage systems, and other measures that maintain a road surface that has good trafficability. Construction and use of the road only during periods when the water table is not near the surface or when the road is frozen help to maintain trafficability and reduce the potential for site damage.

Following is an explanation of the criteria used to determine the limitations or hazards.

Areas of rock outcrop.—Rock outcrop is a named component of the map unit.

Areas of rubble land.—Rubble land is a named component of the map unit.

Boulders.—The terms describing the texture within a depth of 24 inches include a bouldery modifier, or the soil is a bouldery phase.

Depth to rock.—Hard bedrock is within a depth of 60 inches.

Dustiness.—The surface layer is silt, silt loam, loam, or very fine sandy loam.

Erosion by water.—The surface K factor multiplied by the upper slope limit is more than 10.

Flooding.—The component of the map unit is occasionally flooded or frequently flooded.

Low soil strength.—The component of the map unit has one of the following Unified classifications within the 60-inch profile: ML, CL, MH, CH, OL, PT, or GC.

Shrink-swell potential.—The component of the map unit has a high shrink-swell potential in a layer that is at least 10 inches thick and is within 40 inches of the surface.

Slope.—The upper slope limit is more than 35 percent.

Slumping.—The component of the map unit meets the requirements for low soil strength and has slopes of more than 35 percent.

Stones.—The terms describing the texture within a depth of 24 inches include a very stony or extremely stony modifier, or the soil is a very stony or extremely stony phase.

Water table.—The component of the map unit has a water table within a depth of 60 inches.

FOREST LAND MANAGEMENT

(Only the soils suitable for production of commercial trees are listed.
Absence of an entry indicates that data were not available)

Map symbol and soil name	Ordi- nation symbol	Management concerns			
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition
13: Barvon-----	4R	Severe	Slight	Slight	Moderate
Lamedeer-----	4R	Severe	Slight	Slight	Moderate
Lamedeer, dry-----	3R	Severe	Moderate	Slight	Severe
14: Barvon-----	3R	Severe	Moderate	Slight	Severe
Doney.					
Cabba.					
17: Birney-----	3R	Severe	Moderate	Slight	Severe
Cabbart-----	2R	Severe	Severe	Slight	Severe
21: Birney-----	3R	Severe	Moderate	Slight	Severe
Armells.					
Cabbart.					
22: Birney, moist-----	3R	Moderate	Moderate	Slight	Severe
Birney.					
Kirby.					
29: Bitton-----	2R	Severe	Severe	Slight	Severe
Doney.					
Cabba.					
30: Bitton-----	2A	Slight	Severe	Slight	Severe
Lamedeer-----	3A	Slight	Moderate	Slight	Severe
Ringling.					
31: Bitton-----	2R	Severe	Severe	Slight	Severe
Lamedeer-----	3R	Severe	Moderate	Slight	Severe
Ringling.					
32: Bitton-----	2R	Severe	Severe	Slight	Severe

FOREST LAND MANAGEMENT--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition
32: Ringling. Cabba.					
76: Delpoint, moist-----	3R	Moderate	Moderate	Slight	Severe
Delpoint. Cabbart.					
77: Delpoint, moist-----	3R	Severe	Moderate	Slight	Severe
Delpoint. Cabbart.					
100: Havre-----	5A	Moderate	Moderate	Slight	Moderate
101: Havre-----	5A	Moderate	Moderate	Slight	Moderate
104: Havre-----	5A	Moderate	Moderate	Slight	Moderate
Harlem. Glendive.					
118: Lamedeer-----	4R	Severe	Slight	Slight	Moderate
Lamedeer, dry-----	3R	Severe	Moderate	Slight	Severe
Ringling-----	2R	Severe	Severe	Severe	Severe
119: Lamedeer-----	4A	Slight	Slight	Slight	Moderate
Twin Creek-----	4A	Slight	Slight	Slight	Severe
Ringling-----	2D	Slight	Severe	Severe	Severe
120: Lamedeer-----	4R	Moderate	Slight	Slight	Moderate
Twin Creek-----	4R	Moderate	Slight	Slight	Severe
Ringling-----	2R	Moderate	Severe	Severe	Severe
121: Lamedeer-----	3R	Severe	Moderate	Slight	Severe
Bitton-----	2R	Severe	Severe	Slight	Severe
Ringling.					

FOREST LAND MANAGEMENT--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition
170: Spang-----	3A	Slight	Moderate	Slight	Severe
Birney, moist-----	3R	Moderate	Moderate	Slight	Severe
Birney.					

FOREST LAND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that data were not available)

Map symbol and soil name	Common trees	Site index	Productivity class	Board feet	Cubic feet	Trees that stands are commonly managed for--
13: Barvon-----	Ponderosa pine-----	75	4	203	62	Ponderosa pine
Lamedeer-----	Ponderosa pine-----	70	4	178	55	Ponderosa pine
Lamedeer, dry----	Ponderosa pine-----	60	3	129	46	Ponderosa pine
14: Barvon-----	Ponderosa pine-----	65	3	151	50	Ponderosa pine
Doney.						
Cabba.						
17: Birney-----	Ponderosa pine-----	50	3	90	38	Ponderosa pine
Cabbart-----	Ponderosa pine-----	35	2	43	25	Ponderosa pine
21: Birney-----	Ponderosa pine-----	50	3	90	38	Ponderosa pine
Armells.						
Cabbart.						
22: Birney, moist----	Ponderosa pine-----	50	3	90	38	Ponderosa pine
Birney.						
Kirby.						
29: Bitton-----	Ponderosa pine-----	45	2	72	34	Ponderosa pine
Doney.						
Cabba.						
30: Bitton-----	Ponderosa pine-----	45	2	72	34	Ponderosa pine
Lamedeer-----	Ponderosa pine-----	60	3	129	46	Ponderosa pine
Ringling.						
31: Bitton-----	Ponderosa pine-----	45	2	72	34	Ponderosa pine
Lamedeer-----	Ponderosa pine-----	60	3	129	46	Ponderosa pine
Ringling.						
32: Bitton-----	Ponderosa pine-----	45	2	72	34	Ponderosa pine

FOREST LAND PRODUCTIVITY--Continued

Map symbol and soil name	Common trees	Site index	Productivity class	Board feet	Cubic feet	Trees that stands are commonly managed for--
32: Ringling. Cabba.						
76: Delpoint, moist-- Delpoint. Cabbart.	Ponderosa pine-----	55	3	108	42	Ponderosa pine
77: Delpoint, moist-- Delpoint. Cabbart.	Ponderosa pine-----	55	3	108	42	Ponderosa pine
100: Havre----- 101: Havre----- 104: Havre----- Harlem. Glendive.	Plains cottonwood-----	75	---	---	---	Plains cottonwood
101: Havre-----	Plains cottonwood-----	80	---	---	---	Plains cottonwood
104: Havre----- Harlem. Glendive.	Plains cottonwood-----	80	---	---	---	Plains cottonwood
118: Lamedeer----- Lamedeer, dry--- Ringling-----	Ponderosa pine-----	70	4	178	55	Ponderosa pine
118: Lamedeer, dry---	Ponderosa pine-----	60	3	129	46	Ponderosa pine
118: Ringling-----	Ponderosa pine-----	40	2	60	30	Ponderosa pine
119: Lamedeer----- Twin Creek----- Ringling-----	Ponderosa pine-----	70	4	178	55	Ponderosa pine
119: Twin Creek-----	Ponderosa pine-----	75	4	203	62	Ponderosa pine
119: Ringling-----	Ponderosa pine-----	40	2	60	30	Ponderosa pine
120: Lamedeer----- Twin Creek----- Ringling-----	Ponderosa pine-----	70	4	178	55	Ponderosa pine
120: Twin Creek-----	Ponderosa pine-----	75	4	203	62	Ponderosa pine
120: Ringling-----	Ponderosa pine-----	40	2	60	30	Ponderosa pine
121: Lamedeer----- Bitton----- Ringling.	Ponderosa pine-----	60	3	129	46	Ponderosa pine
121: Bitton-----	Ponderosa pine-----	45	2	72	34	Ponderosa pine
170: Spang-----	Ponderosa pine-----	55	3	108	42	Ponderosa pine

FOREST LAND PRODUCTIVITY--Continued

Map symbol and soil name	Common trees	Site index	Produc- tivity class	Board feet	Cubic feet	Trees that stands are commonly managed for--
170: Birney, moist----	Ponderosa pine-----	50	3	90	38	Ponderosa pine
Birney.						

MAIN FOREST ACCESS ROAD LIMITATIONS AND HAZARDS

(See text for a description of the limitations and hazards listed in this table)

Soil name and map symbol	Forest access road limitations or hazards
13:	
Barvon-----	Low soil strength Slope Water erosion
Lamedeer-----	Low soil strength Slope Water erosion
Lamedeer, dry-----	Low soil strength Slope Water erosion
14:	
Barvon-----	Low soil strength Slope Water erosion
Doney-----	Low soil strength Slope Water erosion
Cabba-----	Dustiness Low soil strength Slope Water erosion
17:	
Birney-----	Low soil strength Slope Water erosion
Cabbart-----	Dustiness Low soil strength Slope Water erosion
21:	
Birney-----	Low soil strength Slope Water erosion
Armells-----	Low soil strength Slope Water erosion
Cabbart-----	Low soil strength Slope Water erosion
22:	
Birney, moist-----	Low soil strength
Birney-----	Low soil strength
Kirby-----	Low soil strength

MAIN FOREST ACCESS ROAD LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Forest access road limitations or hazards
29:	
Bitton-----	Low soil strength Slope Water erosion
Doney-----	Low soil strength Slope Water erosion
Cabba-----	Low soil strength Slope Water erosion
30:	
Bitton-----	Low soil strength
Lamedeer-----	Low soil strength
Ringling-----	None
31:	
Bitton-----	Low soil strength Slope Water erosion
Lamedeer-----	Low soil strength Slope Water erosion
Ringling-----	Slope Water erosion
32:	
Bitton-----	Low soil strength Slope Water erosion
Ringling-----	Slope Water erosion
Cabba-----	Low soil strength Slope Water erosion
76:	
Delpoint, moist-----	Low soil strength
Delpoint-----	Low soil strength
Cabbart-----	Low soil strength
77:	
Delpoint, moist-----	Low soil strength Slope Water erosion
Delpoint-----	Low soil strength Slope Water erosion
Cabbart-----	Low soil strength Slope Water erosion

MAIN FOREST ACCESS ROAD LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Forest access road limitations or hazards
100:	
Havre-----	Flooding
	Low soil strength
101:	
Havre-----	Flooding
	Low soil strength
104:	
Havre-----	Flooding
	Low soil strength
Harlem-----	Flooding
	Low soil strength
	Shrink swell potential
Glendive-----	Flooding
	Low soil strength
118:	
Lamedeer-----	Low soil strength
	Slope
	Water erosion
Lamedeer, dry-----	Low soil strength
	Slope
	Water erosion
Ringling-----	Slope
	Water erosion
119:	
Lamedeer-----	Low soil strength
Twin Creek-----	Low soil strength
Ringling-----	None
120:	
Lamedeer-----	Low soil strength
Twin Creek-----	Low soil strength
Ringling-----	None
121:	
Lamedeer-----	Low soil strength
	Slope
	Water erosion
Bitton-----	Low soil strength
	Slope
	Water erosion
Ringling-----	Slope
	Water erosion
170:	
Spang-----	None
Birney, moist-----	Low soil strength
Birney-----	Low soil strength

Recreation

The soils of the survey area are rated in the table "Recreational Development" according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites, and either access to public sewer lines or the capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degrees, for recreational uses by the duration of flooding and the season when it occurs. Onsite assessment of the height, duration, intensity, and frequency of flooding is essential in planning recreational facilities.

Camp areas are tracts of land used intensively as sites for tents, trailers, and campers and for outdoor activities that accompany such sites. These areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The soils are rated on the basis of soil properties that influence the ease of developing camp areas and performance of the areas after development. Also considered are the soil properties that influence trafficability and promote the growth of vegetation after heavy use.

Picnic areas are natural or landscaped tracts of land that are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The soils are rated on the basis of soil properties that influence the cost of shaping the site, trafficability, and the growth of vegetation after development. The surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry.

Playgrounds are areas used intensively for baseball, football, or similar activities. These areas require a nearly level soil that is free of stones and that can withstand heavy foot traffic and maintain an adequate

cover of vegetation. The soils are rated on the basis of soil properties that influence the cost of shaping the site, trafficability, and the growth of vegetation. Slope and stoniness are the main concerns in developing playgrounds. The surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry.

Paths and trails are areas used for hiking and horseback riding. The areas should require little or no cutting and filling during site preparation. The soils are rated on the basis of soil properties that influence trafficability and erodibility. Paths and trails should remain firm under foot traffic and not be dusty when dry.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

The interpretive ratings in this table help engineers, planners, and others to understand how soil properties influence recreational uses. Ratings for proposed uses are given in terms of limitations. Only the most restrictive features are listed. Other features may limit a specific recreational use.

The degree of soil limitation is expressed as slight, moderate, or severe.

Slight means that soil properties are favorable for the rated use. The limitations are minor and can be easily overcome. Good performance and low maintenance are expected.

Moderate means that soil properties are moderately favorable for the rated use. The limitations can be overcome or modified by special planning, design, or maintenance. During some part of the year, the expected performance may be less desirable than that of soils rated *slight*.

Severe means that soil properties are unfavorable for the rated use. Examples of limitations are slope, bedrock near the surface, flooding, and a seasonal high

water table. These limitations generally require major soil reclamation, special design, or intensive maintenance. Overcoming the limitations generally is difficult and costly.

The information in the table "Recreational Development" can be supplemented by other

information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in the table "Building Site Development" and interpretations for septic tank absorption fields in the table "Sanitary Facilities."

RECREATIONAL DEVELOPMENT

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1: Abor-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, depth to rock	Moderate: too clayey	Severe: too clayey
2: Abor-----	Moderate: slope, percs slowly, too clayey	Moderate: slope, too clayey, percs slowly	Severe: slope	Severe: erodes easily	Severe: too clayey
3: Abor-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, depth to rock	Moderate: too clayey	Severe: too clayey
Marvan-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey
4: Abor-----	Moderate: slope, percs slowly, too clayey	Moderate: slope, too clayey, percs slowly	Severe: slope	Severe: erodes easily	Severe: too clayey
Neldore-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock, too clayey
5: Absher-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: too clayey	Severe: excess sodium, too clayey
Nobe-----	Moderate: percs slowly, excess salt	Moderate: excess salt, percs slowly	Moderate: slope, percs slowly, excess salt	Slight	Moderate: excess salt, droughty
6: Antwerp-----	Moderate: excess salt	Moderate: excess salt	Moderate: slope, excess salt	Slight	Moderate: excess salt
7: Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8: Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
9: Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Kirby-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones, droughty, slope
10: Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Kirby-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones, droughty, slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
11: Assinniboine----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
12: Badland.					
13: Barvon-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Lamedeer, dry----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
14: Barvon-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
14: Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
15: Belfield-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
16: Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
17: Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
18: Birney-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Moderate: small stones, droughty, slope
Cooers-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Kirby-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Severe: droughty
19: Birney-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Moderate: small stones, droughty, slope
Kirby-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Severe: droughty
20: Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
Kirby-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: droughty, slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
20: Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
21: Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
22: Birney, moist---	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
Kirby-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: droughty, slope
23: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: droughty, slope
24: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
25: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
25: Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: droughty, slope
26: Bitton-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Moderate: small stones, large stones, droughty
Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
27: Bitton-----	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Moderate: small stones, large stones, droughty
Twin Creek-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
28: Bitton-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Moderate: small stones, large stones, droughty
Twin Creek-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
Ringling-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Severe: droughty
29: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
30: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope	Severe: droughty, slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
31: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
32: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
33: Bonfri-----	Moderate: dusty	Moderate: dusty	Severe: slope	Moderate: dusty	Moderate: depth to rock
Bullock-----	Severe: excess sodium	Severe: excess sodium	Severe: slope, excess sodium	Slight	Severe: excess sodium
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
34: Bonfri-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: droughty, depth to rock
35: Bonfri-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
Marmarth-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: droughty, depth to rock
Bullock-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
36: Borollic Camborthids.					

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
36: Ustic Torrifluvents.					
37: Brunelda-----	Moderate: too clayey	Moderate: too clayey	Moderate: slope, too clayey	Moderate: too clayey	Severe: droughty, too clayey
38: Brunelda-----	Moderate: too clayey	Moderate: too clayey	Moderate: slope, too clayey	Moderate: too clayey	Severe: too clayey
Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
39: Brunelda-----	Moderate: too clayey	Moderate: too clayey	Moderate: slope, too clayey	Moderate: too clayey	Severe: too clayey
Vaeda-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, small stones, too clayey	Moderate: too clayey	Severe: too clayey
Nobe-----	Moderate: percs slowly, excess salt	Moderate: excess salt, percs slowly	Moderate: slope, percs slowly, excess salt	Slight	Moderate: excess salt, droughty
40: Bryant-----	Slight	Slight	Moderate: slope	Slight	Slight
41: Bryant-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
42: Bullock-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
Rallod-----	Severe: depth to rock, excess sodium	Severe: excess sodium, depth to rock	Severe: slope, depth to rock, excess sodium	Severe: erodes easily	Severe: excess sodium, depth to rock
43: Bullock-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
Rominell-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
44: Busby-----	Slight	Slight	Moderate: slope	Slight	Slight
45: Busby-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
46: Busby-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
47: Busby----- Rock outcrop.	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
48: Busby-----	Slight	Slight	Moderate: slope	Slight	Slight
Twilight-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
Blackhall-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: depth to rock
49: Busby-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Twilight-----	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Blackhall-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Moderate: slope	Severe: droughty, slope, depth to rock
50: Busby-----	Slight	Slight	Moderate: slope	Slight	Slight
Yetull-----	Moderate: too sandy	Moderate: too sandy	Moderate: slope, too sandy	Moderate: too sandy	Moderate: droughty
51: Busby-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Yetull-----	Severe: slope	Severe: slope	Severe: slope	Moderate: too sandy, slope	Severe: slope
52: Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Wayden-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
Rock outcrop.					

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
53: Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
Wayden-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope, too clayey
54: Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Rock outcrop.					
55: Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Rock outcrop.					
56: Cambeth-----	Moderate: dusty	Moderate: dusty	Moderate: slope, depth to rock, dusty	Moderate: dusty	Moderate: depth to rock
57: Cambeth-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock
58: Cambeth-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock
Cabbart-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: depth to rock
59: Cambeth-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
59: Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
60: Cambeth-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock
Niler-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Slight	Severe: droughty, depth to rock
61: Castner-----	Severe: depth to rock	Severe: depth to rock	Severe: small stones, depth to rock	Slight	Severe: droughty, depth to rock
Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
62: Chinook-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
63: Chinook-----	Slight	Slight	Moderate: slope	Slight	Slight
64: Coopers-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
65: Coopers-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Birney-----	Moderate: small stones, dusty	Moderate: small stones, dusty	Severe: small stones	Moderate: dusty	Moderate: small stones, droughty
66: Coopers-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: slope, small stones, dusty	Moderate: dusty	Slight
67: Creed-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: dusty	Severe: excess sodium
68: Davidell-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
69: Davidell-----	Slight	Slight	Slight	Slight	Slight
70: Davidell-----	Slight	Slight	Moderate: slope	Slight	Slight
Antwerp-----	Moderate: excess salt	Moderate: excess salt	Moderate: slope, excess salt	Slight	Moderate: excess salt
71: Degrand-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
72: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
73: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
74: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
75: Delpoint-----	Moderate: dusty	Moderate: dusty	Moderate: slope, depth to rock, dusty	Moderate: dusty	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: droughty, depth to rock
76: Delpoint, moist-	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
76: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
77: Delpoint, moist-	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
78: Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
79: Evanston-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
80: Fergus variant--	Slight	Slight	Moderate: slope	Slight	Slight
Twin Creek-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
81: Floweree-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
82: Floweree-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
83: Floweree-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Vanstel-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
84: Fluventic Haploborolls. Typic Fluvaquents.					
85: Forelle-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
86: Forelle-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
87: Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: droughty, depth to rock
88: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
89: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
90: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
Kobar-----	Slight	Slight	Slight	Slight	Slight
91: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
Kobar-----	Slight	Slight	Moderate: slope	Slight	Slight
92: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: too clayey	Severe: excess sodium, too clayey
Marvan-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey
93: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: too clayey	Severe: excess sodium, too clayey

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
93: Vanda-----	Moderate: percs slowly, too clayey, excess salt	Moderate: too clayey, excess salt, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey
94: Gerdrum-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: dusty	Severe: excess sodium
Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Moderate: too clayey	Severe: droughty, depth to rock, too clayey
95: Glendive-----	Severe: flooding	Moderate: dusty	Moderate: flooding, dusty	Moderate: dusty	Moderate: flooding
96: Hanly-----	Severe: flooding	Moderate: dusty	Moderate: flooding, dusty	Moderate: dusty	Moderate: droughty, flooding
Glendive-----	Severe: flooding	Moderate: dusty	Moderate: flooding, dusty	Moderate: dusty	Moderate: flooding
97: Harlem-----	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
98: Harlem-----	Severe: flooding	Moderate: too clayey	Moderate: too clayey, flooding	Moderate: too clayey	Severe: too clayey
99: Havre-----	Severe: flooding	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
100: Havre-----	Severe: flooding	Moderate: dusty	Moderate: flooding, dusty	Moderate: dusty	Moderate: flooding
101: Havre-----	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
102: Havre-----	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
103: Havre-----	Severe: flooding, excess salt	Severe: excess salt	Severe: flooding, excess salt	Moderate: flooding	Severe: excess salt, flooding
104: Havre-----	Severe: flooding	Moderate: flooding, dusty	Severe: flooding	Moderate: flooding, dusty	Severe: flooding

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
104: Harlem-----	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
Glendive-----	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
105: Ivanell-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
106: Ivanell-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
Davidell-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
107: Ivanell-----	Slight	Slight	Severe: slope	Slight	Moderate: depth to rock
Niler-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Slight	Severe: droughty, depth to rock
108: Kirby-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones, droughty, slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Rock outcrop.					
109: Kobar-----	Slight	Slight	Slight	Slight	Slight
110: Kobar-----	Slight	Slight	Moderate: slope	Slight	Slight
111: Kobar-----	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
112: Kobar-----	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
113: Kobar-----	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Severe: too clayey
114: Kobar-----	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Severe: too clayey

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
115: Kobar-----	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
116: Kremlin-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
117: Kremlin-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
118: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Lamedeer, dry---	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
119: Lamedeer-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Moderate: small stones, droughty, slope
Twin Creek-----	Slight	Slight	Severe: slope	Slight	Slight
Ringling-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Severe: droughty
120: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Twin Creek-----	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
121: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
121: Bitton-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Ringling-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: droughty, slope
122: Lihen-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
123: Lonna-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
124: Lonna-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
125: Lonna-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
126: Lonna-----	Slight	Slight	Slight	Slight	Slight
127: Lonna-----	Slight	Slight	Moderate: slope	Slight	Slight
128: Lonna-----	Moderate: dusty	Moderate: dusty	Moderate: dusty	Moderate: dusty	Slight
Alona-----	Moderate: dusty, excess salt	Moderate: excess salt, dusty	Moderate: dusty, excess salt	Moderate: dusty	Moderate: excess salt
129: Lonna-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Alona-----	Moderate: dusty, excess salt	Moderate: excess salt, dusty	Moderate: slope, dusty, excess salt	Moderate: dusty	Moderate: excess salt
130: Lonna-----	Slight	Slight	Slight	Slight	Slight
Antwerp-----	Moderate: excess salt	Moderate: excess salt	Moderate: excess salt	Slight	Moderate: excess salt
131: Lonna-----	Slight	Slight	Moderate: slope	Slight	Slight

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
131: Antwerp-----	Moderate: excess salt	Moderate: excess salt	Moderate: slope, excess salt	Slight	Moderate: excess salt
132: Lonna-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
133: Lonna-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Cambeth-----	Moderate: dusty	Moderate: dusty	Moderate: slope, depth to rock, dusty	Moderate: dusty	Moderate: depth to rock
134: Louscot-----	Moderate: dusty, excess salt	Moderate: excess salt, dusty	Moderate: slope, dusty, excess salt	Moderate: dusty	Moderate: excess salt
135: Macar-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Rock outcrop.					
136: Marmarth-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: droughty, depth to rock
137: Marmarth-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Slight	Severe: droughty, depth to rock
138: Marvan-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: too clayey, percs slowly	Moderate: too clayey	Severe: too clayey

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
139: Marvan-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey
140: Marvan-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey
141: Neldore-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock, too clayey
142: Neldore-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
Abor-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope, too clayey
143: Neldore-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
Abor-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope, too clayey
144: Neldore-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
Abor-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope, too clayey
Rock outcrop.					
145: Neldore-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock, too clayey
Neldore, saline-	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Moderate: too clayey	Severe: droughty, depth to rock, too clayey

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
146: Neldore----- Rock outcrop.	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
147: Neldore----- Ustic Torriorthents.	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock, too clayey
Neldore, saline	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Moderate: too clayey	Severe: droughty, depth to rock, too clayey
148: Neldore----- Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock, too clayey
149: Neldore----- Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
150: Niler-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Moderate: slope	Severe: droughty, slope, depth to rock
151: Orinoco----- Yawdim-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: droughty, depth to rock
152: Rahworth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: depth to rock
	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Moderate: droughty

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
153: Rahworth-----	Slight	Slight	Moderate: slope	Slight	Moderate: droughty
Davidell-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
Sumatra-----	Slight	Slight	Moderate: slope	Slight	Moderate: droughty
154: Riverwash.					
155: Rock outcrop.					
156: Rominell-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
157: Sagedale-----	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
158: Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
Wayden-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, slope, depth to rock
159: Savage-----	Slight	Slight	Slight	Slight	Slight
160: Savage-----	Slight	Slight	Moderate: slope	Slight	Slight
161: Shambo-----	Slight	Slight	Slight	Slight	Slight
162: Shambo-----	Slight	Slight	Moderate: slope	Slight	Slight
163: Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
164: Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
164: Bitton-----	Moderate: slope, small stones	Moderate: slope, small stones	Severe: slope, small stones	Slight	Moderate: small stones, large stones, droughty
Cabba-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: depth to rock
165: Shambo-----	Slight	Slight	Severe: slope	Slight	Slight
Doney-----	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock
166: Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Cabba-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
167: Shambo-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope, erodes easily	Severe: slope
168: Spang-----	Slight	Slight	Moderate: slope	Slight	Slight
169: Spang-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Birney-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Moderate: small stones, droughty, slope
170: Spang-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
Birney, moist---	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
170: Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
171: Spinekop-----	Slight	Slight	Slight	Slight	Slight
172: Straw-----	Severe: flooding	Slight	Moderate: small stones	Slight	Slight
Canburn-----	Severe: flooding, wetness	Severe: wetness	Severe: wetness, flooding	Severe: wetness	Severe: wetness, flooding
173: Sumatra-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: droughty, slope
174: Sumatra-----	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Rock outcrop.					
175: Tinsley-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones, droughty, slope
176: Tinsley-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones	Severe: small stones, droughty, slope
Armells-----	Severe: slope	Severe: slope	Severe: slope, small stones	Severe: slope	Severe: slope
Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
177: Tinsley-----	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: slope, small stones	Severe: small stones, droughty, slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
178: Twilight-----	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
178: Blackhall-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope	Severe: droughty, slope, depth to rock
179: Twin Creek-----	Slight	Slight	Moderate: slope, small stones	Slight	Slight
Shambo-----	Slight	Slight	Moderate: slope	Slight	Slight
180: Typic Haplaquepts.					
181: Ustic Torrifluvents.					
182: Ustic Torrifluvents.					
183: Ustic Torriorthents.					
184: Ustic Torriorthents.					
185: Ustic Torriorthents.					
186: Ustic Torriorthents.					
187: Ustic Torriorthents.					
Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Moderate: too clayey	Severe: droughty, depth to rock, too clayey
188: Vaeda-----	Moderate: percs slowly, too clayey	Moderate: too clayey, percs slowly	Moderate: slope, small stones, too clayey	Moderate: too clayey	Severe: too clayey
189: Vanda-----	Moderate: percs slowly, too clayey, excess salt	Moderate: too clayey, excess salt, percs slowly	Moderate: slope, too clayey, percs slowly	Moderate: too clayey	Severe: too clayey

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
190: Vanstel-----	Moderate: dusty	Moderate: dusty	Moderate: slope, dusty	Moderate: dusty	Slight
191: Volborg-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Moderate: too clayey, slope	Severe: droughty, slope, depth to rock
192: Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Moderate: too clayey	Severe: droughty, depth to rock, too clayey
193: Volborg-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Moderate: too clayey, slope	Severe: droughty, slope, depth to rock
Rock outcrop.					
194: Weingart-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Moderate: too clayey	Severe: excess sodium, too clayey
195: Weingart-----	Severe: excess sodium	Severe: excess sodium	Severe: slope, excess sodium	Moderate: too clayey	Severe: excess sodium, too clayey
Neldore-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: depth to rock, too clayey
196: Weingart-----	Severe: excess sodium	Severe: excess sodium	Severe: slope, excess sodium	Severe: erodes easily	Severe: excess sodium
Niler-----	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: droughty, depth to rock
Rock outcrop.					
197: Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: small stones, dusty	Moderate: dusty	Slight
198: Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: slope, small stones, dusty	Moderate: dusty	Slight

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
199: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
200: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Abor-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope, too clayey
201: Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: slope, small stones, dusty	Moderate: dusty	Slight
Birney-----	Moderate: small stones, dusty	Moderate: small stones, dusty	Severe: small stones	Moderate: dusty	Moderate: small stones, droughty
202: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Birney-----	Moderate: slope, small stones, dusty	Moderate: slope, small stones, dusty	Severe: slope, small stones	Moderate: dusty	Moderate: small stones, droughty, slope
203: Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
204: Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope, small stones	Moderate: slope, dusty	Severe: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
205: Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: slope, small stones, dusty	Moderate: dusty	Slight
Busby-----	Slight	Slight	Moderate: slope	Slight	Slight

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
206: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Busby-----	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
207: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: erodes easily	Severe: slope, depth to rock
208: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Delpoint-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope, depth to rock
209: Yamac-----	Moderate: slope, dusty	Moderate: slope, dusty	Severe: slope	Severe: erodes easily	Moderate: slope
Redcreek-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Moderate: dusty	Severe: depth to rock
210: Yamac-----	Moderate: dusty	Moderate: dusty	Moderate: slope, small stones, dusty	Moderate: dusty	Slight
Rominell-----	Severe: excess sodium	Severe: excess sodium	Severe: excess sodium	Slight	Severe: excess sodium
211: Yawdim-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: depth to rock
212: Yawdim-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: droughty, slope, depth to rock
Cabbart-----	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, depth to rock	Severe: slope, erodes easily	Severe: slope, depth to rock
Kobar-----	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
213: Yawdim-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Severe: depth to rock

RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
213: Orinoco-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: droughty, depth to rock
214: Zatoville-----	Slight	Slight	Moderate: slope	Slight	Slight
215: Zatoville-----	Slight	Slight	Slight	Slight	Slight
216: Zatoville-----	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Moderate: too clayey	Severe: too clayey
217: Zatoville-----	Slight	Slight	Moderate: slope	Slight	Slight
Orinoco-----	Slight	Slight	Moderate: slope, depth to rock	Slight	Moderate: droughty, depth to rock

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. If food, cover, or water is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area.

If the soils have potential for habitat development, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

Elements of Wildlife Habitat

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants used by wildlife. Examples are wheat, rye, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes planted for wildlife food and cover. Examples are fescue, bromegrass, timothy, orchardgrass, clover, alfalfa, trefoil, reed canarygrass, and crownvetch.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Examples are bluestem, indiagrass, blueberry, goldenrod, lambsquarters, dandelions, blackberry, ragweed, wheatgrass, fescue, and nightshade.

The major soil properties affecting the growth of grain and forage crops and wild herbaceous plants are depth of the root zone, texture of the surface layer, the amount of water available to plants, wetness, salinity or sodicity, and flooding. The length of the growing season also is important.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage that wildlife eat. Examples are oak, poplar, boxelder, birch, maple, green ash, willow, and American elm. Examples of fruit-producing shrubs that are suitable for planting on soils that have good potential for these plants are hawthorn, honeysuckle, American plum, redosier dogwood, chokecherry, serviceberry, silver buffaloberry, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, and ground cover that provide habitat or supply food in the form of browse, seed, or fruitlike cones. Examples are pine, spruce, hemlock, fir, yew, cedar, larch, and juniper.

The major soil properties affecting the growth of hardwood and coniferous trees and shrubs are depth of the root zone, the amount of water available to plants, and wetness.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Wetland plants produce food or cover for wetland wildlife. Examples of these plants are smartweed, wild millet, rushes, sedges, bulrushes, wild rice, arrowhead, waterplantain, pickerelweed, and cattail.

The major soil properties affecting wetland plants are texture of the surface layer, wetness, acidity or alkalinity, and slope.

Shallow water areas have an average depth of less than 5 feet. They are useful as habitat for some wildlife species. They are naturally wet areas or are created by dams, levees, or water-control structures in marshes or streams. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, beaver ponds, and other wildlife ponds.

The major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability.

Kinds of Wildlife Habitat

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, and shrubs. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include Hungarian partridge, pheasant, sharp-tailed grouse, sage grouse, meadowlark, field sparrow, killdeer, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of hardwoods or conifers or a mixture of these and associated grasses, legumes, and wild herbaceous plants. The wildlife attracted to this habitat include wild

turkey, ruffed grouse, thrushes, woodpeckers, owls, tree squirrels, porcupine, raccoon, deer, elk, and black bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas that support water-tolerant plants. The wildlife attracted to this habitat include ducks, geese, herons, bitterns, rails, kingfishers, muskrat, otter, mink, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. The wildlife attracted to rangeland include antelope, deer, sage grouse, meadowlark, and lark bunting.

Wildlife in the Survey Area

The survey area provides a variety of habitats for wildlife, including grasslands, coniferous forests, dry and irrigated cropland, riparian woodland, streams and rivers, ponds, marshes, and reservoirs.

Irrigated and dryland farming has made possible the successful introduction of the ring-necked pheasant into the survey area, particularly in bottom land along the Yellowstone, Tongue, and Musselshell Rivers and Rosebud Creek. Different kinds of farming provide a variable land use pattern that includes small grain, irrigated crops, annual weeds, and brushy cover.

Land management practices that are beneficial to pheasant include the proper use of grazing land, the protection of woody cover from burning or eradication, and the retention of stubble and waste grain during winter by eliminating fall tillage. Woody plantings can be grown as shelterbelts and hedgerows or on cropland for the control of erosion. They are beneficial to pheasants and other nongame birds.

The bottom land that supports habitat for ring-necked pheasants is mostly in general soil map units 55, 92, 256, 379, and 668. These areas contain irrigated and dry cropland, brushy ditchbanks, and fence rows. General soil map units 148 and 190 provide good pheasant habitat. These areas contain grain fields, shelterbelts, and brushy drainageways.

Sharp-tailed grouse are found in the survey area throughout much of the prairie uplands, where grain fields, brushy cover, and an abundance of fruit-bearing shrubs, such as chokecherry, plum, rose, snowberry, skunkbush sumac, and buffaloberry, provide excellent habitat. Sharp-tailed grouse are somewhat adapted to modern farming. During winter they readily feed on grain in stubble, stacks, and cattle feedlots. During dry periods in July or August, they may gather in large shelterbelts where water and shade are available.

Populations of sharp-tailed grouse vary greatly between the dry sagebrush country and the more moist upland prairies. When populations are high, the breeding grouse extend their range well into marginal

islands of native grassland, mainly along drainageways surrounded by small grain. When populations are low, the grouse are more restricted to the upper limits of drainageways, where stands of trees and shrubs intermix with grasslands.

Land management practices that are beneficial to sharptailed grouse and gray partridges include the proper use of grazing land, which ensures that sufficient vegetation remains for nesting, roosting, and the rearing of young, and the protection of woody vegetation in draws and along fence rows, which provides both food and shelter. The establishment of properly designed shelterbelts benefits the sharp-tailed grouse, especially during severe winter weather.

General soil map units 48, 55, 70, 75, 89, 92, 103, 148, 173, 190, 227, 256, 263, 321, 379, 597, 612, 668, and 676 support plant communities that provide good habitat for sharp-tailed grouse. These units have areas of grain fields, shelterbelts, windbreaks, brushy draws, and a mixture of trees, shrubs, and grasslands.

Sage grouse are found on sagebrush-covered rangeland throughout much of the survey area. The optimum habitat for sage grouse is characterized by communities of big sagebrush and silver sagebrush with a variety of forbs and grasses.

General soil map units 24, 55, 70, 75, 92, 103, 148, 160, 168, 173, 227, 287, 339, 354, 379, 414, 597, 605, and 689 provide good habitat for sage grouse. These units have areas of brushy drainageways and sagebrush rangeland.

Merriam's turkeys, an introduced species, have been transplanted to several locations in the survey area. Suitable habitat is generally restricted to open ponderosa pine forests in areas of broken terrain. The turkeys have been most successful in forests, where the vegetative cover consists of ponderosa pine with grasses, deciduous trees, and shrubs in scattered parks, small openings, and drainageways. General soil map units 48, 89, 321, 612, and 676 provide most of the habitat for Merriam's turkey.

Pronghorn antelope are in the prairie areas, along with domestic livestock. The potential for maintaining pronghorn herds is dependent on the proper management of rangeland. The competition for food between livestock and pronghorns is not a serious problem on well managed range. Pronghorns utilize forbs and browse species that cattle only eat if they are forced to do so because of overgrazing.

General soil map units 24, 55, 70, 75, 92, 103, 148, 160, 168, 173, 190, 227, 287, 339, 354, 379, 414, 597, 605, and 689 provide habitat for pronghorn antelope in the survey area.

White-tailed deer and mule deer are found throughout the area. White-tailed deer most generally

inhabit the lowlands along the Yellowstone, Musselshell, and Tongue Rivers and their tributaries. Mule deer are in many of the upland areas, in brushy areas on bottom land, and in areas of broken rangeland, timbered slopes, and pine forests.

General soil map units 148, 190, 227, 256, 263, and 668 provide much of the habitat for white-tailed deer, and the entire survey area provides habitat for mule deer.

The Yellowstone, Musselshell, and Tongue Rivers and the numerous marshes, ponds, and reservoirs throughout the survey area provide habitat for an abundance of waterfowl during spring and fall migrations. Ducks and a variety of shore and marsh

birds use these bodies of water for resting, nesting, and the rearing of young. The Yellowstone River and its many islands serve as important nesting and rearing areas for Canada geese. Beaver, mink, muskrat, and raccoon are found in and around the principal watercourses. Cottontail rabbits, jackrabbits, badger, ground squirrels, coyotes, foxes, and a variety of small mammals inhabit areas throughout the survey area.

Field offices of the Natural Resources Conservation Service maintain habitat management guides for a variety of wildlife species. Information about planning and establishing food and shelter for wildlife is available at these offices.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial,

and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

The table "Building Site Development" shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging,

filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills generally are limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, potential for frost action, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

The table "Sanitary Facilities" shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary

landfills. It also shows the suitability of the soils for use as a daily cover for landfill.

Soil properties are important in selecting sites for sanitary facilities and in identifying limiting soil properties and site features to be considered in planning, design, and installation. Soil limitation ratings of *slight*, *moderate*, or *severe* are given for septic tank absorption fields, sewage lagoons, and trench and area sanitary landfills. Soil suitability ratings of *good*, *fair*, and *poor* are given for daily cover for landfill.

A rating of *slight* or *good* indicates that the soils have no limitations or that the limitations can be easily overcome. Good performance and low maintenance can be expected. A rating of *moderate* or *fair* indicates that the limitations should be recognized but generally can be overcome by good management or special design. A rating of *severe* or *poor* indicates that overcoming the limitations is difficult or impractical. Increased maintenance may be required.

Septic tank absorption fields are areas in which subsurface systems of tile or perforated pipe distribute effluent from a septic tank into the natural soil. The centerline of the tile is assumed to be at a depth of 24 inches. Only the part of the soil between depths of 24 and 60 inches is considered in making the ratings. The soil properties and site features considered are those that affect the absorption of the effluent, those that affect the construction and maintenance of the system, and those that may affect public health.

The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted, relatively impervious soil material. Aerobic lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Relatively impervious soil

material for the lagoon floor and sides is desirable to minimize seepage and contamination of local ground water.

The table "Sanitary Facilities" gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Trench sanitary landfill is an area where solid waste is disposed of by placing refuse in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil that is excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. Soil properties that influence the risk of pollution, the ease of excavation, trafficability, and revegetation are the major considerations in rating the soils.

Area sanitary landfill is an area where solid waste is disposed of by placing refuse in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil that is imported from a source away from the site. A final cover of soil at least 2 feet thick is placed over the completed landfill. Soil properties that influence trafficability, revegetation, and the risk of pollution are the main considerations in rating the soils for area sanitary landfills.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. The ratings in the table "Sanitary Facilities" are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only

to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The suitability of a soil for use as cover is based on properties that affect workability and the ease of digging, moving, and spreading the material over the refuse daily during both wet and dry periods.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Waste Management

Soil properties are important when organic waste is applied as fertilizer and wastewater is applied in irrigated areas. They also are important when the soil is used as a medium for the treatment and disposal of organic waste and wastewater. Unfavorable soil properties can result in environmental damage.

The use of organic waste and wastewater as production resources results in energy and resource conservation and minimizes the problems associated with waste disposal. If disposal is the goal, applying a maximum amount of the organic waste or the wastewater to a minimal area holds costs to a minimum and environmental damage is the main hazard. If reuse is the goal, a minimum amount should be applied to a maximum area and environmental damage is unlikely.

Interpretations developed for waste management may include ratings for manure- and food-processing waste, municipal sewage sludge, use of wastewater for irrigation, and treatment of wastewater by slow rate, overland flow, and rapid infiltration processes.

Specific information regarding waste management is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Construction Materials

The table "Construction Materials" gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In the table "Construction Materials," the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have one or more of the following characteristics: a plasticity index of more than 10, a high shrink-swell potential, many stones, slopes of more than 25 percent, or a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table "Construction Materials," only the probability of finding material in suitable quantity in or below the soil is evaluated. The

suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils generally is preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

The table "Water Management" gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In the table "Water Management," the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even more than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed

only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
22: Kirby-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: droughty, slope
23: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
24: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
25: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
26: Bitton-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, large stones, droughty
Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
27: Bitton-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Moderate: small stones, large stones, droughty
Twin Creek-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
28: Bitton-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, large stones, droughty

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
28: Twin Creek-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
Ringling-----	Severe: large stones	Severe: large stones	Severe: large stones	Severe: slope, large stones	Severe: large stones	Severe: droughty
29: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
30: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
31: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
32: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
33: Bonfri-----	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: frost action	Moderate: depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
33: Bullock-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Severe: excess sodium
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
34: Bonfri-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell	Severe: low strength	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: slope, depth to rock	Moderate: depth to rock, frost action	Severe: droughty, depth to rock
35: Bonfri-----	Moderate: depth to rock	Slight	Moderate: depth to rock	Slight	Moderate: frost action	Moderate: depth to rock
Marmarth-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Moderate: droughty, depth to rock
Bullock-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Severe: excess sodium
36: Borollic Camborthids. Ustic Torrifluvents.						
37: Brunelda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, too clayey
38: Brunelda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
39: Brunelda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
Vaeda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
39: Nobe-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Moderate: excess salt, droughty
40: Bryant-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
41: Bryant-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
42: Bullock-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Severe: excess sodium
Ralod-----	Severe: depth to rock	Moderate: shrink-swell, slope, depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength	Severe: excess sodium, depth to rock
43: Bullock-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Severe: excess sodium
Rominell-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Severe: excess sodium
44: Busby-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
45: Busby-----	Severe: cutbanks cave	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
46: Busby-----	Slight	Slight	Slight	Slight	Moderate: frost action	Slight
47: Busby-----	Severe: cutbanks cave	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
Rock outcrop.						
48: Busby-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
Twilight-----	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: frost action	Moderate: depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
48: Blackhall-----	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: slope, depth to rock	Moderate: depth to rock, frost action	Severe: depth to rock
49: Busby-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
Twilight-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Blackhall-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
50: Busby-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
Yetull-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Slight	Moderate: droughty
51: Busby-----	Severe: cutbanks cave	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
Yetull-----	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
52: Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Wayden-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Rock outcrop.						
53: Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
Wayden-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope, too clayey

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
54: Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Rock outcrop.						
55: Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Yawdim-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, depth to rock
Rock outcrop.						
56: Cambeth-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: depth to rock
57: Cambeth-----	Moderate: depth to rock, slope	Moderate: shrink-swell, slope	Moderate: depth to rock, slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope, depth to rock
58: Cambeth-----	Moderate: depth to rock, slope	Moderate: shrink-swell, slope	Moderate: depth to rock, slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope, depth to rock
Cabbart-----	Severe: depth to rock	Moderate: slope, depth to rock	Severe: depth to rock	Severe: slope	Moderate: depth to rock, slope, frost action	Severe: depth to rock
59: Cambeth-----	Moderate: depth to rock, slope	Moderate: shrink-swell, slope	Moderate: depth to rock, slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope, depth to rock
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
60: Cambeth-----	Moderate: depth to rock, slope	Moderate: shrink-swell, slope	Moderate: depth to rock, slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
60: Niler-----	Severe: depth to rock	Moderate: shrink-swell, slope, depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength	Severe: droughty, depth to rock
61: Castner-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: droughty, depth to rock
Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
62: Chinook-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
63: Chinook-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
64: Coers-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
65: Coers-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
Birney-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Moderate: small stones, droughty
66: Coers-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
Yamac-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
67: Creed-----	Severe: cutbanks cave	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Severe: excess sodium
68: Davidell-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
69: Davidell-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
70: Davidell-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
70: Antwerp-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Moderate: excess salt
71: Degrand-----	Severe: cutbanks cave	Slight	Slight	Slight	Moderate: frost action	Slight
72: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
73: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
74: Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Yawdim-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
75: Delpoint-----	Moderate: depth to rock	Slight	Moderate: depth to rock	Moderate: slope	Moderate: low strength, frost action	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: depth to rock	Moderate: depth to rock, frost action	Severe: droughty, depth to rock
76: Delpoint, moist-	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
77:						
Delpoint, moist-	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Delpoint-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
78:						
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
79:						
Evanston-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Slight
80:						
Fergus variant--	Slight	Moderate: shrink-swell	Slight	Moderate: shrink-swell, slope	Severe: low strength	Slight
Twin Creek-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
81:						
Floweree-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
82:						
Floweree-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
83:						
Floweree-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
Vanstel-----	Slight	Slight	Slight	Slight	Severe: low strength	Slight
84:						
Fluventic Haploborolls.						
Typic Fluvaquents.						

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
85: Forelle-----	Slight	Moderate: shrink-swell	Slight	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
86: Forelle-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
87: Galbreth-----	Severe: depth to rock	Moderate: depth to rock	Severe: depth to rock	Moderate: depth to rock	Moderate: depth to rock, frost action	Severe: droughty, depth to rock
88: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
89: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
90: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
Kobar-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
91: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
Kobar-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
92: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium, too clayey
Marvan-----	Severe: cutbanks cave	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
93: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium, too clayey

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
93: Vanda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
94: Gerdrum-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium
Volborg-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
95: Glendive-----	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
96: Hanly-----	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: droughty, flooding
Glendive-----	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
97: Harlem-----	Moderate: too clayey, flooding	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: shrink-swell, low strength, flooding	Moderate: flooding
98: Harlem-----	Moderate: too clayey, flooding	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: shrink-swell, low strength, flooding	Severe: too clayey
99: Havre-----	Slight	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding, frost action	Slight
100: Havre-----	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
101: Havre-----	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
102: Havre-----	Moderate: wetness, flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
103: Havre-----	Moderate: wetness, flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: excess salt, flooding

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
104: Havre-----	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
Harlem-----	Moderate: too clayey, flooding	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: flooding, shrink-swell	Severe: shrink-swell, low strength, flooding	Severe: flooding
Glendive-----	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
105: Ivanell-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: depth to rock
106: Ivanell-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: depth to rock
Davidell-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
107: Ivanell-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: depth to rock
Niler-----	Severe: depth to rock	Moderate: shrink-swell, slope, depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength	Severe: droughty, depth to rock
108: Kirby-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: small stones, droughty, slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Rock outcrop.						
109: Kobar-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
110: Kobar-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
111: Kobar-----	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: slope

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
112: Kobar-----	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: slope
113: Kobar-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
114: Kobar-----	Moderate: too clayey, wetness	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
115: Kobar-----	Moderate: too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Moderate: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Yawdim-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
116: Kremlin-----	Slight	Moderate: shrink-swell	Slight	Moderate: shrink-swell	Moderate: shrink-swell, frost action	Slight
117: Kremlin-----	Slight	Moderate: shrink-swell	Slight	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
118: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Lamedeer, dry---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
119: Lamedeer-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, droughty, slope
Twin Creek-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
119: Ringling-----	Severe: large stones	Severe: large stones	Severe: large stones	Severe: slope, large stones	Severe: large stones	Severe: droughty
120: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Twin Creek-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
121: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ringling-----	Severe: large stones, slope	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: slope, large stones	Severe: droughty, slope
122: Lihen-----	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
123: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
124: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
125: Lonna-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope
126: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
127: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
128: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
Alona-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Moderate: excess salt

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
129: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
Alona-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: excess salt
130: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
Antwerp-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Moderate: excess salt
131: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
Antwerp-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Moderate: excess salt
132: Lonna-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Yawdim-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, depth to rock
133: Lonna-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
Cambeth-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: depth to rock
134: Louscot-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Moderate: excess salt
135: Macar-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Rock outcrop.						

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
136: Marmarth-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Moderate: droughty, depth to rock
137: Marmarth-----	Moderate: depth to rock	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Moderate: depth to rock
Galbreth-----	Severe: depth to rock	Moderate: slope, depth to rock	Severe: depth to rock	Severe: slope	Moderate: depth to rock, slope, frost action	Severe: droughty, depth to rock
138: Marvan-----	Severe: cutbanks cave	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
139: Marvan-----	Severe: cutbanks cave	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
140: Marvan-----	Severe: cutbanks cave	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
141: Neldore-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
142: Neldore-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Abor-----	Severe: cutbanks cave, slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, too clayey
143: Neldore-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Abor-----	Severe: cutbanks cave, slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, too clayey

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
144: Neldore-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Abor-----	Severe: cutbanks cave, slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, too clayey
Rock outcrop.						
145: Neldore-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
Neldore, saline-	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
146: Neldore-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
Rock outcrop.						
147: Neldore-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
Ustic Torriorthents.						
Neldore, saline-	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
148: Neldore-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
Volborg-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
149: Neldore-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
149: Yawdim-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, depth to rock, too clayey
150: Niler-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: low strength, slope	Severe: droughty, slope, depth to rock
151: Orinoco-----	Moderate: depth to rock, too clayey	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty, depth to rock
Yawdim-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: depth to rock
152: Rahworth-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty
153: Rahworth-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty
Davidell-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
Sumatra-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty
154: Riverwash.						
155: Rock outcrop.						
156: Rominell-----	Slight	Slight	Slight	Slight	Moderate: frost action	Severe: excess sodium
157: Sagedale-----	Moderate: too clayey, slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: slope
158: Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
158: Wayden-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
159: Savage-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
160: Savage-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Slight
161: Shambo-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, low strength, frost action	Slight
162: Shambo-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
163: Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
164: Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
Bitton-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, large stones, droughty
Cabba-----	Severe: depth to rock	Moderate: shrink-swell, slope, depth to rock	Severe: depth to rock	Severe: slope	Moderate: depth to rock, shrink-swell, low strength	Severe: depth to rock
165: Shambo-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
Doney-----	Moderate: depth to rock, slope	Moderate: shrink-swell, slope	Moderate: depth to rock, slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
166: Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabba-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
167: Shambo-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, low strength, slope	Moderate: slope
Doney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Sagedale-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
168: Spang-----	Severe: cutbanks cave	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
169: Spang-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
Birney-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, droughty, slope
170: Spang-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope
Birney, moist---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
171: Spinekop-----	Slight	Slight	Slight	Slight	Moderate: frost action	Slight
172: Straw-----	Slight	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: low strength, flooding, frost action	Slight

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
172: Canburn-----	Severe: wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: wetness, flooding, frost action	Severe: wetness, flooding
173: Sumatra-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Severe: low strength	Moderate: droughty, slope
174: Sumatra-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength, slope	Severe: slope
Rock outcrop.						
175: Tinsley-----	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, droughty, slope
176: Tinsley-----	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, droughty, slope
Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
177: Tinsley-----	Severe: cutbanks cave, slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: small stones, droughty, slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
178: Twilight-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Blackhall-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
179: Twin Creek-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
179: Shambo-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, low strength, frost action	Slight
180: Typic Haplaquepts.						
181: Ustic Torrifluvents.						
182: Ustic Torrifluvents.						
183: Ustic Torriorthents.						
184: Ustic Torriorthents.						
185: Ustic Torriorthents.						
186: Ustic Torriorthents.						
187: Ustic Torriorthents.						
Volborg-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
188: Vaeda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
189: Vanda-----	Moderate: too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: too clayey
190: Vanstel-----	Slight	Slight	Slight	Moderate: slope	Severe: low strength	Slight
191: Volborg-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
192: Volborg-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: droughty, depth to rock, too clayey
193: Volborg-----	Severe: depth to rock, slope	Severe: shrink-swell, slope	Severe: depth to rock, slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: droughty, slope, depth to rock
Rock outcrop.						
194: Weingart-----	Moderate: depth to rock, too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium, too clayey
195: Weingart-----	Moderate: depth to rock, too clayey	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: excess sodium, too clayey
Neldore-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: depth to rock, too clayey
196: Weingart-----	Moderate: depth to rock, too clayey, slope	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength	Severe: excess sodium
Niler-----	Severe: depth to rock	Moderate: shrink-swell, slope, depth to rock	Severe: depth to rock	Severe: slope	Severe: low strength	Severe: droughty, depth to rock
Rock outcrop.						
197: Yamac-----	Severe: cutbanks cave	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, frost action	Slight
198: Yamac-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
199: Yamac-----	Severe: cutbanks cave	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
200: Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
200: Abor-----	Severe: cutbanks cave, slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope, too clayey
201: Yamac-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
Birney-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Moderate: small stones, droughty
202: Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
Birney-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: small stones, droughty, slope
203: Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
204: Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
205: Yamac-----	Severe: cutbanks cave	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
Busby-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Slight
206: Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
Busby-----	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope, frost action	Moderate: slope

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
207: Yamac-----	Severe: cutbanks cave	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
208: Yamac-----	Severe: cutbanks cave	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
Delpoint-----	Moderate: depth to rock, slope	Moderate: slope	Moderate: depth to rock, slope	Severe: slope	Moderate: low strength, slope, frost action	Moderate: slope, depth to rock
209: Yamac-----	Moderate: slope	Moderate: shrink-swell, slope	Moderate: slope, shrink-swell	Severe: slope	Moderate: shrink-swell, slope, frost action	Moderate: slope
Redcreek-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock
210: Yamac-----	Slight	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Moderate: shrink-swell, frost action	Slight
Rominell-----	Slight	Slight	Slight	Moderate: slope	Moderate: frost action	Severe: excess sodium
211: Yawdim-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: depth to rock
212: Yawdim-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: droughty, slope, depth to rock
Cabbart-----	Severe: depth to rock, slope	Severe: slope	Severe: depth to rock, slope	Severe: slope	Severe: slope	Severe: slope, depth to rock
Kobar-----	Severe: slope	Severe: shrink-swell, slope	Severe: slope, shrink-swell	Severe: shrink-swell, slope	Severe: shrink-swell, low strength, slope	Severe: slope
213: Yawdim-----	Severe: depth to rock	Severe: shrink-swell	Severe: depth to rock, shrink-swell	Severe: shrink-swell	Severe: shrink-swell, low strength	Severe: depth to rock

BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
213: Orinoco-----	Moderate: depth to rock, too clayey	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty, depth to rock
214: Zatoville-----	Moderate: too clayey	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
215: Zatoville-----	Moderate: too clayey, wetness	Moderate: shrink-swell	Moderate: wetness, shrink-swell	Moderate: shrink-swell	Severe: low strength	Slight
216: Zatoville-----	Moderate: too clayey, wetness	Moderate: shrink-swell	Moderate: wetness, shrink-swell	Moderate: shrink-swell	Severe: low strength	Severe: too clayey
217: Zatoville-----	Moderate: too clayey	Moderate: shrink-swell	Moderate: shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Slight
Orinoco-----	Moderate: depth to rock, too clayey	Moderate: shrink-swell	Moderate: depth to rock, shrink-swell	Moderate: shrink-swell, slope	Severe: low strength	Moderate: droughty, depth to rock

SANITARY FACILITIES

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1: Abor-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock, too clayey	Severe: depth to rock	Poor: depth to rock, too clayey, hard to pack
2: Abor-----	Severe: depth to rock, percs slowly	Severe: depth to rock, slope	Severe: depth to rock, too clayey	Severe: depth to rock	Poor: depth to rock, too clayey, hard to pack
3: Abor-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock, too clayey	Severe: depth to rock	Poor: depth to rock, too clayey, hard to pack
Marvan-----	Severe: percs slowly	Moderate: slope	Severe: too clayey	Slight	Poor: too clayey, hard to pack
4: Abor-----	Severe: depth to rock, percs slowly	Severe: depth to rock, slope	Severe: depth to rock, too clayey	Severe: depth to rock	Poor: depth to rock, too clayey, hard to pack
Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
5: Absher-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
Nobe-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
6: Antwerp-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
7: Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
8: Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8: Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
9: Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Kirby-----	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: slope, large stones	Severe: slope	Poor: seepage, small stones, slope
10: Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Kirby-----	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: slope, large stones	Severe: slope	Poor: seepage, small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
11: Assinniboine----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
12: Badland.					
13: Barvon-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Lamedeer, dry---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
14: Barvon-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
14: Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
15: Belfield-----	Severe: percs slowly	Moderate: slope	Severe: too clayey, excess sodium	Slight	Poor: too clayey, hard to pack, excess sodium
16: Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
17: Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
18: Birney-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Poor: seepage, small stones
Coopers-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Fair: small stones
Kirby-----	Severe: poor filter	Severe: seepage, slope	Severe: large stones	Moderate: slope	Poor: seepage, small stones
19: Birney-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Poor: seepage, small stones
Kirby-----	Severe: poor filter	Severe: seepage, slope	Severe: large stones	Moderate: slope	Poor: seepage, small stones
20: Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Kirby-----	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: slope, large stones	Severe: slope	Poor: seepage, small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
21: Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
22: Birney, moist---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Kirby-----	Severe: poor filter, slope	Severe: seepage, slope, large stones	Severe: slope, large stones	Severe: slope	Poor: seepage, small stones, slope
23: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
24: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
25: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
25: Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
26: Bitton-----	Moderate: percs slowly, slope	Severe: seepage, slope	Severe: seepage	Severe: seepage	Poor: small stones
Shambo-----	Moderate: percs slowly, slope	Severe: seepage, slope	Severe: seepage	Moderate: slope	Fair: too clayey, slope
27: Bitton-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: large stones	Slight	Poor: small stones
Twin Creek-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
28: Bitton-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, large stones	Moderate: slope	Poor: small stones
Twin Creek-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
Ringling-----	Severe: poor filter, large stones	Severe: seepage, slope, large stones	Severe: seepage, large stones	Severe: seepage	Poor: seepage, small stones
29: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
30: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
30: Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
31: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
32: Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
33: Bonfri-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Bullock-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
34: Bonfri-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
35: Bonfri-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Marmarth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
35: Bullock-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
36: Borollic Camborthids. Ustic Torrifluvents.					
37: Brunelda-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
38: Brunelda-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
39: Brunelda-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
Vaeda-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
Nobe-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
40: Bryant-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
41: Bryant-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: too clayey, slope
42: Bullock-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Rallod-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
43: Bullock-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Rominell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
44: Busby-----	Slight	Severe: seepage	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
45: Busby-----	Severe: poor filter	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
46: Busby-----	Slight	Severe: seepage	Slight	Slight	Good
47: Busby-----	Severe: poor filter	Severe: seepage, slope	Moderate: slope, too sandy	Moderate: slope	Fair: too sandy, slope
Rock outcrop.					
48: Busby-----	Slight	Severe: seepage	Slight	Slight	Good
Twilight-----	Severe: depth to rock	Severe: seepage, depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Blackhall-----	Severe: depth to rock	Severe: seepage, depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
49: Busby-----	Moderate: slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Twilight-----	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Blackhall-----	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
50: Busby-----	Severe: poor filter	Severe: seepage	Moderate: too sandy	Slight	Fair: too sandy
Yetull-----	Severe: poor filter	Severe: seepage	Severe: too sandy	Slight	Poor: seepage, too sandy
51: Busby-----	Moderate: slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Yetull-----	Severe: poor filter, slope	Severe: seepage, slope	Severe: slope, too sandy	Severe: slope	Poor: seepage, too sandy, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
52: Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Wayden-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
Rock outcrop.					
53: Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Wayden-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
Sagedale-----	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, slope
54: Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Rock outcrop.					
55: Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Rock outcrop.					
56: Cambeth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
57: Cambeth-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
58: Cambeth-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
58: Cabbart-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
59: Cambeth-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
60: Cambeth-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
Niler-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
61: Castner-----	Severe: depth to rock	Severe: seepage, depth to rock	Severe: depth to rock, seepage	Severe: depth to rock	Poor: depth to rock, seepage, small stones
Shambo-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: too clayey, slope
62: Chinook-----	Slight	Severe: seepage	Moderate: too sandy	Slight	Fair: too sandy
63: Chinook-----	Moderate: percs slowly	Severe: seepage	Slight	Slight	Good
64: Cooers-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Fair: small stones
65: Cooers-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Fair: small stones
Birney-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Poor: seepage, small stones
66: Cooers-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Fair: small stones
Yamac-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
67: Creed-----	Severe: percs slowly	Severe: seepage	Slight	Slight	Good
68: Davidell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
69: Davidell-----	Severe: percs slowly	Slight	Slight	Slight	Good
70: Davidell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
Antwerp-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
71: Degrand-----	Severe: poor filter	Severe: seepage	Severe: too sandy	Slight	Poor: seepage, too sandy
72: Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
73: Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
74: Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
75: Delpoint-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
76: Delpoint, moist-	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
77: Delpoint, moist-	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Delpoint-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
78: Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
79: Evanston-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
80: Fergus variant--	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Twin Creek-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
81: Floweree-----	Severe: percs slowly	Slight	Slight	Slight	Good
82: Floweree-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
83: Floweree-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
Vanstel-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good
84: Fluventic Haploborolls. Typic Fluvaquents.					
85: Forelle-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
86: Forelle-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
87: Galbreth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
88: Gerdrum-----	Severe: percs slowly	Slight	Slight	Slight	Poor: hard to pack
89: Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
90: Gerdrum-----	Severe: percs slowly	Slight	Slight	Slight	Poor: hard to pack
Kobar-----	Severe: percs slowly	Slight	Slight	Slight	Good
91: Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
Kobar-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
92: Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
Marvan-----	Severe: percs slowly	Moderate: slope	Severe: too clayey	Slight	Poor: too clayey, hard to pack
93: Gerdrum-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
Vanda-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
94: Gerdrum-----	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock	Slight	Poor: hard to pack
Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
95: Glendive-----	Severe: flooding	Severe: seepage, flooding	Severe: flooding	Severe: flooding	Fair: too sandy
96: Hanly-----	Severe: flooding, poor filter	Severe: seepage, flooding	Severe: flooding, too sandy	Severe: flooding	Poor: seepage, too sandy
Glendive-----	Severe: flooding	Severe: seepage, flooding	Severe: flooding	Severe: flooding	Fair: too sandy
97: Harlem-----	Severe: flooding, percs slowly	Severe: flooding	Severe: flooding	Severe: flooding	Poor: hard to pack
98: Harlem-----	Severe: flooding, percs slowly	Severe: flooding	Severe: flooding	Severe: flooding	Poor: hard to pack
99: Havre-----	Moderate: flooding, percs slowly	Moderate: seepage	Moderate: flooding	Moderate: flooding	Good
100: Havre-----	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Good
101: Havre-----	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
102: Havre-----	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Fair: wetness
103: Havre-----	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Fair: wetness
104: Havre-----	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Good
Harlem-----	Severe: flooding, percs slowly	Severe: flooding	Severe: flooding	Severe: flooding	Poor: hard to pack
Glendive-----	Severe: flooding	Severe: seepage, flooding	Severe: flooding	Severe: flooding	Good
105: Ivanell-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
106: Ivanell-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Davidell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
107: Ivanell-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Niler-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
108: Kirby-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: slope, large stones	Severe: slope	Poor: seepage, small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Rock outcrop.					
109: Kobar-----	Severe: percs slowly	Slight	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
110: Kobar-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
111: Kobar-----	Severe: percs slowly	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
112: Kobar-----	Severe: percs slowly	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
113: Kobar-----	Severe: percs slowly	Slight	Slight	Slight	Good
114: Kobar-----	Severe: wetness, percs slowly	Slight	Severe: wetness	Severe: wetness	Fair: wetness
115: Kobar-----	Severe: percs slowly	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
116: Kremlin-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good
117: Kremlin-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
118: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Lamedeer, dry---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
119: Lamedeer-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Poor: small stones

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
119: Twin Creek-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
Ringling-----	Severe: poor filter, large stones	Severe: seepage, slope, large stones	Severe: seepage, large stones	Severe: seepage	Poor: seepage, small stones
120: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Twin Creek-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
121: Lamedeer-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Bitton-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Ringling-----	Severe: poor filter, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope, large stones	Severe: seepage, slope	Poor: seepage, small stones, slope
122: Lihen-----	Severe: poor filter, slope	Severe: seepage, slope	Severe: seepage, slope, too sandy	Severe: seepage, slope	Poor: too sandy, slope
123: Lonna-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good
124: Lonna-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
125: Lonna-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
126: Lonna-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
127: Lonna-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
128: Lonna-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good
Alona-----	Severe: percs slowly	Slight	Severe: excess salt	Slight	Good
129: Lonna-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Alona-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Good
130: Lonna-----	Moderate: percs slowly	Moderate: seepage	Slight	Slight	Good
Antwerp-----	Severe: percs slowly	Slight	Slight	Slight	Good
131: Lonna-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Antwerp-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
132: Lonna-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
133: Lonna-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Cambeth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
134: Louscot-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
135: Macar-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Rock outcrop.					
136: Marmarth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
137: Marmarth-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Galbreth-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
138: Marvan-----	Severe: percs slowly	Slight	Severe: too clayey	Slight	Poor: too clayey, hard to pack
139: Marvan-----	Severe: percs slowly	Moderate: slope	Severe: too clayey	Slight	Poor: too clayey, hard to pack
140: Marvan-----	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, too clayey	Moderate: depth to rock	Poor: too clayey, hard to pack
141: Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
142: Neldore-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Abor-----	Severe: depth to rock, percs slowly, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
143: Neldore-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Abor-----	Severe: depth to rock, percs slowly, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
144: Neldore-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Abor-----	Severe: depth to rock, percs slowly, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
Rock outcrop.					
145: Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
Neldore, saline-	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
146: Neldore-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Rock outcrop.					
147: Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
Ustic Torriorthents.					
Neldore, saline-	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
148: Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
Volborg-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
149: Neldore-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
150: Niler-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
151: Orinoco-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
Yawdim-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
152: Rahworth-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Good
153: Rahworth-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Good
Davidell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
Sumatra-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Good
154: Riverwash.					
155: Rock outcrop.					
156: Rominell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good
157: Sagedale-----	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: too clayey
158: Sagedale-----	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, slope
Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Wayden-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
159: Savage-----	Severe: percs slowly	Slight	Severe: too clayey	Slight	Poor: too clayey
160: Savage-----	Severe: percs slowly	Moderate: slope	Severe: too clayey	Slight	Poor: too clayey

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
161: Shambo-----	Moderate: percs slowly	Moderate: seepage	Moderate: too clayey	Slight	Fair: too clayey
162: Shambo-----	Moderate: percs slowly	Severe: seepage	Severe: seepage	Slight	Fair: too clayey
163: Shambo-----	Moderate: percs slowly, slope	Severe: seepage, slope	Severe: seepage	Severe: seepage	Fair: small stones, slope
164: Shambo-----	Moderate: percs slowly, slope	Severe: seepage, slope	Severe: seepage	Moderate: slope	Fair: too clayey, slope
Bitton-----	Moderate: percs slowly, slope	Severe: seepage, slope	Severe: seepage	Severe: seepage	Poor: small stones
Cabba-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Severe: depth to rock	Poor: depth to rock
165: Shambo-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
Doney-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Severe: depth to rock	Poor: depth to rock
166: Shambo-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: too clayey, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Cabba-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
167: Shambo-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope, too clayey	Moderate: slope	Fair: too clayey, slope
Doney-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Poor: depth to rock, slope
Sagedale-----	Severe: percs slowly, slope	Severe: slope	Severe: slope, too clayey	Severe: slope	Poor: too clayey, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
168: Spang-----	Slight	Severe: seepage	Slight	Slight	Good
169: Spang-----	Moderate: slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Birney-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Poor: seepage, small stones
170: Spang-----	Moderate: slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Birney, moist---	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
171: Spinekop-----	Severe: percs slowly	Slight	Slight	Slight	Good
172: Straw-----	Moderate: flooding, percs slowly	Moderate: seepage	Moderate: flooding, too clayey	Moderate: flooding	Fair: too clayey
Canburn-----	Severe: flooding, wetness, percs slowly	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Poor: wetness
173: Sumatra-----	Severe: percs slowly	Severe: slope	Severe: excess salt	Moderate: slope	Fair: slope
174: Sumatra-----	Severe: percs slowly, slope	Severe: slope	Severe: slope, excess salt	Severe: slope	Poor: slope
Rock outcrop.					
175: Tinsley-----	Severe: poor filter, slope	Severe: seepage, slope	Severe: seepage, slope, too sandy	Severe: seepage, slope	Poor: seepage, too sandy, small stones

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
176: Tinsley-----	Severe: poor filter, slope	Severe: seepage, slope	Severe: seepage, slope, too sandy	Severe: seepage, slope	Poor: seepage, too sandy, small stones
Armells-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: small stones, slope
Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
177: Tinsley-----	Severe: poor filter, slope	Severe: seepage, slope	Severe: seepage, slope, too sandy	Severe: seepage, slope	Poor: seepage, too sandy, small stones
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
178: Twilight-----	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Blackhall-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
179: Twin Creek-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
Shambo-----	Moderate: percs slowly	Moderate: seepage, slope	Moderate: too clayey	Slight	Fair: too clayey
180: Typic Haplaquepts.					
181: Ustic Torrifluvents.					
182: Ustic Torrifluvents.					
183: Ustic Torriorthents.					
184: Ustic Torriorthents.					

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
185: Ustic Torriorthents.					
186: Ustic Torriorthents.					
187: Ustic Torriorthents.					
Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
188: Vaeda-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Poor: hard to pack
189: Vanda-----	Severe: percs slowly	Moderate: slope	Severe: excess salt	Slight	Poor: hard to pack
190: Vanstel-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
191: Volborg-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
192: Volborg-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
193: Volborg-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, hard to pack, slope
Rock outcrop.					
194: Weingart-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
195: Weingart-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
Neldore-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
196: Weingart-----	Severe: depth to rock, percs slowly	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock, hard to pack
Niler-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
Rock outcrop.					
197: Yamac-----	Moderate: percs slowly	Severe: seepage	Slight	Slight	Good
198: Yamac-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
199: Yamac-----	Moderate: percs slowly, slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
200: Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Abor-----	Severe: depth to rock, percs slowly, slope	Severe: depth to rock, slope	Severe: depth to rock, slope, too clayey	Severe: depth to rock, slope	Poor: depth to rock, too clayey, hard to pack
201: Yamac-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Birney-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Poor: seepage, small stones
202: Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Birney-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Poor: seepage, small stones
203: Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
204:					
Yamac-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
Birney-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: seepage, small stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
205:					
Yamac-----	Moderate: percs slowly	Severe: seepage	Slight	Slight	Good
Busby-----	Slight	Severe: seepage	Slight	Slight	Good
206:					
Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Busby-----	Moderate: slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
207:					
Yamac-----	Moderate: percs slowly, slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
208:					
Yamac-----	Moderate: percs slowly, slope	Severe: seepage, slope	Moderate: slope	Moderate: slope	Fair: slope
Delpoint-----	Severe: depth to rock	Severe: depth to rock, slope	Severe: depth to rock	Moderate: slope	Poor: depth to rock
209:					
Yamac-----	Moderate: percs slowly, slope	Severe: slope	Moderate: slope	Moderate: slope	Fair: slope
Redcreek-----	Severe: depth to rock	Severe: seepage, depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
210:					
Yamac-----	Moderate: percs slowly	Moderate: seepage, slope	Slight	Slight	Good
Rominell-----	Severe: percs slowly	Moderate: slope	Slight	Slight	Good

SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
211: Yawdim-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
212: Yawdim-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Cabbart-----	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: depth to rock, slope	Severe: slope	Poor: depth to rock, slope
Kobar-----	Severe: percs slowly, slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
213: Yawdim-----	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock, hard to pack
Orinoco-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock
214: Zatoville-----	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock	Slight	Fair: depth to rock, thin layer
215: Zatoville-----	Severe: wetness, percs slowly	Slight	Severe: wetness	Severe: wetness	Fair: wetness
216: Zatoville-----	Severe: wetness, percs slowly	Slight	Severe: wetness	Severe: wetness	Fair: wetness
217: Zatoville-----	Severe: percs slowly	Moderate: depth to rock, slope	Severe: depth to rock, excess salt	Slight	Fair: depth to rock, thin layer
Orinoco-----	Severe: depth to rock, percs slowly	Severe: depth to rock	Severe: depth to rock	Slight	Poor: depth to rock

CONSTRUCTION MATERIALS

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1: Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
2: Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
3: Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Marvan-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
4: Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
5: Absher-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
Nobe-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
6: Antwerp-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
7: Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
8: Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Delpoint-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
9: Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Kirby-----	Poor: slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
10: Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Kirby-----	Poor: slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
11: Assinniboine---	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
12: Badland.				
13: Barvon-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Lamedeer-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Lamedeer, dry---	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
14: Barvon-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
15: Belfield-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
16: Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
17: Birney-----	Poor: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
18: Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
Cooers-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
Kirby-----	Fair: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim
19: Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
Kirby-----	Fair: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim
20: Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
20: Kirby-----	Fair: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
21: Birney-----	Poor: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
22: Birney, moist---	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Kirby-----	Fair: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
23: Bitton-----	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Doney-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Ringling-----	Poor: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
24: Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
24: Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
25: Bitton-----	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
26: Bitton-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Shambo-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim, slope
27: Bitton-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Twin Creek-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
28: Bitton-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Twin Creek-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Ringling-----	Poor: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim
29: Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
30: Bitton-----	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Lamedeer-----	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
31: Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Lamedeer-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
32: Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
33: Bonfri-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
Bullock-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, excess sodium
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
34: Bonfri-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
Galbreth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
35: Bonfri-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
Marmarth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
Bullock-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, excess sodium
36: Borollic Camborthids.				
Ustic Torrifluvents.				
37: Brunelda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
38: Brunelda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess sodium
39: Brunelda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
Vaeda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
Nobe-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
40: Bryant-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
41: Bryant-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, slope
42: Bullock-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, excess sodium
Ralrod-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, excess sodium
43: Bullock-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, excess sodium
Rominell-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: excess sodium
44: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Good
45: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
46: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Good
47: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
Rock outcrop.				
48: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Good
Twilight-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, thin layer
Blackhall-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
49: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
Twilight-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Blackhall-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
50: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Good
Yetull-----	Good	Probable	Improbable: too sandy	Poor: too sandy
51: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
Yetull-----	Fair: slope	Probable	Improbable: too sandy	Poor: too sandy, slope
52: Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Wayden-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Rock outcrop.				
53: Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Wayden-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Sagedale-----	Poor: low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
54: Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Rock outcrop.				
55: Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
55: Rock outcrop.				
56: Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
57: Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
58: Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
59: Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
60: Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
Niler-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
61: Castner-----	Poor: depth to rock	Improbable: small stones	Improbable: thin layer	Poor: depth to rock, small stones
Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, slope
62: Chinook-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones
63: Chinook-----	Good	Improbable: excess fines	Improbable: excess fines	Good
64: Coopers-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
65: Coopers-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
66: Coopers-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones, area reclaim
Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
67: Creed-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, excess sodium
68: Davidell-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt, thin layer
69: Davidell-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
70: Davidell-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
Antwerp-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
71: Degrand-----	Good	Probable	Probable	Poor: small stones
72: Delpoint-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
73: Delpoint-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
74: Delpoint-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
75: Delpoint-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
Galbreth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
76: Delpoint, moist-	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Delpoint-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
77: Delpoint, moist-	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Delpoint-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
78: Doney-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
79: Evanston-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, large stones

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
80: Fergus variant--	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Twin Creek-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
81: Floweree-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
82: Floweree-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
83: Floweree-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Vanstel-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
84: Fluventic Haploborolls. Typic Fluvaquents.				
85: Forelle-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
86: Forelle-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
87: Galbreth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
88: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
89: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
90: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
90: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
91: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
92: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
Marvan-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
93: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt, excess sodium
Vanda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
94: Gerdrum-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess sodium
Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, excess salt
95: Glendive-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too sandy, small stones, excess salt
96: Hanly-----	Good	Probable	Improbable: too sandy	Poor: too sandy
Glendive-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too sandy, small stones, excess salt
97: Harlem-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
98: Harlem-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
99: Havre-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
100: Havre-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
101: Havre-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
102: Havre-----	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
103: Havre-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
104: Havre-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Harlem-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Glendive-----	Good	Improbable: excess fines	Improbable: excess fines	Good
105: Ivanell-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
106: Ivanell-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
Davidell-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt, thin layer
107: Ivanell-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
Niler-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
108: Kirby-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
108: Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Rock outcrop.				
109: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
110: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
111: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
112: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
113: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
114: Kobar-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
115: Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
116: Kremlin-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
117: Kremlin-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
118: Lamedeer-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
118: Lamedeer, dry---	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
119: Lamedeer-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Twin Creek-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Ringling-----	Poor: large stones	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim
120: Lamedeer-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Twin Creek-----	Fair: shrink-swell, low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
121: Lamedeer-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Bitton-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Ringling-----	Poor: large stones, slope	Improbable: small stones, large stones	Improbable: large stones	Poor: small stones, area reclaim, slope
122: Lihen-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: too sandy, slope
123: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
124: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt
125: Lonna-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt, thin layer
126: Lonna-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, thin layer
127: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt
128: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Alona-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
129: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt
Alona-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
130: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Antwerp-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
131: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt
Antwerp-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
132: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt, slope
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
132: Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
133: Lonna-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt
Cambeth-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
134: Louscot-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
135: Macar-----	Fair: shrink-swell, slope	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Rock outcrop.				
136: Marmarth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
137: Marmarth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, thin layer
Galbreth-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
138: Marvan-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
139: Marvan-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
140: Marvan-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
141: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
142: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
143: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
144: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
Rock outcrop.				
145: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
Neldore, saline-	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
146: Neldore-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Rock outcrop.				
147: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
147: Ustic Torriorthents.				
Neldore, saline-	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
148: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
149: Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
150: Niler-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
151: Orinoco-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
152: Rahworth-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
153: Rahworth-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
Davidell-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, excess salt, thin layer
Sumatra-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
154: Riverwash.				

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
155: Rock outcrop.				
156: Rominell-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: excess sodium
157: Sagedale-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones
158: Sagedale-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
Cabba-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Wayden-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
159: Savage-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
160: Savage-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
161: Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
162: Shambo-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim
163: Shambo-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim, slope
164: Shambo-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, area reclaim, slope
Bitton-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim
Cabba-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
165: Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
Doney-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
166: Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Cabba-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
167: Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, slope
Doney-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Sagedale-----	Poor: low strength, slope	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, small stones, slope
168: Spang-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones
169: Spang-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones, slope
Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
170: Spang-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones, slope
Birney, moist---	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
171: Spinekop-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
172: Straw-----	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Canburn-----	Poor: wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
173: Sumatra-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt
174: Sumatra-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: excess salt, slope
Rock outcrop.				
175: Tinsley-----	Poor: slope	Probable	Probable	Poor: too sandy, small stones, area reclaim
176: Tinsley-----	Fair: large stones, slope	Probable	Probable	Poor: too sandy, small stones, area reclaim
Armells-----	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: small stones, area reclaim, slope
Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope
177: Tinsley-----	Poor: slope	Probable	Probable	Poor: too sandy, small stones, area reclaim
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
178: Twilight-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope
Blackhall-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
179: Twin Creek-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Shambo-----	Fair: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
180: Typic Haplaquepts.				
181: Ustic Torrifluvents.				
182: Ustic Torrifluvents.				
183: Ustic Torriorthents.				
184: Ustic Torriorthents.				
185: Ustic Torriorthents.				
186: Ustic Torriorthents.				
187: Ustic Torriorthents.				
Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, excess salt
188: Vaeda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
189: Vanda-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
190: Vanstal-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
191: Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
192: Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, excess salt
193: Volborg-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, excess salt
Rock outcrop.				
194: Weingart-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess sodium
195: Weingart-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess sodium
Neldore-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
196: Weingart-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess sodium
Niler-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock
Rock outcrop.				
197: Yamac-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, area reclaim
198: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
199: Yamac-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, area reclaim
200: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
200: Abor-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope
201: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
202: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope
Birney-----	Good	Probable	Probable	Poor: small stones, area reclaim
203: Yamac-----	Fair: shrink-swell, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
204: Yamac-----	Fair: shrink-swell, slope	Improbable: excess fines	Improbable: excess fines	Poor: slope
Birney-----	Fair: slope	Probable	Probable	Poor: small stones, area reclaim, slope
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
205: Yamac-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, area reclaim
Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Good
206: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
206: Busby-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: slope
207: Yamac-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, area reclaim
Cabbart-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
208: Yamac-----	Good	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, area reclaim
Delpoint-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Fair: depth to rock, too clayey, small stones
209: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones, slope
Redcreek-----	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, small stones
210: Yamac-----	Fair: shrink-swell	Improbable: excess fines	Improbable: excess fines	Fair: too clayey, small stones
Rominell-----	Good	Improbable: excess fines	Improbable: excess fines	Poor: excess sodium
211: Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
212: Yawdim-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey, slope
Cabbart-----	Poor: depth to rock, slope	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, slope
Kobar-----	Poor: shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, slope

CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
213: Yawdim-----	Poor: depth to rock, shrink-swell, low strength	Improbable: excess fines	Improbable: excess fines	Poor: depth to rock, too clayey
Orinoco-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
214: Zatoville-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
215: Zatoville-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
216: Zatoville-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
217: Zatoville-----	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt
Orinoco-----	Poor: depth to rock, low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey, excess salt

WATER MANAGEMENT

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1: Abor-----	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Depth to rock, erodes easily, percs slowly	Erodes easily, droughty, depth to rock
2: Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
3: Abor-----	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Depth to rock, erodes easily, percs slowly	Erodes easily, depth to rock, percs slowly
Marvan-----	Moderate: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Erodes easily, percs slowly	Erodes easily, percs slowly
4: Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
5: Absher-----	Slight	Severe: excess sodium, excess salt	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Erodes easily, percs slowly	Too arid, excess salt, excess sodium
Nobe-----	Slight	Severe: excess salt	Severe: no water	Deep to water	Droughty, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
6: Antwerp-----	Slight	Severe: piping	Severe: no water	Deep to water	Percs slowly, erodes easily, excess salt	Erodes easily, percs slowly	Too arid, excess salt, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
7:							
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
8:							
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
9:							
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
10:							
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
11:							
Assinniboine----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
12: Badland.							
13: Barvon-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Slope, droughty
Lamedeer, dry---	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
14: Barvon-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
15: Belfield-----	Slight	Severe: excess sodium	Severe: no water	Deep to water	Percs slowly, excess sodium, excess salt	Percs slowly	Excess sodium, percs slowly
16: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
17: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
18: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Cooers-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Too arid, erodes easily
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
19: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
20: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
21: Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
22: Birney, moist---	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
23: Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
24: Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
25: Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
26: Bitton-----	Severe: seepage, slope	Moderate: seepage, large stones	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Shambo-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
27: Bitton-----	Moderate: seepage, slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Large stones	Large stones, droughty
Twin Creek-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
28: Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Twin Creek-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
29: Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
30:							
Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Slope, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
31:							
Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
32:							
Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
33:							
Bonfri-----	Moderate: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Depth to rock, erodes easily	Too arid, erodes easily, depth to rock
Bullock-----	Moderate: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
34: Bonfri-----	Moderate: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Soil blowing, depth to rock	Depth to rock, soil blowing	Too arid, depth to rock
Galbreth-----	Severe: depth to rock	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Depth to rock, erodes easily, soil blowing	Too arid, erodes easily, droughty
35: Bonfri-----	Moderate: depth to rock	Severe: piping	Severe: no water	Deep to water	Soil blowing, depth to rock	Depth to rock, soil blowing	Too arid, depth to rock
Marmarth-----	Moderate: seepage, depth to rock	Severe: piping	Severe: no water	Deep to water	Droughty, soil blowing, depth to rock	Depth to rock, soil blowing	Too arid, droughty, depth to rock
Bullock-----	Moderate: depth to rock	Severe: excess sodium	Severe: no water	Deep to water	Droughty, soil blowing, percs slowly	Depth to rock, erodes easily, soil blowing	Too arid, excess sodium, erodes easily
36: Borollic Camborthids. Ustic Torrifluvents.							
37: Brunelda-----	Moderate: slope	Severe: hard to pack, excess salt	Severe: no water	Deep to water	Slope, droughty, slow intake	Percs slowly	Too arid, droughty, percs slowly
38: Brunelda-----	Moderate: slope	Severe: hard to pack, excess salt	Severe: no water	Deep to water	Slope, droughty, slow intake	Percs slowly	Too arid, droughty, percs slowly
Gerdrum-----	Slight	Severe: excess sodium	Severe: no water	Deep to water	Droughty, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
39: Brunelda-----	Moderate: slope	Severe: hard to pack, excess salt	Severe: no water	Deep to water	Slope, droughty, slow intake	Percs slowly	Too arid, droughty, percs slowly
Vaeda-----	Slight	Moderate: hard to pack, excess salt	Severe: no water	Deep to water	Slow intake, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
39: Nobe-----	Moderate: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, percs slowly	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
40: Bryant-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Favorable	Favorable
41: Bryant-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope	Slope
42: Bullock-----	Moderate: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Rallod-----	Severe: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, excess sodium
43: Bullock-----	Moderate: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Rominell-----	Moderate: slope	Severe: piping, excess sodium	Severe: no water	Deep to water	Slope, soil blowing, percs slowly	Erodes easily, soil blowing, percs slowly	Too arid, excess sodium, erodes easily
44: Busby-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid
45: Busby-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
46: Busby-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Favorable	Favorable	Too arid
47: Busby-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, too sandy, soil blowing	Too arid, slope

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
47: Rock outcrop.							
48: Busby-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid
Twilight-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing, depth to rock	Depth to rock, soil blowing	Too arid, depth to rock
Blackhall-----	Severe: depth to rock	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Depth to rock, soil blowing	Too arid, droughty, depth to rock
49: Busby-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
Twilight-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Slope, depth to rock, soil blowing	Too arid, slope, droughty
Blackhall-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Slope, depth to rock, soil blowing	Too arid, slope, droughty
50: Busby-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Too sandy, soil blowing	Too arid
Yetull-----	Severe: seepage	Severe: seepage, piping	Severe: no water	Deep to water	Slope, droughty, fast intake	Too sandy, soil blowing	Too arid, droughty
51: Busby-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
Yetull-----	Severe: seepage, slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, droughty, fast intake	Slope, too sandy, soil blowing	Too arid, slope, droughty
52: Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
52: Wayden-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Rock outcrop.							
53: Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Wayden-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Sagedale-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Slope, percs slowly	Slope, percs slowly
54: Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Rock outcrop.							
55: Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Rock outcrop.							
56: Cambeth-----	Moderate: seepage, depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Depth to rock, erodes easily	Too arid, erodes easily, depth to rock

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
57: Cambeth-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
58: Cambeth-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
59: Cambeth-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
60: Cambeth-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Niler-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock	Too arid, slope, droughty
61: Castner-----	Severe: depth to rock	Severe: seepage	Severe: no water	Deep to water	Slope, large stones, droughty	Large stones, depth to rock	Large stones, droughty, depth to rock
Shambo-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
62: Chinook-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid
63: Chinook-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
64: Coers-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Too arid, erodes easily
65: Coers-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Too arid, erodes easily
Birney-----	Moderate: seepage, slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Favorable	Too arid, droughty
66: Coers-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Too arid, erodes easily
Yamac-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
67: Creed-----	Severe: seepage	Severe: excess sodium	Severe: no water	Deep to water	Percs slowly, erodes easily, excess sodium	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
68: Davidell-----	Moderate: slope	Moderate: piping, excess salt	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily
69: Davidell-----	Slight	Moderate: piping, excess salt	Severe: no water	Deep to water	Excess salt	Favorable	Too arid
70: Davidell-----	Slight	Moderate: piping, excess salt	Severe: no water	Deep to water	Excess salt	Favorable	Too arid
Antwerp-----	Slight	Severe: piping	Severe: no water	Deep to water	Percs slowly, erodes easily, excess salt	Erodes easily, percs slowly	Too arid, excess salt, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
71: Degrand-----	Severe: seepage	Severe: seepage, piping	Severe: no water	Deep to water	Soil blowing	Too sandy, soil blowing	Too arid
72: Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
72: Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
73: Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
74: Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
75: Delpoint-----	Moderate: seepage, depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Depth to rock, erodes easily	Too arid, erodes easily, depth to rock
Galbreth-----	Severe: depth to rock	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Depth to rock, erodes easily	Too arid, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
76:							
Delpoint, moist	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
77:							
Delpoint, moist	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
78:							
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
79:							
Evanston-----	Moderate: seepage	Moderate: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
80:							
Fergus variant--	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
80: Twin Creek-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
81: Floweree-----	Slight	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
82: Floweree-----	Moderate: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
83: Floweree-----	Slight	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
Vanstel-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
84: Fluventic Haploborolls. Typic Fluvaquents.							
85: Forelle-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
86: Forelle-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
Gerdrum-----	Moderate: slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
87: Galbreth-----	Severe: depth to rock	Severe: piping	Severe: no water	Deep to water	Droughty, depth to rock	Depth to rock, erodes easily	Too arid, erodes easily, droughty
88: Gerdrum-----	Slight	Severe: excess sodium	Severe: no water	Deep to water	Droughty, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
89: Gerdrum-----	Moderate: slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
90: Gerdrum-----	Slight	Severe: excess sodium	Severe: no water	Deep to water	Droughty, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Kobar-----	Slight	Slight	Severe: no water	Deep to water	Percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
91: Gerdrum-----	Moderate: slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Kobar-----	Moderate: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
92: Gerdrum-----	Moderate: slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, slow intake	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Marvan-----	Moderate: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Erodes easily, percs slowly	Erodes easily, percs slowly
93: Gerdrum-----	Slight	Severe: excess sodium	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Vanda-----	Slight	Severe: hard to pack, excess salt	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
94: Gerdrum-----	Moderate: depth to rock	Severe: excess sodium	Severe: no water	Deep to water	Percs slowly, erodes easily, excess sodium	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Volborg-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
95: Glendive-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, flooding, excess salt	Erodes easily	Too arid, erodes easily
96: Hanly-----	Severe: seepage	Severe: seepage, piping	Severe: no water	Deep to water	Droughty, erodes easily, flooding	Erodes easily, too sandy	Too arid, erodes easily, droughty
Glendive-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, flooding, excess salt	Erodes easily	Too arid, erodes easily
97: Harlem-----	Slight	Moderate: hard to pack	Severe: no water	Deep to water	Percs slowly, erodes easily, flooding	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
98: Harlem-----	Slight	Moderate: thin layer, hard to pack	Severe: no water	Deep to water	Slow intake, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
99: Havre-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
100: Havre-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, flooding	Erodes easily	Too arid, erodes easily
101: Havre-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, flooding	Erodes easily	Too arid, erodes easily
102: Havre-----	Moderate: seepage	Severe: piping	Moderate: deep to water, slow refill	Deep to water	Flooding	Erodes easily	Too arid, erodes easily
103: Havre-----	Moderate: seepage	Severe: piping	Severe: slow refill	Deep to water	Erodes easily, flooding, excess salt	Erodes easily	Too arid, excess salt, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
104: Havre-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, flooding	Erodes easily	Too arid, erodes easily
Harlem-----	Slight	Moderate: hard to pack	Severe: no water	Deep to water	Percs slowly, erodes easily, flooding	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
Glendive-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Soil blowing, flooding	Soil blowing	Too arid
105: Ivanell-----	Moderate: depth to rock, slope	Moderate: thin layer, piping, excess salt	Severe: no water	Deep to water	Slope, depth to rock, excess salt	Depth to rock	Too arid, depth to rock
106: Ivanell-----	Moderate: depth to rock, slope	Moderate: thin layer, piping, excess salt	Severe: no water	Deep to water	Slope, depth to rock, excess salt	Depth to rock	Too arid, depth to rock
Davidell-----	Moderate: slope	Moderate: piping, excess salt	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily
107: Ivanell-----	Moderate: depth to rock, slope	Moderate: thin layer, piping, excess salt	Severe: no water	Deep to water	Slope, depth to rock, excess salt	Depth to rock	Too arid, depth to rock
Niler-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock	Too arid, slope, droughty
108: Kirby-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Too arid, large stones, slope
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Rock outcrop.							

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
109: Kobar-----	Slight	Slight	Severe: no water	Deep to water	Percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
110: Kobar-----	Moderate: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
111: Kobar-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Too arid, slope, erodes easily
112: Kobar-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Too arid, slope, erodes easily
113: Kobar-----	Slight	Slight	Severe: no water	Deep to water	Slow intake, percs slowly	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
114: Kobar-----	Slight	Moderate: wetness	Severe: slow refill	Deep to water	Slow intake, percs slowly	Percs slowly	Too arid, percs slowly
115: Kobar-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
116: Kremlin-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
117: Kremlin-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
118: Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Slope, droughty
Lamedeer, dry---	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
119: Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Slope, droughty
Twin Creek-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
120: Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Twin Creek-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
121: Lamedeer-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Slope, droughty
Bitton-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
121: Ringling-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones	Large stones, slope, droughty
122: Lihen-----	Severe: seepage, slope	Severe: seepage, piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Slope, too sandy, soil blowing	Slope, droughty
123: Lonna-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, excess salt	Erodes easily	Too arid, erodes easily
124: Lonna-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily
125: Lonna-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Slope, erodes easily	Too arid, slope, erodes easily
126: Lonna-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Excess salt	Erodes easily	Too arid, erodes easily
127: Lonna-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, excess salt	Erodes easily	Too arid, erodes easily
128: Lonna-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily, excess salt	Erodes easily	Too arid, erodes easily
Alona-----	Slight	Severe: piping, excess salt	Severe: no water	Deep to water	Erodes easily, excess salt	Erodes easily	Too arid, excess salt, erodes easily
129: Lonna-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily
Alona-----	Moderate: slope	Severe: piping, excess salt	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, excess salt, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
130: Lonna-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Excess salt	Erodes easily	Too arid, erodes easily
Antwerp-----	Slight	Severe: piping	Severe: no water	Deep to water	Percs slowly, erodes easily, excess salt	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
131: Lonna-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, excess salt	Erodes easily	Too arid, erodes easily
Antwerp-----	Moderate: slope	Severe: piping	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
132: Lonna-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Slope, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
133: Lonna-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily
Cambeth-----	Moderate: seepage, depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Depth to rock, erodes easily	Too arid, erodes easily, depth to rock
134: Louscot-----	Slight	Severe: piping	Severe: no water	Deep to water	Erodes easily, excess salt	Erodes easily	Too arid, excess salt, erodes easily
135: Macar-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Slope, erodes easily	Slope, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
135: Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Rock outcrop.							
136: Marmarth-----	Moderate: seepage, depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Depth to rock, soil blowing	Too arid, droughty, depth to rock
137: Marmarth-----	Moderate: seepage, depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing, depth to rock	Depth to rock, soil blowing	Too arid, depth to rock
Galbreth-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
138: Marvan-----	Slight	Severe: hard to pack	Severe: no water	Deep to water	Slow intake, percs slowly, erodes easily	Erodes easily, percs slowly	Erodes easily, percs slowly
139: Marvan-----	Moderate: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Erodes easily, percs slowly	Erodes easily, percs slowly
140: Marvan-----	Moderate: depth to rock, slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Erodes easily, percs slowly	Erodes easily, percs slowly
141: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
142: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
142: Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, slow intake, percs slowly	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
143: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
144: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Rock outcrop.							
145: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Neldore, saline-	Severe: depth to rock	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
146: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Rock outcrop.							
147: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Ustic Torriorthents.							

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
147: Neldore, saline-	Severe: depth to rock	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
148: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Volborg-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, soil blowing	Too arid, slope, droughty
149: Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
150: Niler-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock	Too arid, slope, droughty
151: Orinoco-----	Moderate: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
Yawdim-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
152: Rahworth-----	Moderate: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, erodes easily	Erodes easily	Too arid, erodes easily, droughty
153: Rahworth-----	Moderate: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, excess salt	Erodes easily	Too arid, erodes easily, droughty
Davidell-----	Moderate: slope	Moderate: piping, excess salt	Severe: no water	Deep to water	Slope, erodes easily, excess salt	Erodes easily	Too arid, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
153: Sumatra-----	Moderate: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, excess salt	Favorable	Too arid, droughty
154: Riverwash.							
155: Rock outcrop.							
156: Rominell-----	Slight	Severe: piping, excess sodium	Severe: no water	Deep to water	Soil blowing, percs slowly, excess sodium	Erodes easily, soil blowing, percs slowly	Too arid, excess sodium, erodes easily
157: Sagedale-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
158: Sagedale-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Wayden-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
159: Savage-----	Slight	Moderate: piping	Severe: no water	Deep to water	Percs slowly	Percs slowly	Percs slowly
160: Savage-----	Moderate: slope	Moderate: piping	Severe: no water	Deep to water	Slope, percs slowly	Percs slowly	Percs slowly
161: Shambo-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Favorable	Erodes easily	Erodes easily
162: Shambo-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
163: Shambo-----	Severe: seepage, slope	Severe: seepage	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
164: Shambo-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
Bitton-----	Severe: seepage, slope	Moderate: seepage, large stones	Severe: no water	Deep to water	Slope, droughty	Slope, large stones	Large stones, slope, droughty
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
165: Shambo-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
166: Shambo-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Slope, erodes easily, depth to rock
Cabba-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
167: Shambo-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope	Slope, erodes easily	Slope, erodes easily
Doney-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
Sagedale-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Slope, erodes easily, percs slowly

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
168: Spang-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid
169: Spang-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
170: Spang-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
Birney, moist---	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
171: Spinekop-----	Slight	Severe: piping	Severe: no water	Deep to water	Favorable	Erodes easily	Too arid, erodes easily
172: Straw-----	Moderate: seepage	Severe: piping	Severe: no water	Deep to water	Favorable	Erodes easily	Erodes easily
Canburn-----	Moderate: seepage	Severe: piping, wetness	Severe: slow refill	Flooding, frost action	Wetness, flooding	Erodes easily, wetness	Wetness, erodes easily
173: Sumatra-----	Severe: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, excess salt	Slope	Too arid, slope, droughty
174: Sumatra-----	Severe: slope	Severe: excess salt	Severe: no water	Deep to water	Slope, droughty, excess salt	Slope	Too arid, slope, droughty
Rock outcrop.							

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
175: Tinsley-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones, too sandy	Large stones, slope, droughty
176: Tinsley-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones, too sandy	Large stones, slope, droughty
Armells-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
177: Tinsley-----	Severe: seepage, slope	Severe: seepage, large stones	Severe: no water	Deep to water	Slope, large stones, droughty	Slope, large stones, too sandy	Large stones, slope, droughty
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
178: Twilight-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing, depth to rock	Slope, depth to rock, soil blowing	Too arid, slope, depth to rock
Blackhall-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, droughty, soil blowing	Slope, depth to rock, soil blowing	Too arid, slope, droughty
179: Twin Creek-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
Shambo-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope	Erodes easily	Erodes easily
180: Typic Haplaquepts.							

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
181: Ustic Torrifluvents.							
182: Ustic Torrifluvents.							
183: Ustic Torriorthents.							
184: Ustic Torriorthents.							
185: Ustic Torriorthents.							
186: Ustic Torriorthents.							
187: Ustic Torriorthents.							
Volborg-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
188: Vaeda-----	Slight	Moderate: hard to pack, excess salt	Severe: no water	Deep to water	Slow intake, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
189: Vanda-----	Slight	Severe: hard to pack, excess salt	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Erodes easily, percs slowly	Too arid, excess salt, erodes easily
190: Vanstel-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
191: Volborg-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, soil blowing	Too arid, slope, droughty
192: Volborg-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Droughty, slow intake, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
193: Volborg-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, percs slowly	Too arid, slope, droughty
Rock outcrop.							
194: Weingart-----	Moderate: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, slow intake	Depth to rock, erodes easily, percs slowly	Too arid, excess sodium, erodes easily
195: Weingart-----	Moderate: depth to rock, slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, slow intake	Depth to rock, erodes easily, percs slowly	Too arid, excess sodium, erodes easily
Neldore-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
196: Weingart-----	Severe: slope	Severe: excess sodium	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, excess sodium
Niler-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, depth to rock	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Rock outcrop.							
197: Yamac-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Erodes easily	Erodes easily	Too arid, erodes easily
198: Yamac-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
199: Yamac-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
200: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Abor-----	Severe: slope	Severe: hard to pack	Severe: no water	Deep to water	Slope, droughty, slow intake	Slope, depth to rock, erodes easily	Slope, erodes easily, droughty
201: Yamac-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
Birney-----	Moderate: seepage, slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Favorable	Too arid, droughty
202: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
203: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty
204: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Birney-----	Severe: slope	Severe: seepage	Severe: no water	Deep to water	Slope, droughty	Slope	Too arid, slope, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
204: Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
205: Yamac-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
Busby-----	Severe: seepage	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Soil blowing	Too arid
206: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Busby-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, soil blowing	Slope, soil blowing	Too arid, slope
207: Yamac-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
208: Yamac-----	Severe: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Delpoint-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
209: Yamac-----	Severe: slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Slope, erodes easily	Too arid, slope, erodes easily
Redcreek-----	Severe: depth to rock	Severe: piping	Severe: no water	Deep to water	Slope, droughty, depth to rock	Depth to rock, erodes easily	Too arid, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
210: Yamac-----	Moderate: seepage, slope	Severe: piping	Severe: no water	Deep to water	Slope, erodes easily	Erodes easily	Too arid, erodes easily
Rominell-----	Moderate: slope	Severe: piping, excess sodium	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, excess sodium, erodes easily
211: Yawdim-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
212: Yawdim-----	Severe: depth to rock, slope	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Cabbart-----	Severe: depth to rock, slope	Severe: piping	Severe: no water	Deep to water	Slope, depth to rock, erodes easily	Slope, depth to rock, erodes easily	Too arid, slope, erodes easily
Kobar-----	Severe: slope	Slight	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Slope, erodes easily, percs slowly	Too arid, slope, erodes easily
213: Yawdim-----	Severe: depth to rock	Severe: thin layer	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
Orinoco-----	Moderate: depth to rock, slope	Moderate: thin layer, excess salt	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty
214: Zatoville-----	Moderate: depth to rock	Moderate: thin layer, excess salt	Severe: no water	Deep to water	Percs slowly, erodes easily, excess salt	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
215: Zatoville-----	Slight	Moderate: wetness, excess salt	Severe: slow refill	Deep to water	Percs slowly, erodes easily, excess salt	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
216: Zatoville-----	Slight	Moderate: wetness, excess salt	Severe: slow refill	Deep to water	Droughty, slow intake, percs slowly	Erodes easily, percs slowly	Too arid, erodes easily, droughty

WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
217: Zatoville-----	Moderate: depth to rock, slope	Severe: excess salt	Severe: no water	Deep to water	Slope, percs slowly, erodes easily	Erodes easily, percs slowly	Too arid, erodes easily, percs slowly
Orinoco-----	Moderate: depth to rock, slope	Moderate: thin layer, excess salt	Severe: no water	Deep to water	Slope, droughty, percs slowly	Depth to rock, erodes easily, percs slowly	Too arid, erodes easily, droughty

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

The table "Engineering Index Properties" gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given in the series descriptions in Part I of this survey.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52

percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the system adopted by the American Association of State Highway and Transportation Officials (1) and the Unified soil classification system (2).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

The tables "Physical Properties of the Soils" and "Chemical Properties of the Soils" show estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

The following paragraphs describe the columns in the table "Physical Properties of the Soils."

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given in the series descriptions in Part I of this survey.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $\frac{1}{3}$ -bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In the table "Physical Properties of the Soils," the estimated moist bulk density of each major soil horizon is expressed in

grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Organic matter is the plant and animal residue in the

soil at various stages of decomposition. In the table "Physical Properties of Soils," the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility of soil to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils generally are not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams that have more than 5 percent finely divided calcium carbonate. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be

grown if measures to control soil blowing are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils have less than 5 percent finely divided calcium carbonate. They are moderately erodible. Crops can be grown if measures to control soil blowing are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils have less than 5 percent finely divided calcium carbonate. They are moderately erodible. Crops can be grown if ordinary measures to control soil blowing are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils have less than 5 percent finely divided calcium carbonate. They are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

The following paragraphs describe the columns in the table "Chemical Properties of the Soils."

Cation-exchange capacity is the total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the soil. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is given as the percent, by weight, of hydrated calcium sulfates in the soil. Gypsum is partially soluble in water and can be dissolved and removed by water. Soils that have a high content of gypsum (more

than 10 percent) may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio is the measure of sodium relative to calcium and magnesium in the water extract from saturated soil paste. Soils having a sodium adsorption ratio of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

The table "Water Features" gives estimates of several important water features used in land use planning that involves engineering considerations. These features are described in the following paragraphs.

Hydrologic soil groups are groups of soils that, when saturated, have the same runoff potential under similar storm and ground cover conditions. The soil properties that affect the runoff potential are those that influence the minimum rate of infiltration in a bare soil after prolonged wetting and when the soil is not frozen. These properties include the depth to a seasonal high water table, the intake rate, permeability after prolonged wetting, and the depth to a very slowly permeable layer. The influences of ground cover and slope are treated independently and are not taken into account in hydrologic soil groups.

In the definitions of the hydrologic soil groups, the infiltration rate is the rate at which water enters the soil at the surface and is controlled by surface conditions. The transmission rate is the rate at which water moves through the soil and is controlled by properties of the soil layers.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflow from streams or by runoff from adjacent slopes. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in marshes and swamps or in closed depressions is considered to be ponding.

The table "Water Features" gives the frequency and duration of flooding and the time of year when flooding is most likely to occur. Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means flooding is not probable; *rare* that it is unlikely but is possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs often under normal weather conditions (the chance of flooding more than 50 percent in any year).

Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 to 30 days), and *very long* (more than 30 days). The time of year that flooding is most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and level of flooding and the relation of each soil on the landscape to historic floods. Information on the

extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is a zone of saturation at the highest average depth during the wettest season. It is at least 6 inches thick, persists in the soil for more than a few weeks, and is within 6 feet of the surface. Indicated in the table "Water Features" are the depth to the seasonal high water table, the kind of water table, and the months of the year when the water table usually is highest.

An *apparent* water table is indicated by the level at which water stands in a freshly dug, unlined borehole after adequate time is allowed for adjustments in the surrounding soil.

A *perched* water table is one that is above an unsaturated zone in the soil. The basis for determining that a water table is perched may be general knowledge of the area. The water table is proven to be perched if the water level in a borehole is observed to fall when the borehole is extended.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation.

Soil Features

The table "Soil Features" gives estimates of several important soil features used in land use planning that involves engineering considerations. These features are described in the following paragraphs.

Depth to bedrock is given if bedrock is within a depth of 60 inches. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

A *low* potential for frost action indicates that the soil is rarely susceptible to the formation of ice lenses; a *moderate* potential indicates that the soil is susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength; and a *high* potential indicates that the soil is highly susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil.

Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

ENGINEERING INDEX PROPERTIES

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
1: Abor-----	0-2	Silty clay	CL, CH	A-7	0	0	95-100	90-100	80-100	75-95	40-60	20-35
	2-26	Silty clay, clay, silty clay loam	CL, CH	A-6, A-7	0	0	80-100	75-100	65-100	60-95	35-65	20-45
	26-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
2: Abor-----	0-5	Silty clay	CL, CH	A-7	0	0	95-100	90-100	80-100	75-95	40-60	20-35
	5-27	Silty clay, clay, silty clay loam	CL, CH	A-6, A-7	0	0	80-100	75-100	65-100	60-95	35-65	20-45
	27-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
3: Abor-----	0-5	Silty clay	CL, CH	A-7	0	0	95-100	90-100	80-100	75-95	40-60	20-35
	5-30	Silty clay, clay, silty clay loam	CL, CH	A-6, A-7	0	0	80-100	75-100	65-100	60-95	35-65	20-45
	30-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Marvan-----	0-6	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-100	40-65	20-45
	6-30	Clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	75-100	45-70	25-50
	30-60	Clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	75-100	45-70	25-50
4: Abor-----	0-2	Silty clay	CL, CH	A-7	0	0	95-100	90-100	80-100	75-95	40-60	20-35
	2-35	Silty clay, clay, silty clay loam	CL, CH	A-6, A-7	0	0	80-100	75-100	65-100	60-95	35-65	20-45
	35-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Neldore-----	0-3	Silty clay	CL, CH	A-7	0	0-10	95-100	90-100	75-100	70-95	40-55	20-30
	3-14	Clay, silty clay	CL, CH	A-7	0	0	90-100	85-100	70-95	65-90	40-60	20-40
	14-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
5: Absher-----	0-7	Silty clay	CL, CH	A-7	0	0	95-100	75-100	70-100	60-95	40-60	20-35
	7-13	Silty clay, clay, clay loam	CL, CH	A-7	0	0	95-100	75-100	70-100	60-95	40-60	20-40
	13-60	Clay loam, clay, silty clay	CL, CH	A-7	0	0	95-100	75-100	70-100	60-95	40-55	20-35
	60-70	Stratified clay to loamy sand	CL, CH	A-7	0	0	95-100	75-100	60-80	55-75	40-55	20-35
Nobe-----	0-7	Silty clay loam	CL	A-6	0	0	100	100	90-100	70-90	30-40	10-20
	7-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	90-95	40-60	20-35

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
6: Antwerp-----	0-6	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	6-24	Silty clay	CL,	A-6,	0	0	100	100	95-100	80-95	25-35	5-15
	24-60	loam, silt loam, silty clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	80-95	25-35	5-15
7: Armells-----	0-4	Channery loam	GM, GM-GC, SM-SC, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	4-60	Extremely channery loam, very channery loam, very channery fine sandy loam	GM-GC, GM	A-2, A-1	0	0-15	20-50	15-40	10-30	10-25	20-30	NP-10
Cabbart-----	0-4	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	4-15	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
8: Armells-----	0-5	Channery loam	GM, GM-GC, SM-SC, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	5-60	Extremely channery loam, very channery loam, very channery fine sandy loam	GM-GC, GM	A-2, A-1	0	0-15	20-50	15-40	10-30	10-25	20-30	NP-10
Delpoint-----	0-4	Loam	CL-ML	A-4	0	0	95-100	90-100	75-90	55-75	20-30	5-10
	4-32	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-95	65-85	20-40	5-20
	32-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Cabbart-----	0-3	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	3-16	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
9: Armells-----	0-4	Channery loam	GM, GM-GC, SM-SC, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	4-60	Extremely channery loam, very channery loam, very channery fine sandy loam	GM-GC, GM	A-2, A-1	0	0-15	20-50	15-40	10-30	10-25	20-30	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
14: Cabba-----	0-4	Silt loam	ML, CL-ML	A-4	0	0-5	90-100	85-100	70-90	60-80	20-30	NP-10
	4-15	Clay loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0-5	95-100	90-100	85-100	80-95	25-35	5-15
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
15: Belfield-----	0-7	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-100	30-50	10-30
	7-16	Silty clay, silty clay loam, clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	70-100	35-65	15-40
	16-60	Silty clay, silty clay loam, clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	70-100	30-55	10-30
16: Birney-----	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-11	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	11-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
17: Birney-----	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-12	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	12-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
Cabbart-----	0-4	Silt loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	4-12	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
18: Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-11	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	11-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
18: Coopers-----	0-4	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	5-15
	4-19	Loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	80-100	75-100	60-95	40-75	25-35	5-15
	19-38	Loam, channery loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	75-100	70-100	55-95	35-75	25-35	5-15
	38-60	Loam, channery loam, sandy loam	CL-ML, SM-SC	A-4	0	0	65-100	60-100	50-95	35-75	20-30	5-10
Kirby-----	0-5	Channery loam	SM, SM-SC, GM, CL-ML	A-4	0	0-10	65-85	55-75	45-65	40-60	15-25	NP-10
	5-18	Extremely channery loam, extremely channery sandy loam, very channery loam	GP-GM, GM, GM-GC	A-2, A-1	0	10-30	20-60	10-50	5-40	5-35	15-25	NP-10
	18-60	Fragmental material	GP	A-1	0	40-60	5-15	0-10	0-5	0-5	---	NP
19: Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-12	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	12-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
Kirby-----	0-6	Channery loam	SM, SM-SC, GM, CL-ML	A-4	0	0-10	65-85	55-75	45-65	40-60	15-25	NP-10
	6-18	Extremely channery loam, extremely channery sandy loam, very channery loam	GP-GM, GM, GM-GC	A-2, A-1	0	10-30	20-60	10-50	5-40	5-35	15-25	NP-10
	18-60	Fragmental material	GP	A-1	0	40-60	5-15	0-10	0-5	0-5	---	NP
20: Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-11	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	11-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
20: Kirby-----	0-4	Channery loam	SM, SM-SC GM, CL-ML	A-4	0	0-10	65-85	55-75	45-65	40-60	15-25	NP-10
	4-12	Extremely channery loam, extremely channery sandy loam, very channery loam	GP-GM, GM, GM-GC	A-2, A-1	0	10-30	20-60	10-50	5-40	5-35	15-25	NP-10
	12-60	Fragmental material	GP	A-1	0	40-60	5-15	0-10	0-5	0-5	---	NP
Cabbart-----	0-2	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	2-15	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
21: Birney-----	0-3	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	3-10	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	10-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
Armells-----	0-4	Channery loam	GM, GM-GC, SM-SC, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	4-60	Extremely channery loam, very channery loam, very channery fine sandy loam	GM-GC, GM	A-2, A-1	0	0-15	20-50	15-40	10-30	10-25	20-30	NP-10
Cabbart-----	0-2	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	2-12	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
22: Birney, moist---	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-14	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	14-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
22: Birney-----	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-10	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	10-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
Kirby-----	0-4	Channery loam	SM, SM-SC GM, CL-ML	A-4	0	0-10	65-85	55-75	45-65	40-60	15-25	NP-10
	4-12	Extremely channery loam, extremely channery sandy loam, very channery loam	GP-GM, GM, GM-GC	A-2, A-1	0	10-30	20-60	10-50	5-40	5-35	15-25	NP-10
	12-60	Fragmental material	GP	A-1	0	40-60	5-15	0-10	0-5	0-5	---	NP
23: Bitton-----	0-6	Channery loam	ML, CL-ML GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	6-14	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	14-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Doney-----	0-4	Loam	ML, CL-ML	A-4	0	0	85-100	75-100	65-95	50-75	20-30	NP-10
	4-27	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	65-95	55-85	25-35	5-15
	27-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Ringling-----	0-7	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	7-17	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	17-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
24: Bitton-----	0-4	Channery loam	ML, CL-ML GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	4-10	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	10-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Doney-----	0-3	Loam	ML, CL-ML	A-4	0	0	85-100	75-100	65-95	50-75	20-30	NP-10
	3-25	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	65-95	55-85	25-35	5-15
	25-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Ringling-----	0-5	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	5-15	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	15-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
25: Bitton-----	0-4	Channery loam	ML, CL-ML GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	4-15	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	15-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Ringling-----	0-5	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	5-17	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	17-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
26: Bitton-----	0-5	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	5-17	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	17-30	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
	30-60	Stratified gravelly loam to extremely gravelly sandy loam	GM, GM-GC	A-1, A-2	0	0-25	45-60	40-55	30-45	20-35	15-30	NP-10
Shambo-----	0-6	Loam	CL-ML	A-4	0	0	100	100	85-100	65-90	25-30	5-10
	6-24	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	65-90	25-35	5-15
	24-42	Loam, clay loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	65-95	25-35	5-15
	42-60	Gravelly sandy loam	SM	A-2, A-1	0	0	85-100	55-75	35-55	15-30	20-25	NP-5
27: Bitton-----	0-5	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	5-17	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	17-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Twin Creek-----	0-6	Loam	ML, CL-ML	A-4	0	0	95-100	85-100	70-90	55-75	20-30	NP-10
	6-24	Loam, clay loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
	24-60	Clay loam, loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
28: Bitton-----	0-6	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	6-19	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	19-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
28: Twin Creek-----	0-6	Loam	ML, CL-ML	A-4	0	0	95-100	85-100	70-90	55-75	20-30	NP-10
	6-22	Loam, clay loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
	22-60	Clay loam, loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
Ringling-----	0-5	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	5-12	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	12-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
29: Bitton-----	0-4	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	4-10	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	10-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Doney-----	0-5	Loam	ML, CL-ML	A-4	0	0	85-100	75-100	65-95	50-75	20-30	NP-10
	5-26	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	65-95	55-85	25-35	5-15
	26-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Cabba-----	0-3	Loam	ML, CL-ML	A-4	0	0-5	90-100	85-100	70-90	60-80	20-30	NP-10
	3-12	Clay loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0-5	95-100	90-100	85-100	80-95	25-35	5-15
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
30: Bitton-----	0-8	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	8-18	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	18-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
30: Lamedeer-----	0-6	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	6-20	Channery loam, very channery loam	SM-SC, SM, GM-GC, GM	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	20-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Ringling-----	0-5	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	5-11	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	11-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
31: Bitton-----	0-5	Channery loam	ML, CL-ML, ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	5-13	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	13-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Lamedeer-----	0-6	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	6-18	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	18-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
36: Ustic Torrifluvents.												
37: Brunelda-----	0-3	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	20-35
	3-12	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	12-42	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	42-60	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
38: Brunelda-----	0-5	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	20-35
	5-12	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	12-48	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	48-60	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
Gerdrum-----	0-5	Clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	5-23	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	23-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
39: Brunelda-----	0-6	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	20-35
	6-13	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	13-40	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	40-60	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	85-100	45-65	25-45
Vaeda-----	0-3	Silty clay	CH	A-7	0	0	95-100	75-100	70-95	65-90	50-60	25-35
	3-11	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	95-100	75-100	70-95	55-90	45-65	20-40
	11-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	95-100	75-100	70-95	55-90	45-65	20-40
Nobe-----	0-7	Silty clay loam	CL	A-6	0	0	100	100	90-100	70-90	30-40	10-20
	7-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	90-95	40-60	20-35
40: Bryant-----	0-7	Silt loam	CL-ML	A-4	0	0	100	100	95-100	70-90	25-30	5-10
	7-18	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	75-90	25-40	5-15
	18-60	Loam, silt loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	75-90	25-40	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
41: Bryant-----	0-5	Silt loam	CL-ML	A-4	0	0	100	100	95-100	70-90	25-30	5-10
	5-13	Clay loam, silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	75-90	25-40	5-15
	13-60	Loam, silt loam, clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	75-90	25-40	5-15
42: Bullock-----	0-7	Clay loam	CL	A-6	0	0	100	100	90-95	70-80	30-35	10-15
	7-11	Clay loam	CL	A-6	0	0	100	100	90-95	70-80	30-35	10-15
	11-27	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	90-95	60-80	30-35	10-15
	27-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rallod-----	0-7	Clay loam	CL	A-6	0	0	100	100	90-100	70-80	30-40	10-15
	7-12	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0	100	100	90-100	70-85	35-50	15-25
	12-16	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0	100	100	90-100	70-85	30-45	10-20
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
43: Bullock-----	0-7	Clay loam	CL	A-6	0	0	100	100	90-95	70-80	30-35	10-15
	7-14	Clay loam	CL	A-6	0	0	100	100	90-95	70-80	30-35	10-15
	14-28	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	100	90-95	60-80	30-35	10-15
	28-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rominell-----	0-4	Fine sandy loam	SM-SC, CL-ML	A-4	0	0	100	100	80-90	40-60	20-30	5-10
	4-8	Very fine sandy loam, fine sandy loam, loam	ML, SM, CL-ML, SM-SC,	A-4	0	0	100	100	70-95	40-75	25-35	5-10
	8-13	Clay loam, loam, sandy clay loam	CL-ML, SM-SC, CL, SC	A-4, A-6	0	0	100	100	85-90	40-75	25-35	5-15
	13-60	Clay loam, loam, sandy loam	CL-ML, ML, SM, SM-SC	A-4	0	0	90-100	85-100	60-90	45-70	20-30	NP-10
44: Busby-----	0-4	Fine sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	4-13	Fine sandy loam, sandy loam, loam	SM, ML	A-4	0	0	100	100	60-90	35-75	20-25	NP-5
	13-47	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	47-60	Loamy fine sand, loamy sand, fine sandy loam	SM	A-2, A-4	0	0	100	100	60-85	20-50	15-25	NP-5

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
48: Blackhall-----	0-6	Fine sandy loam	SM, ML	A-4	0	0-5	90-100	85-100	60-85	35-55	15-25	NP-5
	6-17	Fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0	0-5	90-100	85-100	60-80	35-50	15-25	NP-5
	17-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
49: Busby-----	0-3	Fine sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	3-15	Fine sandy loam, sandy loam, loam	SM, ML	A-4	0	0	100	100	60-90	35-75	20-25	NP-5
	15-60	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
Twilight-----	0-3	Fine sandy loam	SM	A-4	0	0	100	100	60-90	35-50	20-30	NP-5
	3-15	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-90	35-50	20-30	NP-5
	15-28	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-90	35-50	20-30	NP-5
	28-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Blackhall-----	0-2	Fine sandy loam	SM, ML	A-4	0	0-5	90-100	85-100	60-85	35-55	15-25	NP-5
	2-15	Fine sandy loam, sandy loam, very fine sandy loam	SM	A-4	0	0-5	90-100	85-100	60-80	35-50	15-25	NP-5
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
50: Busby-----	0-3	Fine sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	3-20	Fine sandy loam, sandy loam, loam	SM, ML	A-4	0	0	100	100	60-90	35-75	20-25	NP-5
	20-38	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	38-60	Loamy fine sand, loamy sand, fine sandy loam	SM	A-2, A-4	0	0	100	100	60-85	20-50	15-25	NP-5
Yetull-----	0-3	Loamy fine sand	SM	A-2	0	0-5	95-100	95-100	50-75	10-30	---	NP
	3-60	Loamy coarse sand, sand, loamy sand	SM, SP-SM	A-1, A-3, A-2	0	0-5	95-100	95-100	45-70	5-30	---	NP

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
60: Cambeth-----	In											
	0-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	3-10	Silt loam, silty clay loam, loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-20
	10-27	Silt loam, silty clay loam, loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-20
	27-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Niler-----	0-4	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-15
	4-14	Clay loam, silty clay loam	CL	A-6	0	0	100	100	85-95	80-95	30-40	10-15
	14-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
61: Castner-----	0-9	Channery loam	ML, CL-ML, SM, GM	A-4	0	0-15	60-90	50-80	40-70	35-60	20-30	NP-10
	9-16	Extremely channery loam, very channery sandy loam, very flaggy loam	GM, GM-GC, GP-GM	A-2, A-1	0	25-40	25-60	15-50	10-40	5-35	20-30	NP-10
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Shambo-----	0-6	Loam	CL-ML	A-4	0	0	100	100	85-100	65-90	25-30	5-10
	6-21	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	65-90	25-35	5-15
	21-60	Loam, clay loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	65-95	25-35	5-15
62: Chinook-----	0-14	Fine sandy loam	SM	A-4, A-2	0	0	80-100	75-100	65-85	30-50	15-25	NP-5
	14-35	Fine sandy loam, sandy loam	SM	A-4, A-2	0	0	80-100	75-100	55-85	30-50	15-25	NP-5
	35-60	Fine sandy loam, loamy fine sand, sandy loam	SM	A-4, A-2	0	0	80-100	75-100	60-80	25-45	15-25	NP-5
63: Chinook-----	0-3	Fine sandy loam	SM	A-4	0	0	100	100	70-85	35-50	15-25	NP-5
	3-12	Fine sandy loam	SM	A-4	0	0	100	100	70-85	35-50	15-25	NP-5
	12-40	Fine sandy loam	SM	A-4	0	0	100	100	70-85	35-50	15-25	NP-5
	40-52	Fine sandy loam	SM	A-4	0	0	100	100	70-85	35-50	15-25	NP-5
	52-60	Loam, sandy clay loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	85-100	75-100	55-95	35-75	25-35	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
64: Coopers-----	0-5	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	5-15
	5-22	Loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	80-100	75-100	60-95	40-75	25-35	5-15
	22-60	Loam, channery loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	75-100	70-100	55-95	35-75	25-35	5-15
65: Coopers-----	0-4	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	5-15
	4-20	Loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	80-100	75-100	60-95	40-75	25-35	5-15
	20-60	Loam, channery loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	75-100	70-100	55-95	35-75	25-35	5-15
Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-13	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	13-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
66: Coopers-----	0-4	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	55-75	25-35	5-15
	4-24	Loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	80-100	75-100	60-95	40-75	25-35	5-15
	24-60	Loam, channery loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	0	75-100	70-100	55-95	35-75	25-35	5-15
Yamac-----	0-4	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	4-14	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	14-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
67: Creed-----	0-4	Loam	ML	A-4	0	0	100	100	90-100	60-80	20-25	NP-5
	4-7	Sandy clay loam	CL-ML, SM-SC	A-4	0	0	100	100	80-90	35-55	25-30	5-10
	7-16	Clay loam	CL	A-6	0	0	100	100	90-100	75-85	35-40	15-20
	16-41	Clay loam	CL	A-6	0	0	100	100	90-100	75-85	30-35	10-15
	41-60	Loamy fine sand	SM	A-2	0	0	100	100	75-90	20-35	---	NP

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
78: Bitton-----	0-5	Channery loam	ML, CL-ML GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	5-20	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	20-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Cabba-----	0-4	Loam	ML, CL-ML	A-4	0	0-5	90-100	85-100	70-90	60-80	20-30	NP-10
	4-16	Clay loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0-5	95-100	90-100	85-100	80-95	25-35	5-15
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
79: Evanston-----	0-7	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	95-100	85-90	65-70	25-35	5-15
	7-28	Clay loam, loam, silty clay loam	CL	A-6	0	0-5	95-100	95-100	85-100	65-85	25-35	10-15
	28-60	Loam, clay loam, fine sandy loam	CL	A-6	0	0-5	95-100	95-100	70-90	50-75	25-35	10-15
80: Fergus variant--	0-4	Silt loam	CL-ML	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	4-9	Silt loam	CL-ML	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	9-28	Silty clay loam	CL	A-6	0	0	100	100	90-100	85-95	30-35	10-15
	28-32	Silt loam	CL-ML	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	32-60	Silt loam	CL-ML	A-4	0	0	100	100	90-100	80-90	25-30	5-10
Twin Creek-----	0-6	Loam	ML, CL-ML	A-4	0	0	95-100	85-100	70-90	55-75	20-30	NP-10
	6-24	Loam, clay loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
	24-60	Clay loam, loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
81: Floweree-----	0-7	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	20-35	NP-10
	7-21	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
	21-40	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
	40-60	Stratified silty clay loam to very fine sandy loam	CL, CL-ML	A-6, A-4	0	0	100	100	75-100	65-85	25-40	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
82: Floweree-----	0-7	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	20-35	NP-10
	7-19	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
	19-60	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
83: Floweree-----	0-6	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	20-35	NP-10
	6-16	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
	16-60	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-15
Vanstel-----	0-4	Silt loam	CL-ML	A-4	0	0	100	100	95-100	75-85	20-30	5-10
	4-22	Loam, clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	22-60	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	25-35	5-15
84: Fluventic Haploborolls. Typic Fluvaquents.												
85: Forelle-----	0-4	Loam	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	4-32	Clay loam, loam	CL	A-6	0	0	100	100	85-95	65-80	25-35	10-15
	32-60	Loam, clay loam	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
86: Forelle-----	0-6	Loam	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	6-22	Clay loam, loam	CL	A-6	0	0	100	100	85-95	65-80	25-35	10-15
	22-60	Loam, clay loam	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
Gerdrum-----	0-7	Clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	7-18	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	18-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
87: Galbreth-----	0-7	Sandy clay loam	CL-ML	A-4	0	0	100	100	90-100	55-65	25-30	5-10
	7-13	Loam, sandy clay loam	CL-ML	A-4	0	0	100	100	90-100	55-70	25-30	5-10
	13-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
88: Gerdrum-----	0-7	Clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	7-18	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	18-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
89: Gerdrum-----	0-7	Clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	7-23	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	23-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
90: Gerdrum-----	0-7	Silty clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	7-15	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	15-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
Kobar-----	0-3	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	3-27	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	27-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
91: Gerdrum-----	0-7	Silty clay loam	CL	A-6	0	0	80-100	75-100	65-95	60-90	25-40	10-20
	7-19	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	19-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
Kobar-----	0-4	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	4-19	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	19-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
92: Gerdrum-----	0-7	Silty clay	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-55	15-30
	7-22	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	22-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
Marvan-----	0-3	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-100	40-65	20-45
	3-28	Clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	75-100	45-70	25-50
	28-60	Clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	75-100	45-70	25-50

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
93: Gerdrum-----	0-7	Silty clay	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-55	15-30
	7-23	Clay, silty clay, silty clay loam	CL, CH	A-7	0	0	90-100	90-100	85-100	75-95	40-60	20-40
	23-60	Clay loam, sandy clay loam, clay	CL, SC, CH	A-6, A-7	0	0	90-100	90-100	80-95	45-75	35-55	15-35
Vanda-----	0-7	Silty clay	CL, CH	A-7	0	0	100	100	95-100	75-95	40-65	20-45
	7-60	Clay, silty clay, silty clay loam	CL, CH	A-7, A-6	0	0	100	100	95-100	80-95	35-65	15-45
94: Gerdrum-----	0-6	Loam	ML	A-4	0	0	100	100	85-95	65-80	20-25	NP-5
	6-24	Silty clay loam, silty clay	CL, CH	A-6, A-7	0	0	100	100	95-100	85-95	35-55	15-30
	24-41	Silty clay, silty clay loam	CL, CH	A-7, A-6	0	0	100	100	95-100	90-95	35-55	15-30
	41-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Volborg-----	0-1	Silty clay	CL, CH	A-7, A-6	0	0	100	100	95-100	85-95	35-55	15-30
	1-12	Silty clay	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	20-30
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
95: Glendive-----	0-4	Loam	ML	A-4	0	0	100	100	75-95	65-90	25-35	NP-10
	4-17	Loam, silt loam, sandy loam	ML, CL-ML, SM, SM-SC	A-4	0	0	100	100	65-95	40-70	15-30	NP-10
	17-60	Stratified loamy fine sand to silt loam	SM, SM-SC	A-2, A-4	0	0	95-100	75-100	60-80	25-50	15-25	NP-10
96: Hanly-----	0-7	Loam	ML	A-4	0	0	100	100	85-95	60-75	25-35	NP-10
	7-60	Stratified fine sandy loam to sand	SM, SP-SM	A-2, A-3	0	0	100	100	50-85	5-25	---	NP
Glendive-----	0-8	Loam	ML	A-4	0	0	100	100	75-95	65-90	25-35	NP-10
	8-60	Stratified loamy fine sand to silt loam	SM, SM-SC	A-2, A-4	0	0	95-100	75-100	60-80	25-50	15-25	NP-10
97: Harlem-----	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-90	35-45	15-20
	8-60	Stratified clay to silty clay loam	CL, CH	A-7	0	0	100	100	95-100	85-95	40-65	20-40

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
98: Harlem-----	0-10	Silty clay	CL, CH	A-7	0	0	100	100	95-100	90-95	40-60	20-40
	10-43	Stratified clay to silty clay loam	CL, CH	A-7	0	0	100	100	95-100	85-95	40-65	20-40
	43-60	Stratified silty clay loam to fine sandy loam	CL, CL-ML	A-6, A-4	0	0	100	100	85-95	60-75	20-40	5-15
99: Havre-----	0-6	Loam	CL-ML	A-4	0	0	100	100	80-95	60-90	20-30	5-10
	6-60	Stratified fine sandy loam to clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	80-95	60-80	20-35	5-15
100: Havre-----	0-12	Loam	ML, CL-ML	A-4	0	0	100	100	80-95	60-75	20-30	NP-10
	12-60	Stratified fine sandy loam to clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	80-95	50-70	20-35	5-15
101: Havre-----	0-10	Silty clay loam	CL	A-6	0	0	100	100	85-100	75-95	25-40	10-20
	10-60	Stratified fine sandy loam to clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	80-95	50-70	20-35	5-15
102: Havre-----	0-10	Silty clay loam	CL	A-6	0	0	100	100	90-95	75-95	30-40	10-20
	10-60	Stratified loam to clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-95	60-75	25-40	5-15
103: Havre-----	0-12	Silty clay loam	CL	A-6	0	0	100	100	90-100	70-85	25-40	10-20
	12-60	Stratified fine sandy loam to clay loam	ML, CL-ML	A-4	0	0	100	100	75-100	50-70	15-25	NP-10
104: Havre-----	0-5	Loam	ML, CL-ML	A-4	0	0	100	100	80-95	60-75	20-30	NP-10
	5-60	Stratified fine sandy loam to clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	80-95	50-70	20-35	5-15
Harlem-----	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-90	35-45	15-20
	5-60	Stratified clay to silty clay loam	CL, CH	A-7	0	0	100	100	95-100	85-95	40-65	20-40

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
108: Kirby-----	0-3	Very channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-15	40-60	30-50	25-45	20-40	15-25	NP-10
	3-11	Extremely channery loam, extremely channery sandy loam, very channery loam	GP-GM, GM, GM-GC	A-2, A-1	0	10-30	20-60	10-50	5-40	5-35	15-25	NP-10
	11-60	Fragmental material	GP	A-1	0	40-60	5-15	0-10	0-5	0-5	---	NP
Cabbart-----	0-2	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	2-11	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	11-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
109: Kobar-----	0-5	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	5-22	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	22-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
110: Kobar-----	0-7	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	7-23	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	23-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
111: Kobar-----	0-4	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	4-15	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	15-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
112: Kobar-----	0-4	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	4-14	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	14-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
113: Kobar-----	0-6	Silty clay	CL	A-7, A-6	0	0	95-100	90-100	90-100	85-100	35-50	15-25
	6-23	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	23-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
114: Kobar-----	0-11	Silty clay	CL	A-7	0	0	95-100	90-100	85-100	80-95	40-50	20-25
	11-18	Silty clay, clay, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	18-40	Silty clay, clay, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	40-60	Silty clay loam, clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-95	65-90	30-45	10-20
115: Kobar-----	0-4	Silty clay loam	CL	A-7, A-6	0	0	95-100	90-100	85-100	80-95	30-45	10-20
	4-15	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
	15-60	Silty clay loam, silty clay, clay	CL	A-7, A-6	0	0	95-100	90-100	85-100	75-95	35-50	15-25
Cabbart-----	0-3	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	3-16	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Yawdim-----	0-2	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-90	30-45	10-20
	2-12	Silty clay loam, clay loam, clay	CL, CH	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	12-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
116: Kremlin-----	0-10	Loam	CL-ML	A-4	0	0	95-100	90-100	75-95	50-75	25-30	5-10
	10-22	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	55-80	25-35	5-15
	22-36	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	55-80	25-35	5-15
	36-60	Stratified sandy loam to silt loam	ML, CL-ML	A-4	0	0	90-100	85-100	70-90	50-75	20-30	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
117: Kremlin-----	In											
	0-8	Loam	CL-ML	A-4	0	0	95-100	90-100	75-95	50-75	25-30	5-10
	8-13	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	55-80	25-35	5-15
	13-30	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	55-80	25-35	5-15
	30-60	Stratified sandy loam to silt loam	ML, CL-ML	A-4	0	0	90-100	85-100	70-90	50-75	20-30	NP-10
118: Lamedeer-----	0-8	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	8-20	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	20-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Lamedeer, dry---	0-7	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	7-13	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	13-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Ringling-----	0-7	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	7-15	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	15-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
					Pct	Pct					Pct	
119: Lamedeer-----	0-6	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	6-20	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	20-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Twin Creek-----	0-5	Loam	ML, CL-ML	A-4	0	0	95-100	85-100	70-90	55-75	20-30	NP-10
	5-33	Loam, clay loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
	33-60	Clay loam, loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
Ringling-----	0-5	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	5-17	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	17-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
120: Lamedeer-----	0-7	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	7-17	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	17-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Twin Creek-----	0-7	Loam	ML, CL-ML	A-4	0	0	95-100	85-100	70-90	55-75	20-30	NP-10
	7-31	Loam, clay loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20
	31-60	Clay loam, loam	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	70-95	55-80	20-40	5-20

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
120: Ringling-----	0-7	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	7-17	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	17-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
121: Lamedeer-----	0-7	Channery loam	SM-SC, SM, GM-GC, GM	A-4	0	0	60-80	50-75	45-65	35-50	20-30	NP-10
	7-21	Channery loam, very channery loam	SM-SC, SM, GM, GM-GC	A-4, A-2	0	0	45-80	35-75	30-60	25-50	20-30	NP-10
	21-60	Very channery loam, very channery sandy loam, extremely channery sandy loam	GM	A-1	0	25-30	35-50	25-45	20-35	10-25	15-25	NP-5
Bitton-----	0-7	Channery loam	ML, CL-ML, GM, SM	A-4	0	0-10	70-85	60-75	50-65	40-60	20-30	NP-10
	7-14	Gravelly loam, channery loam, very gravelly loam	GM, GM-GC, SM, SM-SC	A-2, A-1, A-4	0	0-15	40-80	30-70	25-60	20-50	20-30	NP-10
	14-60	Very gravelly loam, very channery loam, extremely channery loam	GM, GM-GC	A-2, A-1, A-4	0	0-25	30-60	20-50	15-45	15-40	20-30	NP-10
Ringling-----	0-4	Channery loam	GM, SM	A-4	0	0-10	60-80	55-75	50-60	35-50	20-30	NP-5
	4-13	Very channery loam, extremely channery loam	GM	A-1, A-2	0	10-40	25-60	15-50	15-40	10-35	20-30	NP-5
	13-60	Fragmental material	GP	A-1	0	80-85	15-25	5-10	0-5	0-5	---	NP
122: Lihen-----	0-7	Sandy loam	SM	A-4	0	0	100	85-100	60-80	35-50	20-25	NP-5
	7-60	Loamy fine sand, loamy sand, sand	SM	A-2, A-1	0	0	100	85-100	45-75	15-35	---	NP
123: Lonna-----	0-7	Silt loam	CL-ML	A-4	0	0	100	100	90-100	75-90	25-30	5-10
	7-22	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	22-60	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
124: Lonna-----	0-6	Silt loam	CL-ML	A-4	0	0	100	100	90-100	75-90	25-30	5-10
	6-12	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	12-60	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
125: Lonna-----	0-4	Silt loam	CL-ML	A-4	0	0	100	100	90-100	75-90	25-30	5-10
	4-12	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	12-38	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	38-60	Silty clay loam, silt loam, very fine sandy loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-90	25-35	5-15
126: Lonna-----	0-4	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	4-22	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	22-38	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	38-60	Silty clay loam, silt loam, very fine sandy loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-90	25-35	5-15
127: Lonna-----	0-3	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	3-18	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	18-60	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
128: Lonna-----	0-5	Silt loam	CL-ML	A-4	0	0	100	100	90-100	75-90	25-30	5-10
	5-26	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	26-60	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
Alona-----	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	8-14	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	80-95	25-40	5-15
	14-21	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	80-95	25-40	5-15
	21-60	Silty clay loam, loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-15
129: Lonna-----	0-4	Silt loam	CL-ML	A-4	0	0	100	100	90-100	75-90	25-30	5-10
	4-20	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15
	20-60	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	75-95	25-40	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
152: Rahworth-----	0-3	Loam	CL-ML	A-4	0	0	100	100	95-100	80-90	25-30	5-10
	3-8	Loam, clay loam	CL	A-6	0	0	100	100	95-100	80-90	30-35	10-15
	8-23	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	23-60	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
153: Rahworth-----	0-7	Clay loam	CL	A-6	0	0	100	100	95-100	80-90	30-35	10-15
	7-11	Loam, clay loam	CL	A-6	0	0	100	100	95-100	80-90	30-35	10-15
	11-23	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	23-60	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
Davidell-----	0-6	Silt loam	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	6-11	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	11-32	Clay loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	32-60	Loam, silt loam, silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
Sumatra-----	0-3	Silty clay loam	CL	A-6	0	0	100	100	95-100	80-90	30-35	10-15
	3-11	Silty clay loam, clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
	11-60	Silty clay loam, clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-35	10-15
154: Riverwash.												
155: Rock outcrop.												
156: Rominell-----	0-6	Fine sandy loam	SM-SC, CL-ML	A-4	0	0	100	100	80-90	40-60	20-30	5-10
	6-13	Clay loam, loam, sandy clay loam	CL-ML, SM-SC, CL, SC	A-4, A-6	0	0	100	100	85-90	40-75	25-35	5-15
	13-60	Clay loam, loam, sandy loam	CL-ML, ML, SM, SM-SC	A-4	0	0	90-100	85-100	60-90	45-70	20-30	NP-10
157: Sagedale-----	0-4	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	4-16	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	16-28	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	28-60	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
158: Sagedale-----	0-4	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	4-11	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	11-30	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	30-60	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
Cabba-----	0-3	Loam	ML, CL-ML	A-4	0	0-5	90-100	85-100	70-90	60-80	20-30	NP-10
	3-12	Clay loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0-5	95-100	90-100	85-100	80-95	25-35	5-15
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Wayden-----	0-4	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	75-85	35-45	15-25
	4-11	Clay loam, silty clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	80-95	35-60	15-35
	11-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
159: Savage-----	0-6	Silty clay loam	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	90-100	75-95	25-40	5-15
	6-15	Clay, silty clay, silty clay loam	CL	A-7, A-6	0	0	95-100	95-100	85-100	75-95	35-50	15-30
	15-60	Silty clay, silty clay loam, clay	CL	A-7, A-6	0	0-5	90-100	85-100	75-100	65-95	30-50	10-30
160: Savage-----	0-7	Silty clay loam	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	90-100	75-95	25-40	5-15
	7-17	Clay, silty clay, silty clay loam	CL	A-7, A-6	0	0	95-100	95-100	85-100	75-95	35-50	15-30
	17-60	Silty clay, silty clay loam, clay	CL	A-7, A-6	0	0-5	90-100	85-100	75-100	65-95	30-50	10-30
161: Shambo-----	0-7	Loam	CL-ML	A-4	0	0	100	100	85-100	65-90	25-30	5-10
	7-31	Loam, silt loam, clay loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	65-90	25-35	5-15
	31-60	Loam, clay loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	65-95	25-35	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
167: Sagedale-----	0-3	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	3-15	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	15-30	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
	30-60	Silty clay loam, silty clay, gravelly clay loam	CL	A-6, A-7	0	0	75-100	70-100	65-100	60-95	35-45	15-25
168: Spang-----	0-6	Sandy loam	SM	A-4	0	0	95-100	95-100	60-70	35-45	20-25	NP-5
	6-18	Sandy loam, fine sandy loam	SM	A-4	0	0	95-100	95-100	55-80	35-50	20-25	NP-5
	18-42	Sandy loam, fine sandy loam	SM	A-2, A-4	0	0	80-100	75-100	50-80	25-50	20-25	NP-5
	42-60	Sandy loam, fine sandy loam, loamy sand	SM	A-2, A-4, A-1	0	0	80-100	75-100	35-75	15-45	15-25	NP-5
169: Spang-----	0-6	Sandy loam	SM	A-4	0	0	95-100	95-100	60-70	35-45	20-25	NP-5
	6-16	Sandy loam, fine sandy loam	SM	A-4	0	0	95-100	95-100	55-80	35-50	20-25	NP-5
	16-60	Sandy loam, fine sandy loam	SM	A-2, A-4	0	0	80-100	75-100	50-80	25-50	20-25	NP-5
Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-11	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	11-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
170: Spang-----	0-6	Sandy loam	SM	A-4	0	0	95-100	95-100	60-70	35-45	20-25	NP-5
	6-17	Sandy loam, fine sandy loam	SM	A-4	0	0	95-100	95-100	55-80	35-50	20-25	NP-5
	17-60	Sandy loam, fine sandy loam	SM	A-2, A-4	0	0	80-100	75-100	50-80	25-50	20-25	NP-5
Birney, moist---	0-7	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	7-15	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	15-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
194: Weingart-----	0-7	Clay	CL	A-7	0	0	90-100	90-100	80-100	65-90	40-50	15-25
	7-17	Clay, silty clay	CL, CH	A-7	0	0	90-100	90-100	80-100	75-95	40-65	20-40
	17-23	Clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0	90-100	90-100	75-100	70-90	35-60	15-35
	23-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
195: Weingart-----	0-7	Clay	CL	A-7	0	0	90-100	90-100	80-100	65-90	40-50	15-25
	7-16	Clay, silty clay	CL, CH	A-7	0	0	90-100	90-100	80-100	75-95	40-65	20-40
	16-25	Clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0	90-100	90-100	75-100	70-90	35-60	15-35
	25-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Neldore-----	0-2	Silty clay	CL, CH	A-7	0	0-10	95-100	90-100	75-100	70-95	40-55	20-30
	2-17	Clay, silty clay	CL, CH	A-7	0	0	90-100	85-100	70-95	65-90	40-60	20-40
	17-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
196: Weingart-----	0-7	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	65-90	60-85	30-45	10-25
	7-16	Clay, silty clay	CL, CH	A-7	0	0	90-100	90-100	80-100	75-95	40-65	20-40
	16-25	Clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0	90-100	90-100	75-100	70-90	35-60	15-35
	25-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Niler-----	0-3	Clay loam	CL	A-6	0	0	100	100	85-90	70-80	30-40	10-15
	3-13	Clay loam, silty clay loam	CL	A-6	0	0	100	100	85-95	80-95	30-40	10-15
	13-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
197: Yamac-----	0-5	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	5-14	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	14-45	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
	45-60	Stratified gravelly loam to loamy sand	ML, SM	A-4, A-2	0	0-5	75-100	70-100	50-80	25-55	15-25	NP-5
198: Yamac-----	0-5	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	5-13	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	13-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
199: Yamac-----	0-6	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	6-15	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	15-43	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
	43-60	Stratified gravelly loam to loamy sand	ML, SM	A-4, A-2	0	0-5	75-100	70-100	50-80	25-55	15-25	NP-5
200: Yamac-----	0-4	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	4-11	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	11-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
Abor-----	0-3	Silty clay	CL, CH	A-7	0	0	95-100	90-100	80-100	75-95	40-60	20-35
	3-28	Silty clay, clay, silty clay loam	CL, CH	A-6, A-7	0	0	80-100	75-100	65-100	60-95	35-65	20-45
	28-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
201: Yamac-----	0-4	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	4-12	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	12-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
Birney-----	0-5	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	5-11	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	11-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
202: Yamac-----	0-4	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	4-10	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	10-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
Birney-----	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-12	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	12-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
203: Yamac-----	0-3	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	3-12	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	12-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
Birney-----	0-3	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	3-10	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	10-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
204: Yamac-----	0-3	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	3-11	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	11-60	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
Birney-----	0-4	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	4-12	Channery loam	SM, ML	A-4	0	0	75-85	60-75	50-70	35-55	25-35	NP-10
	12-60	Very channery sandy loam, extremely channery fine sandy loam, very channery loam	GM, GP-GM	A-1, A-2	0	0-20	35-60	20-50	10-35	5-20	25-35	NP-10
Cabbart-----	0-3	Loam	CL-ML	A-4	0	0	90-100	85-100	65-85	55-75	25-30	5-10
	3-16	Loam, clay loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	55-85	25-35	5-15
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
205: Yamac-----	0-3	Loam	CL-ML	A-4	0	0-5	85-100	80-100	60-85	55-75	25-30	5-10
	3-13	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-90	60-80	25-35	5-15
	13-42	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	60-85	55-75	25-35	5-15
	42-60	Stratified gravelly loam to loamy sand	ML, SM	A-4, A-2	0	0-5	75-100	70-100	50-80	25-55	15-25	NP-5
Busby-----	0-5	Fine sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5
	5-11	Fine sandy loam, sandy loam, loam	SM, ML	A-4	0	0	100	100	60-90	35-75	20-25	NP-5
	11-60	Fine sandy loam, sandy loam	SM	A-4	0	0	100	100	60-85	35-50	20-25	NP-5

ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
						Pct	Pct					Pct
213: Orinoco-----	0-9	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	9-19	Silty clay loam, silty clay	CL	A-6, A-7	0	0	100	100	90-100	85-95	35-45	15-25
	19-32	Silty clay loam, silty clay	CL	A-6, A-7	0	0	100	100	90-100	85-95	35-45	15-25
	32-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
214: Zatoville-----	0-3	Silty clay loam	CL	A-6	0	0	100	100	90-100	85-100	30-40	10-20
	3-10	Silty clay loam, silty clay	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-45	15-25
	10-17	Silty clay loam, silty clay	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-45	15-25
	17-43	Silty clay loam, silty clay	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-45	15-25
	43-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
215: Zatoville-----	0-7	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	25-35	10-15
	7-30	Silty clay loam, silty clay, clay loam	CL	A-7, A-6	0	0	100	100	90-100	75-95	35-50	15-25
	30-46	Silty clay loam, loam, clay loam	CL	A-6	0	0	100	100	90-100	70-90	30-40	10-20
	46-60	Silty clay loam, clay loam, loam	CL	A-6	0	0	100	100	90-100	70-90	30-40	10-20
216: Zatoville-----	0-2	Silty clay	CL	A-7	0	0	100	100	90-100	85-100	40-45	20-25
	2-10	Silty clay, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-45	15-25
	10-30	Silty clay, silty clay loam, clay loam	CL	A-6, A-7	0	0	100	100	90-100	65-100	35-45	15-25
	30-60	Silty clay, silty clay loam, clay loam	CL	A-6, A-7	0	0	100	100	90-100	65-100	35-45	15-25

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
15: Belfield-----	0-7	27-35	0.90-1.25	0.20-2.00	0.17-0.22	High	2.0-6.0	0.28	0.28	5	6
	7-16	35-45	1.15-1.65	0.06-0.20	0.14-0.18	High	1.0-2.0	0.32	---	---	---
	16-60	27-45	1.30-1.60	0.06-0.20	0.13-0.16	High	0.0-0.5	0.32	---	---	---
16: Birney-----	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-11	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	11-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
17: Birney-----	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-12	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	12-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Cabbart-----	0-4	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	4-12	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
18: Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-11	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	11-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Coers-----	0-4	18-25	1.15-1.35	0.60-2.00	0.17-0.19	Low	2.0-4.0	0.32	0.32	5	6
	4-19	18-27	1.30-1.50	0.60-2.00	0.16-0.18	Low	1.0-2.0	0.37	---	---	---
	19-38	18-27	1.30-1.55	0.60-2.00	0.14-0.17	Low	0.5-1.0	0.37	---	---	---
	38-60	10-27	1.35-1.60	0.60-2.00	0.14-0.17	Low	0.0-0.5	0.37	---	---	---
Kirby-----	0-5	10-22	1.30-1.50	2.00-6.00	0.11-0.14	Low	1.0-2.0	0.17	0.37	2	5
	5-18	8-22	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.05	---	---	---
	18-60	0-1	1.60-1.80	6.00-20.00	0.00-0.01	Low	---	0.02	---	---	---
19: Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-12	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	12-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Kirby-----	0-6	10-22	1.30-1.50	2.00-6.00	0.11-0.14	Low	1.0-2.0	0.17	0.37	2	5
	6-18	8-22	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.05	---	---	---
	18-60	0-1	1.60-1.80	6.00-20.00	0.00-0.01	Low	---	0.02	---	---	---
20: Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-11	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	11-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Kirby-----	0-4	10-22	1.30-1.50	2.00-6.00	0.11-0.14	Low	1.0-2.0	0.17	0.37	2	5
	4-12	8-22	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.05	---	---	---
	12-60	0-1	1.60-1.80	6.00-20.00	0.00-0.01	Low	---	0.02	---	---	---
Cabbart-----	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	2-15	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	15-60	---	---	---	---	---	---	---	---	---	---
21: Birney-----	0-3	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	3-10	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	10-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Armells-----	0-4	10-22	1.25-1.45	0.60-2.00	0.12-0.15	Low	1.0-2.0	0.20	0.37	5	4L
	4-60	15-27	1.40-1.65	0.60-2.00	0.06-0.08	Low	---	0.10	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
21: Cabbart-----	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	2-12	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
22: Birney, moist---	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-14	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	14-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Birney-----	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-10	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	10-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Kirby-----	0-4	10-22	1.30-1.50	2.00-6.00	0.11-0.14	Low	1.0-2.0	0.17	0.37	2	5
	4-12	8-22	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.05	---	---	---
	12-60	0-1	1.60-1.80	6.00-20.00	0.00-0.01	Low	---	0.02	---	---	---
23: Bitton-----	0-6	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	6-14	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	14-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Doney-----	0-4	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	4-27	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	27-60	---	---	---	---	---	---	---	---	---	---
Ringling-----	0-7	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	7-17	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	17-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
24: Bitton-----	0-4	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	4-10	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	10-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Doney-----	0-3	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	3-25	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	25-60	---	---	---	---	---	---	---	---	---	---
Ringling-----	0-5	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	5-15	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	15-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
25: Bitton-----	0-4	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	4-15	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	15-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Ringling-----	0-5	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	5-17	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	17-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
26: Bitton-----	0-5	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	5-17	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	17-30	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
	30-60	10-25	1.40-1.65	0.60-6.00	0.07-0.08	Low	0.0-0.5	0.10	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
26: Shambo-----	0-6	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	6-24	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	24-42	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
	42-60	10-20	1.30-1.70	2.00-6.00	0.11-0.13	Low	0.0-0.5	0.15	---	---	---
27: Bitton-----	0-5	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	5-17	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	17-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Twin Creek-----	0-6	20-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	2.0-4.0	0.32	0.32	4	6
	6-24	20-32	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	1.0-2.0	0.37	---	---	---
	24-60	20-32	1.30-1.50	0.60-2.00	0.14-0.16	Moderate	0.0-0.5	0.37	---	---	---
28: Bitton-----	0-6	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	6-19	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	19-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Twin Creek-----	0-6	20-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	2.0-4.0	0.32	0.32	4	6
	6-22	20-32	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	1.0-2.0	0.37	---	---	---
	22-60	20-32	1.30-1.50	0.60-2.00	0.14-0.16	Moderate	0.0-0.5	0.37	---	---	---
Ringling-----	0-5	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	5-12	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	12-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
29: Bitton-----	0-4	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	4-10	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	10-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Doney-----	0-5	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	5-26	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	26-60	---	---	---	---	---	---	---	---	---	---
Cabba-----	0-3	10-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	2	4L
	3-12	20-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
30: Bitton-----	0-8	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	8-18	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	18-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Lamedeer-----	0-6	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	6-20	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	20-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---
Ringling-----	0-5	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	5-11	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	11-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
31: Bitton-----	0-5	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	5-13	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	13-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Lamedeer-----	0-6	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	6-18	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	18-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
55: Rock outcrop.											
56: Cambeth-----	0-5	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	5-12	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	12-36	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	36-60	---	---	---	---	---	---	---	---	---	---
57: Cambeth-----	0-4	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	4-20	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	20-26	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	26-60	---	---	---	---	---	---	---	---	---	---
58: Cambeth-----	0-5	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	5-22	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	22-30	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	30-60	---	---	---	---	---	---	---	---	---	---
Cabbart-----	0-7	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	7-12	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
59: Cambeth-----	0-3	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	3-10	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	10-32	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	32-60	---	---	---	---	---	---	---	---	---	---
Cabbart-----	0-3	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	3-14	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	0.5-1.0	0.37	---	---	---
	14-60	---	---	---	---	---	---	---	---	---	---
60: Cambeth-----	0-3	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	3-10	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	10-27	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	27-60	---	---	---	---	---	---	---	---	---	---
Niler-----	0-4	27-35	1.20-1.40	0.20-0.60	0.15-0.18	Moderate	1.0-2.0	0.32	0.32	2	4L
	4-14	27-35	1.30-1.50	0.20-0.60	0.09-0.11	Moderate	0.5-1.0	0.32	---	---	---
	14-60	---	---	---	---	---	---	---	---	---	---
61: Castner-----	0-9	10-18	1.10-1.30	0.60-6.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	1	5
	9-16	10-18	1.35-1.55	0.60-6.00	0.06-0.07	Low	0.5-1.0	0.15	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
Shambo-----	0-6	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	6-21	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	21-60	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
62: Chinook-----	0-14	5-18	1.25-1.45	2.00-6.00	0.13-0.16	Low	1.0-2.0	0.20	0.20	5	3
	14-35	5-18	1.40-1.60	2.00-6.00	0.12-0.15	Low	0.0-1.0	0.20	---	---	---
	35-60	5-18	1.40-1.60	2.00-6.00	0.11-0.12	Low	0.0-1.0	0.20	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
63:											
Chinook-----	0-3	5-15	1.25-1.45	2.00-6.00	0.12-0.15	Low	1.0-3.0	0.24	0.24	5	3
	3-12	5-15	1.30-1.50	2.00-6.00	0.12-0.15	Low	1.0-2.0	0.32	---	---	---
	12-40	5-15	1.40-1.60	2.00-6.00	0.12-0.15	Low	0.5-1.0	0.32	---	---	---
	40-52	5-18	1.40-1.60	0.60-2.00	0.10-0.13	Low	0.0-0.5	0.32	---	---	---
	52-60	15-27	1.40-1.60	0.60-2.00	0.12-0.16	Moderate	0.0-0.5	0.37	---	---	---
64:											
Coopers-----	0-5	18-25	1.15-1.35	0.60-2.00	0.17-0.19	Low	2.0-4.0	0.32	0.32	5	6
	5-22	18-27	1.30-1.50	0.60-2.00	0.16-0.18	Low	1.0-2.0	0.37	---	---	---
	22-60	18-27	1.30-1.55	0.60-2.00	0.14-0.17	Low	0.5-1.0	0.37	---	---	---
65:											
Coopers-----	0-4	18-25	1.15-1.35	0.60-2.00	0.17-0.19	Low	2.0-4.0	0.32	0.32	5	6
	4-20	18-27	1.30-1.50	0.60-2.00	0.16-0.18	Low	1.0-2.0	0.37	---	---	---
	20-60	18-27	1.30-1.55	0.60-2.00	0.14-0.17	Low	0.5-1.0	0.37	---	---	---
Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-13	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	13-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
66:											
Coopers-----	0-4	18-25	1.15-1.35	0.60-2.00	0.17-0.19	Low	2.0-4.0	0.32	0.32	5	6
	4-24	18-27	1.30-1.50	0.60-2.00	0.16-0.18	Low	1.0-2.0	0.37	---	---	---
	24-60	18-27	1.30-1.55	0.60-2.00	0.14-0.17	Low	0.5-1.0	0.37	---	---	---
Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-14	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	14-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
67:											
Creed-----	0-4	10-15	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.43	0.43	2	5
	4-7	20-30	1.45-1.65	0.60-2.00	0.14-0.16	Low	1.0-2.0	0.37	---	---	---
	7-16	35-40	1.40-1.60	0.06-0.20	0.12-0.14	Moderate	0.5-1.0	0.37	---	---	---
	16-41	27-35	1.40-1.60	0.06-0.20	0.10-0.12	Moderate	0.0-0.5	0.37	---	---	---
	41-60	2-8	1.45-1.65	6.00-20.00	0.05-0.07	Low	0.0-0.5	0.17	---	---	---
68:											
Davidell-----	0-8	15-24	1.15-1.35	0.60-2.00	0.16-0.19	Low	1.0-3.0	0.37	0.37	5	5
	8-30	27-32	1.30-1.50	0.20-0.60	0.11-0.14	Moderate	0.5-1.0	0.32	---	---	---
	30-60	24-30	1.25-1.50	0.20-0.60	0.07-0.10	Moderate	---	0.32	---	---	---
69:											
Davidell-----	0-7	27-33	1.15-1.35	0.20-0.60	0.14-0.17	Moderate	1.0-3.0	0.32	0.32	5	7
	7-16	27-35	1.30-1.50	0.20-0.60	0.14-0.17	Moderate	0.5-1.0	0.32	---	---	---
	16-20	27-32	1.30-1.50	0.20-0.60	0.11-0.14	Moderate	0.5-1.0	0.32	---	---	---
	20-60	24-30	1.25-1.50	0.20-0.60	0.07-0.10	Moderate	---	0.32	---	---	---
70:											
Davidell-----	0-7	27-33	1.15-1.35	0.20-0.60	0.14-0.17	Moderate	1.0-3.0	0.32	0.32	5	7
	7-17	27-35	1.30-1.50	0.20-0.60	0.14-0.17	Moderate	0.5-1.0	0.32	---	---	---
	17-28	27-32	1.30-1.50	0.20-0.60	0.11-0.14	Moderate	0.5-1.0	0.32	---	---	---
	28-60	24-30	1.25-1.50	0.20-0.60	0.07-0.10	Moderate	---	0.32	---	---	---
Antwerp-----	0-7	27-33	1.20-1.40	0.06-0.20	0.14-0.18	Moderate	1.0-2.0	0.37	0.37	5	7
	7-24	20-35	1.20-1.45	0.06-0.20	0.11-0.13	Moderate	0.5-1.0	0.37	---	---	---
	24-60	20-35	1.20-1.50	0.06-0.20	0.08-0.10	Moderate	0.0-0.5	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
76: Cabbart-----	0-4	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	4-12	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
77: Delpoint, moist-	0-4	20-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	3	6
	4-34	18-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	34-60	---	---	---	---	---	---	---	---	---	---
Delpoint-----	0-2	20-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	3	6
	2-28	18-35	1.30-1.50	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.37	---	---	---
	28-60	---	---	---	---	---	---	---	---	---	---
Cabbart-----	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	2-14	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	14-60	---	---	---	---	---	---	---	---	---	---
78: Doney-----	0-6	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	6-30	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	30-60	---	---	---	---	---	---	---	---	---	---
Bitton-----	0-5	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	5-20	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	20-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Cabba-----	0-4	10-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	2	4L
	4-16	20-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
79: Evanston-----	0-7	15-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6
	7-28	27-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	28-60	15-30	1.30-1.50	0.60-2.00	0.16-0.18	Moderate	0.5-1.0	0.37	---	---	---
80: Fergus variant--	0-4	18-23	1.05-1.25	0.60-2.00	0.18-0.20	Low	2.0-6.0	0.28	0.28	5	6
	4-9	18-23	1.05-1.30	0.60-2.00	0.18-0.20	Low	2.0-4.0	0.37	---	---	---
	9-28	27-35	1.25-1.45	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.32	---	---	---
	28-32	20-27	1.20-1.40	0.60-2.00	0.18-0.20	Low	0.5-1.0	0.37	---	---	---
	32-60	20-27	1.20-1.45	0.60-2.00	0.18-0.20	Low	0.0-0.5	0.37	---	---	---
Twin Creek-----	0-6	20-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	2.0-4.0	0.32	0.32	4	6
	6-24	20-32	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	1.0-2.0	0.37	---	---	---
	24-60	20-32	1.30-1.50	0.60-2.00	0.14-0.16	Moderate	0.0-0.5	0.37	---	---	---
81: Floweree-----	0-7	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	5	6
	7-21	20-35	1.20-1.45	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	21-40	20-35	1.20-1.45	0.20-0.60	0.15-0.19	Moderate	0.5-1.0	0.32	---	---	---
	40-60	20-35	1.30-1.55	0.20-0.60	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
82: Floweree-----	0-7	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	5	6
	7-19	20-35	1.20-1.45	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	19-60	20-35	1.20-1.45	0.20-0.60	0.15-0.19	Moderate	0.5-1.0	0.32	---	---	---
83: Floweree-----	0-6	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	5	6
	6-16	20-35	1.20-1.45	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	16-60	20-35	1.20-1.45	0.20-0.60	0.15-0.19	Moderate	0.5-1.0	0.32	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
83: Vanstel-----	0-4	14-25	1.10-1.30	0.60-2.00	0.16-0.19	Low	1.0-2.0	0.37	0.37	5	5
	4-22	25-35	1.30-1.50	0.60-2.00	0.14-0.17	Moderate	0.5-1.0	0.32	---	---	---
	22-60	18-30	1.25-1.50	0.60-2.00	0.14-0.17	Low	0.0-0.5	0.37	---	---	---
84: Fluventic Haploborolls. Typic Fluvaquents.											
85: Forelle-----	0-4	20-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-32	25-35	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	0.5-1.0	0.32	---	---	---
	32-60	18-30	1.30-1.55	0.60-2.00	0.16-0.19	Low	0.0-0.5	0.37	---	---	---
86: Forelle-----	0-6	20-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	6-22	25-35	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	0.5-1.0	0.32	---	---	---
	22-60	18-30	1.30-1.55	0.60-2.00	0.16-0.19	Low	0.0-0.5	0.37	---	---	---
Gerdrum-----	0-7	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.43	0.43	2	6
	7-18	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	18-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
87: Galbreth-----	0-7	20-27	1.40-1.60	0.60-2.00	0.13-0.16	Low	1.0-2.0	0.32	0.32	2	5
	7-13	20-30	1.40-1.65	0.60-2.00	0.13-0.16	Low	0.5-1.0	0.37	---	---	---
	13-60	---	---	---	---	---	---	---	---	---	---
88: Gerdrum-----	0-7	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.43	0.43	2	6
	7-18	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	18-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
89: Gerdrum-----	0-7	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.43	0.43	2	6
	7-23	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	23-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
90: Gerdrum-----	0-7	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.43	0.43	2	7
	7-15	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	15-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
Kobar-----	0-3	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	3-27	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	27-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
91: Gerdrum-----	0-7	27-40	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.43	0.43	2	7
	7-19	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	19-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
Kobar-----	0-4	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	4-19	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	19-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
92:											
Gerdrum-----	0-7	40-50	1.20-1.40	0.06-0.20	0.14-0.18	High	1.0-3.0	0.37	0.37	2	4
	7-22	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	22-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
Marvan-----	0-3	40-60	1.25-1.45	0.06-0.20	0.14-0.18	High	0.5-2.0	0.43	0.43	5	4
	3-28	45-60	1.30-1.50	0.00-0.06	0.11-0.13	High	0.5-1.0	0.37	---	---	---
	28-60	45-60	1.30-1.50	0.00-0.06	0.09-0.11	High	0.0-0.5	0.37	---	---	---
93:											
Gerdrum-----	0-7	40-50	1.20-1.40	0.06-0.20	0.14-0.18	High	1.0-3.0	0.37	0.37	2	4
	7-23	35-55	1.30-1.55	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	23-60	30-50	1.30-1.55	0.00-0.06	0.08-0.10	High	0.0-0.5	0.43	---	---	---
Vanda-----	0-7	40-60	1.25-1.45	0.00-0.06	0.08-0.12	High	0.5-2.0	0.43	0.43	5	4
	7-60	35-60	1.30-1.50	0.00-0.06	0.08-0.12	High	0.0-0.5	0.37	---	---	---
94:											
Gerdrum-----	0-6	10-15	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.49	0.49	2	5
	6-24	35-50	1.25-1.50	0.00-0.06	0.10-0.13	High	0.5-1.0	0.37	---	---	---
	24-41	30-50	1.30-1.50	0.00-0.06	0.08-0.10	High	1.0-0.5	0.32	---	---	---
	41-60	---	---	---	---	---	---	---	---	---	---
Volborg-----	0-1	40-50	1.25-1.45	0.06-0.20	0.14-0.18	High	0.5-2.0	0.37	0.37	2	4
	1-12	35-50	1.30-1.50	0.06-0.20	0.11-0.13	High	0.0-0.5	0.32	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
95:											
Glendive-----	0-4	10-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	0.5-2.0	0.43	0.43	5	5
	4-17	5-18	1.35-1.60	2.00-6.00	0.15-0.19	Low	0.5-1.0	0.32	---	---	---
	17-60	5-18	1.35-1.60	2.00-6.00	0.10-0.13	Low	0.5-1.0	0.20	---	---	---
96:											
Hanly-----	0-7	10-20	1.25-1.45	0.60-2.00	0.15-0.19	Low	0.5-1.0	0.43	0.43	5	5
	7-60	5-10	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.17	---	---	---
Glendive-----	0-8	10-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	0.5-2.0	0.43	0.43	5	5
	8-60	5-18	1.35-1.60	2.00-6.00	0.10-0.13	Low	0.5-1.0	0.20	---	---	---
97:											
Harlem-----	0-8	27-40	1.25-1.45	0.06-0.20	0.14-0.18	Moderate	0.5-1.0	0.43	0.43	5	7
	8-60	35-60	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
98:											
Harlem-----	0-10	40-50	1.25-1.45	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	0.37	5	4
	10-43	35-60	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	43-60	15-35	1.35-1.55	0.06-0.20	0.13-0.16	Low	0.5-1.0	0.37	---	---	---
99:											
Havre-----	0-6	15-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	5	5
	6-60	18-35	1.35-1.55	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.28	---	---	---
100:											
Havre-----	0-12	10-22	1.15-1.35	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	5	5
	12-60	18-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.28	---	---	---
101:											
Havre-----	0-10	27-35	1.20-1.40	0.20-0.60	0.14-0.18	Moderate	0.5-2.0	0.37	0.37	5	6
	10-60	18-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.28	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
102:											
Havre-----	0-10	27-40	1.15-1.35	0.20-0.60	0.14-0.18	Moderate	1.0-3.0	0.32	0.32	5	6
	10-60	18-32	1.30-1.50	0.60-2.00	0.15-0.19	Low	0.5-1.0	0.37	---	---	---
103:											
Havre-----	0-12	27-40	1.30-1.50	0.20-0.60	0.10-0.12	Moderate	1.0-2.0	0.37	0.37	5	7
	12-60	18-35	1.40-1.60	0.60-2.00	0.10-0.12	Low	0.5-1.0	0.28	---	---	---
104:											
Havre-----	0-5	10-22	1.15-1.35	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	5	5
	5-60	18-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.28	---	---	---
Harlem-----	0-5	27-40	1.25-1.45	0.06-0.20	0.14-0.18	Moderate	0.5-1.0	0.43	0.43	5	7
	5-60	35-60	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
Glendive-----	0-6	5-15	1.40-1.60	2.00-6.00	0.10-0.13	Low	0.5-2.0	0.24	0.24	5	3
	6-60	5-18	1.35-1.60	2.00-6.00	0.15-0.19	Low	0.5-1.0	0.32	---	---	---
105:											
Ivanell-----	0-3	18-27	1.20-1.40	0.60-2.00	0.16-0.19	Low	1.0-2.0	0.32	0.32	3	6
	3-7	27-35	1.30-1.50	0.20-0.60	0.16-0.19	Moderate	1.0-2.0	0.32	---	---	---
	7-22	27-35	1.30-1.50	0.20-0.60	0.15-0.18	Moderate	0.5-1.0	0.32	---	---	---
	22-37	27-35	1.30-1.55	0.20-0.60	0.11-0.13	Moderate	0.0-0.5	0.32	---	---	---
	37-60	---	---	---	---	---	---	---	---	---	---
106:											
Ivanell-----	0-7	27-35	1.20-1.40	0.60-2.00	0.16-0.19	Low	1.0-2.0	0.32	0.32	3	7
	7-16	27-35	1.30-1.50	0.20-0.60	0.15-0.18	Moderate	0.5-1.0	0.32	---	---	---
	16-30	27-35	1.30-1.55	0.20-0.60	0.11-0.13	Moderate	0.0-0.5	0.32	---	---	---
	30-60	---	---	---	---	---	---	---	---	---	---
Davidell-----	0-4	15-24	1.15-1.35	0.60-2.00	0.16-0.19	Low	1.0-3.0	0.37	0.37	5	5
	4-9	27-35	1.30-1.50	0.20-0.60	0.14-0.17	Moderate	0.5-1.0	0.32	---	---	---
	9-25	27-32	1.30-1.50	0.20-0.60	0.11-0.14	Moderate	0.5-1.0	0.32	---	---	---
	25-60	24-30	1.25-1.50	0.20-0.60	0.07-0.10	Moderate	---	0.32	---	---	---
107:											
Ivanell-----	0-7	27-35	1.20-1.40	0.60-2.00	0.16-0.19	Low	1.0-2.0	0.32	0.32	3	7
	7-12	27-35	1.30-1.50	0.20-0.60	0.16-0.19	Moderate	1.0-2.0	0.32	---	---	---
	12-17	27-35	1.30-1.50	0.20-0.60	0.15-0.18	Moderate	0.5-1.0	0.32	---	---	---
	17-36	27-35	1.30-1.55	0.20-0.60	0.11-0.13	Moderate	0.0-0.5	0.32	---	---	---
	36-60	---	---	---	---	---	---	---	---	---	---
Niler-----	0-2	27-35	1.20-1.40	0.20-0.60	0.15-0.18	Moderate	1.0-2.0	0.32	0.32	2	4L
	2-16	27-35	1.30-1.50	0.20-0.60	0.09-0.11	Moderate	0.5-1.0	0.32	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
108:											
Kirby-----	0-3	10-22	1.40-1.60	2.00-6.00	0.07-0.09	Low	1.0-2.0	0.10	0.37	2	5
	3-11	8-22	1.45-1.65	6.00-20.00	0.05-0.06	Low	0.5-1.0	0.05	---	---	---
	11-60	0-1	1.60-1.80	6.00-20.00	0.00-0.01	Low	---	0.02	---	---	---
Cabbart-----	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	2-11	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	11-60	---	---	---	---	---	---	---	---	---	---
Rock outcrop.											
109:											
Kobar-----	0-5	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	5-22	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	22-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
110: Kobar-----	0-7	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	7-23	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	23-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
111: Kobar-----	0-4	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	4-15	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	15-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
112: Kobar-----	0-4	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	4-14	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	14-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
113: Kobar-----	0-6	40-45	1.20-1.40	0.20-0.60	0.14-0.18	High	1.0-2.0	0.32	0.32	5	4
	6-23	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	23-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
114: Kobar-----	0-11	40-45	1.20-1.40	0.06-0.20	0.14-0.18	High	1.0-2.0	0.32	0.32	5	4
	11-18	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.32	---	---	---
	18-40	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.32	---	---	---
	40-60	27-40	1.30-1.55	0.20-0.60	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
115: Kobar-----	0-4	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	7
	4-15	35-45	1.30-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	15-60	35-45	1.30-1.55	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
Cabbart-----	0-3	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	3-16	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
Yawdim-----	0-2	27-40	1.10-1.30	0.20-0.60	0.17-0.20	Moderate	0.5-1.0	0.43	0.43	2	4
	2-12	35-50	1.20-1.40	0.06-0.20	0.15-0.18	High	0.0-0.5	0.32	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
116: Kremlin-----	0-10	18-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6
	10-22	18-30	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	1.0-2.0	0.37	---	---	---
	22-36	18-30	1.30-1.50	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	36-60	18-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	0.0-0.5	0.37	---	---	---
117: Kremlin-----	0-8	18-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6
	8-13	18-30	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	1.0-2.0	0.37	---	---	---
	13-30	18-30	1.30-1.50	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	30-60	18-30	1.30-1.55	0.60-2.00	0.14-0.18	Low	0.0-0.5	0.37	---	---	---
118: Lamedeer-----	0-8	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	8-20	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	20-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---
Lamedeer, dry---	0-7	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	7-13	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	13-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
118:											
Ringling-----	0-7	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	7-15	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	15-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
119:											
Lamedeer-----	0-6	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	6-20	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	20-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---
Twin Creek-----	0-5	20-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	2.0-4.0	0.32	0.32	4	6
	5-33	20-32	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	1.0-2.0	0.37	---	---	---
	33-60	20-32	1.30-1.50	0.60-2.00	0.14-0.16	Moderate	0.0-0.5	0.37	---	---	---
Ringling-----	0-5	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	5-17	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	17-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
120:											
Lamedeer-----	0-7	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	7-17	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	17-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---
Twin Creek-----	0-7	20-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	2.0-4.0	0.32	0.32	4	6
	7-31	20-32	1.30-1.50	0.60-2.00	0.15-0.18	Moderate	1.0-2.0	0.37	---	---	---
	31-60	20-32	1.30-1.50	0.60-2.00	0.14-0.16	Moderate	0.0-0.5	0.37	---	---	---
Ringling-----	0-7	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	7-17	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	17-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
121:											
Lamedeer-----	0-7	12-23	1.15-1.35	0.60-2.00	0.11-0.14	Low	2.0-4.0	0.17	0.37	5	5
	7-21	15-25	1.35-1.55	0.60-2.00	0.09-0.12	Low	1.0-2.0	0.17	---	---	---
	21-60	8-20	1.40-1.65	0.60-2.00	0.05-0.06	Low	0.0-1.0	0.10	---	---	---
Bitton-----	0-7	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	7-14	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	14-60	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
Ringling-----	0-4	10-25	1.20-1.40	0.60-2.00	0.12-0.16	Low	2.0-5.0	0.17	0.37	2	5
	4-13	10-25	1.40-1.60	2.00-6.00	0.06-0.07	Low	1.0-2.0	0.10	---	---	---
	13-60	0-5	1.60-1.80	6.00-20.00	0.00-0.01	Low	0.0-0.5	0.02	---	---	---
122:											
Lihen-----	0-7	10-20	1.30-1.50	6.00-20.00	0.13-0.16	Low	1.0-2.0	0.20	0.20	5	3
	7-60	0-10	1.40-1.65	6.00-20.00	0.07-0.09	Low	0.0-0.5	0.17	---	---	---
123:											
Lonna-----	0-7	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	7-22	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	22-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
124:											
Lonna-----	0-6	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	6-12	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	12-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
125:											
Lonna-----	0-4	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	4-12	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	12-38	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	38-60	10-35	1.25-1.50	0.60-2.00	0.12-0.16	Moderate	0.0-0.5	0.37	---	---	---
126:											
Lonna-----	0-4	27-35	1.15-1.35	0.60-2.00	0.16-0.20	Moderate	1.0-3.0	0.32	0.32	5	4L
	4-22	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	22-38	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	38-60	10-35	1.25-1.50	0.60-2.00	0.12-0.16	Moderate	0.0-0.5	0.37	---	---	---
127:											
Lonna-----	0-3	27-35	1.15-1.35	0.60-2.00	0.16-0.20	Moderate	1.0-3.0	0.32	0.32	5	4L
	3-18	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	18-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
128:											
Lonna-----	0-5	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	5-26	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	26-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
Alona-----	0-8	18-27	1.10-1.25	0.60-2.00	0.18-0.22	Low	1.0-3.0	0.37	0.37	5	6
	8-14	25-35	1.25-1.45	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	14-21	18-35	1.25-1.45	0.20-0.60	0.11-0.14	Moderate	0.0-0.5	0.37	---	---	---
	21-60	18-35	1.25-1.50	0.20-0.60	0.08-0.11	Moderate	0.0-0.5	0.43	---	---	---
129:											
Lonna-----	0-4	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	4-20	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	20-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
Alona-----	0-3	18-27	1.10-1.25	0.60-2.00	0.18-0.22	Low	1.0-3.0	0.37	0.37	5	6
	3-13	25-35	1.25-1.45	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	13-25	18-35	1.25-1.45	0.20-0.60	0.11-0.14	Moderate	0.0-0.5	0.37	---	---	---
	25-60	18-35	1.25-1.50	0.20-0.60	0.08-0.11	Moderate	0.0-0.5	0.43	---	---	---
130:											
Lonna-----	0-4	27-35	1.15-1.35	0.60-2.00	0.16-0.20	Moderate	1.0-3.0	0.32	0.32	5	4L
	4-36	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	36-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
Antwerp-----	0-9	27-33	1.20-1.40	0.06-0.20	0.14-0.18	Moderate	1.0-2.0	0.37	0.37	5	7
	9-40	20-35	1.20-1.45	0.06-0.20	0.11-0.13	Moderate	0.5-1.0	0.37	---	---	---
	40-60	20-35	1.20-1.50	0.06-0.20	0.08-0.10	Moderate	0.0-0.5	0.37	---	---	---
131:											
Lonna-----	0-3	27-35	1.15-1.35	0.60-2.00	0.16-0.20	Moderate	1.0-3.0	0.32	0.32	5	4L
	3-13	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	13-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
Antwerp-----	0-8	27-33	1.20-1.40	0.06-0.20	0.14-0.18	Moderate	1.0-2.0	0.37	0.37	5	7
	8-36	20-35	1.20-1.45	0.06-0.20	0.11-0.13	Moderate	0.5-1.0	0.37	---	---	---
	36-60	20-35	1.20-1.50	0.06-0.20	0.08-0.10	Moderate	0.0-0.5	0.37	---	---	---
132:											
Lonna-----	0-3	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	3-21	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	21-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
132:											
Cabbart-----	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	2-12	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
Yawdim-----	0-4	27-40	1.10-1.30	0.20-0.60	0.17-0.20	Moderate	0.5-1.0	0.43	0.43	2	4
	4-15	35-50	1.20-1.40	0.06-0.20	0.15-0.18	High	0.0-0.5	0.32	---	---	---
	15-60	---	---	---	---	---	---	---	---	---	---
133:											
Lonna-----	0-5	18-27	1.10-1.30	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	4L
	5-17	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.37	---	---	---
	17-60	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
Cambeth-----	0-5	18-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	1.0-2.0	0.37	0.37	3	4L
	5-11	18-35	1.25-1.45	0.60-2.00	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	11-31	18-35	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	---	---	---
	31-60	---	---	---	---	---	---	---	---	---	---
134:											
Louscot-----	0-4	20-27	1.10-1.30	0.20-0.60	0.16-0.20	Low	0.5-1.0	0.43	0.43	5	6
	4-60	20-35	1.20-1.45	0.20-0.60	0.12-0.16	Moderate	0.0-0.5	0.37	---	---	---
135:											
Macar-----	0-7	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	5	6
	7-18	18-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.32	---	---	---
	18-60	15-30	1.30-1.60	0.60-2.00	0.13-0.16	Moderate	0.0-0.5	0.32	---	---	---
Doney-----	0-2	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	2-27	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	27-60	---	---	---	---	---	---	---	---	---	---
Rock outcrop.											
136:											
Marmarth-----	0-4	10-18	1.20-1.40	2.00-6.00	0.13-0.16	Low	1.0-3.0	0.24	0.24	3	3
	4-13	18-35	1.35-1.60	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.32	---	---	---
	13-24	15-30	1.35-1.60	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.32	---	---	---
	24-60	---	---	---	---	---	---	---	---	---	---
137:											
Marmarth-----	0-4	10-18	1.20-1.40	2.00-6.00	0.13-0.16	Low	1.0-3.0	0.24	0.24	3	3
	4-11	18-35	1.35-1.60	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.32	---	---	---
	11-29	15-30	1.35-1.60	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.32	---	---	---
	29-60	---	---	---	---	---	---	---	---	---	---
Galbreth-----	0-5	20-27	1.40-1.60	0.60-2.00	0.13-0.16	Low	1.0-2.0	0.32	0.32	2	5
	5-13	20-30	1.40-1.65	0.60-2.00	0.13-0.16	Low	0.5-1.0	0.37	---	---	---
	13-60	---	---	---	---	---	---	---	---	---	---
138:											
Marvan-----	0-3	40-60	1.25-1.45	0.06-0.20	0.14-0.18	High	0.5-2.0	0.43	0.43	5	4
	3-30	45-60	1.30-1.50	0.00-0.06	0.11-0.13	High	0.5-1.0	0.37	---	---	---
	30-60	45-60	1.30-1.50	0.00-0.06	0.09-0.11	High	0.0-0.5	0.37	---	---	---
139:											
Marvan-----	0-5	40-60	1.25-1.45	0.06-0.20	0.14-0.18	High	0.5-2.0	0.43	0.43	5	4
	5-27	45-60	1.30-1.50	0.00-0.06	0.11-0.13	High	0.5-1.0	0.37	---	---	---
	27-60	45-60	1.30-1.50	0.00-0.06	0.09-0.11	High	0.0-0.5	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
147: Ustic Torriorthents.											
Neldore, saline-	0-2	45-60	1.20-1.40	0.06-0.20	0.11-0.13	High	1.0-2.0	0.37	0.37	2	4
	2-16	45-60	1.30-1.50	0.06-0.20	0.10-0.12	High	0.5-1.0	0.32	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
148:											
Neldore-----	0-2	40-50	1.20-1.40	0.06-0.20	0.14-0.18	High	1.0-3.0	0.37	0.37	2	4
	2-14	40-60	1.30-1.50	0.06-0.20	0.12-0.16	High	0.5-1.0	0.32	---	---	---
	14-60	---	---	---	---	---	---	---	---	---	---
Volborg-----	0-2	40-50	1.30-1.50	0.06-0.20	0.14-0.17	High	1.0-2.0	0.32	0.32	2	2
	2-11	35-50	1.30-1.50	0.06-0.20	0.10-0.12	High	0.5-1.0	0.32	---	---	---
	11-60	---	---	---	---	---	---	---	---	---	---
149:											
Neldore-----	0-2	40-50	1.20-1.40	0.06-0.20	0.14-0.18	High	1.0-3.0	0.37	0.37	2	4
	2-16	40-60	1.30-1.50	0.06-0.20	0.12-0.16	High	0.5-1.0	0.32	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
Yawdim-----	0-3	40-50	1.10-1.30	0.06-0.20	0.15-0.18	High	0.5-1.0	0.37	0.37	2	4
	3-16	35-50	1.20-1.40	0.06-0.20	0.15-0.18	High	0.0-0.5	0.32	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
150:											
Niler-----	0-3	27-35	1.20-1.40	0.20-0.60	0.15-0.18	Moderate	1.0-2.0	0.32	0.32	2	4L
	3-13	27-35	1.30-1.50	0.20-0.60	0.09-0.11	Moderate	0.5-1.0	0.32	---	---	---
	13-60	---	---	---	---	---	---	---	---	---	---
151:											
Orinoco-----	0-7	30-40	1.15-1.35	0.20-0.60	0.15-0.18	Moderate	1.0-3.0	0.32	0.32	3	4L
	7-17	35-50	1.30-1.50	0.06-0.20	0.12-0.15	Moderate	0.5-1.0	0.37	---	---	---
	17-26	35-50	1.30-1.55	0.06-0.20	0.10-0.12	Moderate	0.0-0.5	0.37	---	---	---
	26-60	---	---	---	---	---	---	---	---	---	---
Yawdim-----	0-2	27-40	1.10-1.30	0.20-0.60	0.17-0.20	Moderate	0.5-1.0	0.43	0.43	2	4
	2-18	35-50	1.20-1.40	0.06-0.20	0.15-0.18	High	0.0-0.5	0.32	---	---	---
	18-60	---	---	---	---	---	---	---	---	---	---
152:											
Rahworth-----	0-3	20-25	1.20-1.40	0.60-2.00	0.16-0.19	Low	1.0-2.0	0.37	0.37	5	6
	3-8	25-32	1.30-1.50	0.60-2.00	0.14-0.17	Moderate	0.5-1.5	0.37	---	---	---
	8-23	30-35	1.30-1.55	0.20-0.60	0.13-0.16	Moderate	0.5-1.0	0.32	---	---	---
	23-60	30-35	1.30-1.60	0.20-0.60	0.04-0.05	Moderate	0.0-0.5	0.32	---	---	---
153:											
Rahworth-----	0-7	27-30	1.20-1.40	0.60-2.00	0.14-0.17	Low	1.0-2.0	0.32	0.32	5	6
	7-11	25-32	1.30-1.50	0.60-2.00	0.14-0.17	Moderate	0.5-1.5	0.37	---	---	---
	11-23	30-35	1.30-1.55	0.20-0.60	0.13-0.16	Moderate	0.5-1.0	0.32	---	---	---
	23-60	30-35	1.30-1.60	0.20-0.60	0.04-0.05	Moderate	0.0-0.5	0.32	---	---	---
Davidell-----	0-6	15-24	1.15-1.35	0.60-2.00	0.18-0.21	Low	1.0-3.0	0.37	0.37	5	5
	6-11	27-35	1.30-1.50	0.20-0.60	0.14-0.17	Moderate	0.5-1.0	0.32	---	---	---
	11-32	27-32	1.30-1.50	0.20-0.60	0.11-0.14	Moderate	0.5-1.0	0.32	---	---	---
	32-60	24-30	1.25-1.50	0.20-0.60	0.07-0.10	Moderate	---	0.32	---	---	---
Sumatra-----	0-3	27-35	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.32	0.32	5	4L
	3-11	27-35	1.25-1.50	0.20-0.60	0.11-0.13	Moderate	0.5-1.0	0.32	---	---	---
	11-60	27-35	1.30-1.55	0.20-0.60	0.04-0.05	Moderate	0.0-0.5	0.32	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
154: Riverwash.											
155: Rock outcrop.											
156: Rominell-----	0-6	10-20	1.25-1.45	2.00-6.00	0.14-0.17	Low	1.0-3.0	0.32	0.32	2	3
	6-13	20-35	1.35-1.60	0.06-0.20	0.11-0.15	Moderate	0.5-1.0	0.37	---	---	---
	13-60	10-35	1.35-1.60	0.06-0.20	0.10-0.14	Low	0.0-0.5	0.37	---	---	---
157: Sagedale-----	0-4	30-40	1.20-1.40	0.06-0.20	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	4
	4-16	32-45	1.30-1.50	0.06-0.20	0.15-0.18	Moderate	1.0-2.0	0.32	---	---	---
	16-28	35-45	1.30-1.50	0.06-0.20	0.15-0.17	Moderate	0.5-1.0	0.32	---	---	---
	28-60	35-45	1.30-1.55	0.06-0.20	0.14-0.16	Moderate	0.0-0.5	0.32	---	---	---
158: Sagedale-----	0-4	30-40	1.20-1.40	0.06-0.20	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	4
	4-11	32-45	1.30-1.50	0.06-0.20	0.15-0.18	Moderate	1.0-2.0	0.32	---	---	---
	11-30	35-45	1.30-1.50	0.06-0.20	0.15-0.17	Moderate	0.5-1.0	0.32	---	---	---
	30-60	35-45	1.30-1.55	0.06-0.20	0.14-0.16	Moderate	0.0-0.5	0.32	---	---	---
Cabba-----	0-3	10-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	2	4L
	3-12	20-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	---	---	---	---	---	---	---	---	---	---
Wayden-----	0-4	35-40	1.10-1.50	0.06-0.20	0.14-0.18	High	0.5-2.0	0.37	0.37	2	4L
	4-11	35-50	1.10-1.50	0.06-0.20	0.14-0.18	High	0.5-1.0	0.37	---	---	---
	11-60	---	---	---	---	---	---	---	---	---	---
159: Savage-----	0-6	27-35	1.20-1.40	0.60-2.00	0.16-0.20	Moderate	2.0-4.0	0.32	0.32	5	7
	6-15	35-50	1.30-1.50	0.06-0.20	0.14-0.18	High	1.0-3.0	0.32	---	---	---
	15-60	25-45	1.35-1.55	0.06-0.20	0.13-0.16	High	0.5-1.0	0.32	---	---	---
160: Savage-----	0-7	27-35	1.20-1.40	0.60-2.00	0.16-0.20	Moderate	2.0-4.0	0.32	0.32	5	7
	7-17	35-50	1.30-1.50	0.06-0.20	0.14-0.18	High	1.0-3.0	0.32	---	---	---
	17-60	25-45	1.35-1.55	0.06-0.20	0.13-0.16	High	0.5-1.0	0.32	---	---	---
161: Shambo-----	0-7	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	7-31	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	31-60	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
162: Shambo-----	0-6	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	6-26	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	26-42	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
	42-60	10-20	1.30-1.70	2.00-6.00	0.11-0.13	Low	0.0-0.5	0.15	---	---	---
163: Shambo-----	0-5	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	5-22	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	22-38	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
	38-60	10-20	1.30-1.70	2.00-6.00	0.11-0.13	Low	0.0-0.5	0.15	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
164:											
Shambo-----	0-6	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	6-21	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	21-45	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
	45-60	10-20	1.30-1.70	2.00-6.00	0.11-0.13	Low	0.0-0.5	0.15	---	---	---
Bitton-----	0-4	15-27	1.15-1.35	2.00-6.00	0.14-0.18	Low	2.0-4.0	0.17	0.37	5	5
	4-17	15-27	1.30-1.55	0.60-2.00	0.08-0.10	Low	1.0-2.0	0.17	---	---	---
	17-30	15-27	1.35-1.60	0.60-2.00	0.07-0.08	Low	0.5-1.0	0.10	---	---	---
	30-60	10-25	1.40-1.65	0.60-6.00	0.07-0.08	Low	0.0-0.5	0.10	---	---	---
Cabba-----	0-4	10-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	2	4L
	4-16	20-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
165:											
Shambo-----	0-4	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	4-16	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	16-60	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
Doney-----	0-4	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	4-36	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	36-60	---	---	---	---	---	---	---	---	---	---
166:											
Shambo-----	0-7	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	7-19	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	19-60	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
Doney-----	0-3	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	3-29	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	29-60	---	---	---	---	---	---	---	---	---	---
Cabba-----	0-4	10-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	2	4L
	4-16	20-35	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
167:											
Shambo-----	0-8	10-27	1.10-1.30	0.60-2.00	0.18-0.22	Low	2.0-6.0	0.28	0.28	5	6
	8-20	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	1.0-2.0	0.37	---	---	---
	20-60	18-35	1.20-1.50	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.37	---	---	---
Doney-----	0-3	10-27	1.25-1.45	0.60-2.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	3	5
	3-27	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	27-60	---	---	---	---	---	---	---	---	---	---
Sagedale-----	0-3	30-40	1.20-1.40	0.06-0.20	0.16-0.20	Moderate	1.0-2.0	0.37	0.37	5	4
	3-15	32-45	1.30-1.50	0.06-0.20	0.15-0.18	Moderate	1.0-2.0	0.32	---	---	---
	15-30	35-45	1.30-1.50	0.06-0.20	0.15-0.17	Moderate	0.5-1.0	0.32	---	---	---
	30-60	35-45	1.30-1.55	0.06-0.20	0.14-0.16	Moderate	0.0-0.5	0.32	---	---	---
168:											
Spang-----	0-6	10-20	1.25-1.45	2.00-6.00	0.13-0.16	Low	1.0-3.0	0.20	0.20	4	3
	6-18	10-20	1.35-1.60	2.00-6.00	0.13-0.15	Low	1.0-2.0	0.20	---	---	---
	18-42	8-18	1.35-1.60	2.00-6.00	0.13-0.15	Low	0.5-1.0	0.20	---	---	---
	42-60	5-15	1.40-1.65	6.00-20.00	0.10-0.12	Low	0.0-0.5	0.20	---	---	---
169:											
Spang-----	0-6	10-20	1.25-1.45	2.00-6.00	0.13-0.16	Low	1.0-3.0	0.20	0.20	5	3
	6-16	10-20	1.35-1.60	2.00-6.00	0.13-0.15	Low	1.0-2.0	0.20	---	---	---
	16-60	8-18	1.35-1.60	2.00-6.00	0.13-0.15	Low	0.5-1.0	0.20	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
169:											
Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-11	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	11-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
170:											
Spang-----	0-6	10-20	1.25-1.45	2.00-6.00	0.13-0.16	Low	1.0-3.0	0.20	0.20	5	3
	6-17	10-20	1.35-1.60	2.00-6.00	0.13-0.15	Low	1.0-2.0	0.20	---	---	---
	17-60	8-18	1.35-1.60	2.00-6.00	0.13-0.15	Low	0.5-1.0	0.20	---	---	---
Birney, moist---	0-7	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	7-15	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	15-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-13	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	13-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
171:											
Spinekop-----	0-11	27-40	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.32	0.32	5	7
	11-17	27-35	1.30-1.50	0.20-0.60	0.16-0.20	Moderate	0.5-1.0	0.32	---	---	---
	17-21	18-35	1.30-1.50	0.20-0.60	0.15-0.18	Moderate	0.5-1.0	0.37	---	---	---
	21-33	18-35	1.30-1.50	0.20-0.60	0.15-0.18	Low	0.0-0.5	0.37	---	---	---
	33-60	18-30	1.35-1.55	0.20-0.60	0.13-0.16	Low	0.0-0.5	0.37	---	---	---
172:											
Straw-----	0-9	10-27	1.05-1.25	0.60-2.00	0.18-0.22	Low	2.0-4.0	0.32	0.32	5	5
	9-44	18-35	1.25-1.50	0.60-2.00	0.14-0.18	Low	1.0-3.0	0.37	---	---	---
	44-60	18-35	1.25-1.50	0.60-2.00	0.16-0.20	Low	0.5-1.0	0.37	---	---	---
Canburn-----	0-6	18-27	1.05-1.25	0.60-2.00	0.17-0.20	Low	4.0-6.0	0.28	0.28	5	6
	6-27	18-27	1.10-1.30	0.20-0.60	0.16-0.20	Low	2.0-4.0	0.37	---	---	---
	27-41	18-27	1.20-1.45	0.20-0.60	0.17-0.20	Low	1.0-2.0	0.37	---	---	---
	41-60	10-20	1.30-1.55	0.60-2.00	0.14-0.17	Low	0.5-1.0	0.37	---	---	---
173:											
Sumatra-----	0-2	27-35	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.32	0.32	5	4L
	2-9	27-35	1.25-1.50	0.20-0.60	0.11-0.13	Moderate	0.5-1.0	0.32	---	---	---
	9-60	27-35	1.30-1.55	0.20-0.60	0.04-0.05	Moderate	0.0-0.5	0.32	---	---	---
174:											
Sumatra-----	0-4	27-35	1.20-1.40	0.20-0.60	0.16-0.20	Moderate	1.0-2.0	0.32	0.32	5	4L
	4-8	27-35	1.25-1.50	0.20-0.60	0.11-0.13	Moderate	0.5-1.0	0.32	---	---	---
	8-60	27-35	1.30-1.55	0.20-0.60	0.04-0.05	Moderate	0.0-0.5	0.32	---	---	---
Rock outcrop.											
175:											
Tinsley-----	0-4	5-10	1.20-1.45	2.00-6.00	0.07-0.09	Low	0.7-2.0	0.10	0.20	5	3
	4-60	0-10	1.45-1.65	6.00-20.00	0.01-0.02	Low	0.0-0.5	0.05	---	---	---
176:											
Tinsley-----	0-4	5-10	1.20-1.45	2.00-6.00	0.07-0.09	Low	0.7-2.0	0.10	0.20	5	3
	4-60	0-10	1.45-1.65	6.00-20.00	0.01-0.02	Low	0.0-0.5	0.05	---	---	---
Armells-----	0-4	10-22	1.25-1.45	0.60-2.00	0.12-0.15	Low	1.0-2.0	0.20	0.37	5	4L
	4-60	15-27	1.40-1.65	0.60-2.00	0.06-0.08	Low	---	0.10	---	---	---
Yamac-----	0-5	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	5-12	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
197:											
Yamac-----	0-5	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	5-14	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	14-45	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	45-60	5-15	1.35-1.60	2.00-6.00	0.11-0.15	Low	0.0-0.5	0.20	---	---	---
198:											
Yamac-----	0-5	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	5-13	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	13-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
199:											
Yamac-----	0-6	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	6-15	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	15-43	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	43-60	5-15	1.35-1.60	2.00-6.00	0.11-0.15	Low	0.0-0.5	0.20	---	---	---
200:											
Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-11	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	11-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Abor-----	0-3	40-55	1.20-1.40	0.20-0.60	0.14-0.18	High	1.0-2.0	0.37	0.37	3	4
	3-28	35-60	1.30-1.55	0.00-0.06	0.14-0.16	High	0.5-1.0	0.37	---	---	---
	28-60	---	---	---	---	---	---	---	---	---	---
201:											
Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-12	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Birney-----	0-5	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	5-11	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	11-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
202:											
Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-10	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	10-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Birney-----	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-12	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	12-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
203:											
Yamac-----	0-3	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	3-12	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Birney-----	0-3	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	3-10	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	10-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---
204:											
Yamac-----	0-3	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	3-11	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	11-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Birney-----	0-4	10-25	1.15-1.35	0.60-2.00	0.12-0.14	Low	2.0-4.0	0.17	0.37	3	5
	4-12	10-25	1.30-1.50	0.60-2.00	0.12-0.14	Low	1.0-2.0	0.20	---	---	---
	12-60	10-25	1.40-1.60	0.60-2.00	0.05-0.06	Low	0.0-0.5	0.10	---	---	---

PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group
								K	Kf	T	
	In	Pct	g/cc	In/hr	In/in		Pct				
204: Cabbart-----	0-3	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	3-16	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
205: Yamac-----	0-3	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	3-13	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	13-42	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	42-60	5-15	1.35-1.60	2.00-6.00	0.11-0.15	Low	0.0-0.5	0.20	---	---	---
Busby-----	0-5	10-18	1.30-1.50	2.00-6.00	0.12-0.16	Low	1.0-2.0	0.20	0.20	5	3
	5-11	10-18	1.40-1.60	2.00-6.00	0.12-0.16	Low	0.5-1.0	0.32	---	---	---
	11-60	10-18	1.40-1.60	2.00-6.00	0.12-0.15	Low	0.0-0.5	0.20	---	---	---
206: Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-10	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	10-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Busby-----	0-5	10-18	1.30-1.50	2.00-6.00	0.12-0.16	Low	1.0-2.0	0.20	0.20	5	3
	5-11	10-18	1.40-1.60	2.00-6.00	0.12-0.16	Low	0.5-1.0	0.32	---	---	---
	11-60	10-18	1.40-1.60	2.00-6.00	0.12-0.15	Low	0.0-0.5	0.20	---	---	---
207: Yamac-----	0-5	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	5-11	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	11-42	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	42-60	5-15	1.35-1.60	2.00-6.00	0.11-0.15	Low	0.0-0.5	0.20	---	---	---
Cabbart-----	0-3	18-27	1.20-1.40	0.60-2.00	0.17-0.21	Low	1.0-2.0	0.37	0.37	2	4L
	3-18	18-35	1.20-1.40	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.37	---	---	---
	18-60	---	---	---	---	---	---	---	---	---	---
208: Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-15	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	15-45	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
	45-60	5-15	1.35-1.60	2.00-6.00	0.11-0.15	Low	0.0-0.5	0.20	---	---	---
Delpoint-----	0-6	20-27	1.15-1.35	0.60-2.00	0.16-0.20	Low	1.0-3.0	0.37	0.37	3	6
	6-28	18-35	1.30-1.50	0.60-2.00	0.14-0.18	Low	0.5-1.0	0.37	---	---	---
	28-60	---	---	---	---	---	---	---	---	---	---
209: Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-14	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	14-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Redcreek-----	0-4	7-18	1.25-1.45	2.00-6.00	0.16-0.20	Low	0.5-2.0	0.43	0.43	1	4L
	4-16	7-18	1.30-1.55	2.00-6.00	0.14-0.18	Low	0.5-1.0	0.37	---	---	---
	16-60	---	---	---	---	---	---	---	---	---	---
210: Yamac-----	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	1.0-2.0	0.37	0.37	5	6
	4-12	18-30	1.25-1.45	0.60-2.00	0.14-0.18	Moderate	0.5-1.0	0.37	---	---	---
	12-60	18-30	1.30-1.50	0.60-2.00	0.14-0.18	Moderate	0.0-0.5	0.37	---	---	---
Rominell-----	0-7	27-32	1.15-1.35	0.20-0.60	0.15-0.18	Low	1.0-3.0	0.37	0.37	5	6
	7-14	20-35	1.35-1.60	0.06-0.20	0.11-0.15	Moderate	0.5-1.0	0.37	---	---	---
	14-60	10-35	1.35-1.60	0.06-0.20	0.10-0.14	Low	0.0-0.5	0.37	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
15: Belfield-----	0-7	27-35	25.0-30.0	6.1-7.3	---	---	---	---
	7-16	35-45	25.0-30.0	6.6-7.8	---	---	0-2	13-20
	16-60	27-45	20.0-25.0	7.9-9.0	5-15	---	8-16	13-20
16: Birney-----	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-11	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	11-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
17: Birney-----	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-12	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	12-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Cabbart-----	0-4	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	4-12	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	12-60	---	---	---	---	---	---	---
18: Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-11	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	11-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Coers-----	0-4	18-25	20.0-25.0	6.6-8.4	---	---	---	---
	4-19	18-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	19-38	18-27	15.0-20.0	7.9-9.0	5-15	---	0-4	---
	38-60	10-27	10.0-15.0	7.9-9.0	5-10	---	0-4	---
Kirby-----	0-5	10-22	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	5-18	8-22	5.0-10.0	7.9-8.4	5-15	---	0-2	---
	18-60	0-1	---	7.9-8.4	1-5	---	0-2	---
19: Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-12	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	12-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Kirby-----	0-6	10-22	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	6-18	8-22	5.0-10.0	7.9-8.4	5-15	---	0-2	---
	18-60	0-1	---	7.9-8.4	1-5	---	0-2	---
20: Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-11	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	11-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Kirby-----	0-4	10-22	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	4-12	8-22	5.0-10.0	7.9-8.4	5-15	---	0-2	---
	12-60	0-1	---	7.9-8.4	1-5	---	0-2	---
Cabbart-----	0-2	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	2-15	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	15-60	---	---	---	---	---	---	---
21: Birney-----	0-3	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	3-10	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	10-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Armells-----	0-4	10-22	10.0-15.0	7.4-8.4	5-10	---	---	---
	4-60	15-27	10.0-15.0	7.9-8.4	5-15	---	0-2	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
21: Cabbart-----	0-2	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	2-12	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	12-60	---	---	---	---	---	---	---
22: Birney, moist---	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-14	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	14-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Birney-----	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-10	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	10-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Kirby-----	0-4	10-22	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	4-12	8-22	5.0-10.0	7.9-8.4	5-15	---	0-2	---
	12-60	0-1	---	7.9-8.4	1-5	---	0-2	---
23: Bitton-----	0-6	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	6-14	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	14-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Doney-----	0-4	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-27	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	27-60	---	---	---	---	---	---	---
Ringling-----	0-7	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	7-17	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	17-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
24: Bitton-----	0-4	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-10	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	10-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Doney-----	0-3	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	3-25	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	25-60	---	---	---	---	---	---	---
Ringling-----	0-5	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	5-15	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	15-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
25: Bitton-----	0-4	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-15	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	15-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Ringling-----	0-5	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	5-17	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	17-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
26: Bitton-----	0-5	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	5-17	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	17-30	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
	30-60	10-25	5.0-10.0	7.4-8.4	5-15	---	0-2	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
26:								
Shambo-----	0-6	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	6-24	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	24-42	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-4
	42-60	10-20	5.0-10.0	7.4-9.0	5-10	---	---	1-4
27:								
Bitton-----	0-5	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	5-17	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	17-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Twin Creek-----	0-6	20-27	20.0-25.0	6.6-7.8	---	---	0-2	---
	6-24	20-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	24-60	20-32	10.0-15.0	7.9-9.0	25-35	---	0-2	---
28:								
Bitton-----	0-6	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	6-19	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	19-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Twin Creek-----	0-6	20-27	20.0-25.0	6.6-7.8	---	---	0-2	---
	6-22	20-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	22-60	20-32	10.0-15.0	7.9-9.0	25-35	---	0-2	---
Ringling-----	0-5	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	5-12	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	12-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
29:								
Bitton-----	0-4	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-10	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	10-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Doney-----	0-5	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	5-26	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	26-60	---	---	---	---	---	---	---
Cabba-----	0-3	10-27	10.0-15.0	7.4-9.0	0-10	---	0-4	---
	3-12	20-35	5.0-10.0	7.4-9.0	2-15	---	0-8	---
	12-60	---	---	---	---	---	---	---
30:								
Bitton-----	0-8	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	8-18	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	18-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Lamedeer-----	0-6	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	6-20	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	20-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Ringling-----	0-5	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	5-11	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	11-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
31:								
Bitton-----	0-5	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	5-13	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	13-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Lamedeer-----	0-6	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	6-18	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	18-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
55: Rock outcrop.								
56: Cambeth-----	0-5	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	5-12	18-35	15.0-20.0	7.4-8.4	0-10	---	0-2	---
	12-36	18-35	10.0-15.0	7.9-9.0	10-25	---	0-4	---
	36-60	---	---	---	---	---	---	---
57: Cambeth-----	0-4	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	4-20	18-35	15.0-20.0	7.4-8.4	0-10	---	0-2	---
	20-26	18-35	10.0-15.0	7.9-9.0	10-25	---	0-4	---
	26-60	---	---	---	---	---	---	---
58: Cambeth-----	0-5	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	5-22	18-35	15.0-20.0	7.4-8.4	0-10	---	0-2	---
	22-30	18-35	10.0-15.0	7.9-9.0	10-25	---	0-4	---
	30-60	---	---	---	---	---	---	---
	Cabbart-----	0-7	18-27	10.0-15.0	7.4-9.0	1-10	0-4	---
		7-12	18-27	5.0-10.0	7.4-9.0	10-15	0-4	1-5
		12-60	---	---	---	---	---	---
59: Cambeth-----	0-3	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	3-10	18-35	15.0-20.0	7.4-8.4	0-10	---	0-2	---
	10-32	18-35	10.0-15.0	7.9-9.0	10-25	---	0-4	---
	32-60	---	---	---	---	---	---	---
	Cabbart-----	0-3	18-27	10.0-15.0	7.4-9.0	1-10	0-4	---
		3-14	18-27	5.0-10.0	7.4-9.0	10-15	0-4	1-5
		14-60	---	---	---	---	---	---
60: Cambeth-----	0-3	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	3-10	18-35	15.0-20.0	7.4-8.4	0-10	---	0-2	---
	10-27	18-35	10.0-15.0	7.9-9.0	10-25	---	0-4	---
	27-60	---	---	---	---	---	---	---
	Niler-----	0-4	27-35	15.0-20.0	7.9-8.4	5-10	0-4	---
		4-14	27-35	10.0-20.0	7.9-8.4	1-10	1-5	5-10
		14-60	---	---	---	---	---	---
61: Castner-----	0-9	10-18	15.0-20.0	6.6-8.4	---	---	---	---
	9-16	10-18	10.0-15.0	7.4-8.4	3-15	---	0-2	---
	16-60	---	---	---	---	---	---	---
	Shambo-----	0-6	10-27	15.0-20.0	6.6-7.8	---	---	---
		6-21	18-35	10.0-15.0	6.6-8.4	---	---	---
		21-60	18-35	10.0-15.0	7.4-9.0	10-15	---	1-4
62: Chinook-----	0-14	5-18	10.0-15.0	6.6-8.4	---	---	0-2	---
	14-35	5-18	5.0-10.0	7.4-8.4	3-10	---	0-2	---
	35-60	5-18	5.0-10.0	7.4-9.0	5-15	---	0-2	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
63:								
Chinook-----	0-3	5-15	10.0-15.0	6.6-7.8	---	---	---	---
	3-12	5-15	10.0-15.0	7.4-8.4	---	---	0-2	---
	12-40	5-15	10.0-15.0	7.9-8.4	3-15	---	0-2	---
	40-52	5-18	5.0-10.0	9.0-9.6	1-5	---	4-8	25-40
	52-60	15-27	10.0-15.0	9.0-9.6	1-5	---	4-8	25-40
64:								
Coers-----	0-5	18-25	20.0-25.0	6.6-8.4	---	---	---	---
	5-22	18-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	22-60	18-27	15.0-20.0	7.9-9.0	5-15	---	0-4	---
65:								
Coers-----	0-4	18-25	20.0-25.0	6.6-8.4	---	---	---	---
	4-20	18-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	20-60	18-27	15.0-20.0	7.9-9.0	5-15	---	0-4	---
Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-13	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	13-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
66:								
Coers-----	0-4	18-25	20.0-25.0	6.6-8.4	---	---	---	---
	4-24	18-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	24-60	18-27	15.0-20.0	7.9-9.0	5-15	---	0-4	---
Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-14	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	14-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-4
67:								
Creed-----	0-4	10-15	15.0-20.0	6.1-7.3	---	---	---	---
	4-7	20-30	15.0-20.0	6.6-7.8	---	---	---	---
	7-16	35-40	20.0-25.0	7.9-8.4	---	---	2-4	8-13
	16-41	27-35	20.0-25.0	7.9-9.0	5-15	1-5	4-16	13-25
	41-60	2-8	1.0-5.0	7.9-9.0	5-10	---	4-8	---
68:								
Davidell-----	0-8	15-24	10.0-15.0	6.6-7.8	---	---	---	---
	8-30	27-32	10.0-15.0	7.9-9.0	5-15	---	4-8	8-15
	30-60	24-30	10.0-15.0	7.9-9.0	5-10	---	8-16	15-30
69:								
Davidell-----	0-7	27-33	15.0-20.0	6.6-7.8	---	---	---	---
	7-16	27-35	15.0-20.0	7.4-8.4	---	---	0-2	1-5
	16-20	27-32	10.0-15.0	7.9-9.0	5-15	---	4-8	8-15
	20-60	24-30	10.0-15.0	7.9-9.0	5-10	---	8-16	15-30
70:								
Davidell-----	0-7	27-33	15.0-20.0	6.6-7.8	---	---	---	---
	7-17	27-35	15.0-20.0	7.4-8.4	---	---	0-2	1-5
	17-28	27-32	10.0-15.0	7.9-9.0	5-15	---	4-8	8-15
	28-60	24-30	10.0-15.0	7.9-9.0	5-10	---	8-16	15-30
Antwerp-----	0-7	27-33	20.0-25.0	7.9-9.6	1-5	---	0-8	10-30
	7-24	20-35	15.0-25.0	7.9-9.0	5-10	---	8-16	15-40
	24-60	20-35	10.0-20.0	7.9-9.0	5-10	---	8-16	15-30

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
77:								
Delpoint, moist-	0-4	20-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-34	18-35	15.0-20.0	6.6-8.4	0-10	---	---	---
	34-60	---	---	---	---	---	---	---
Delpoint-----	0-2	20-27	15.0-20.0	6.6-8.4	---	---	0-4	---
	2-28	18-35	15.0-20.0	6.6-8.4	0-10	---	0-4	---
	28-60	---	---	---	---	---	---	---
Cabbart-----	0-2	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	2-14	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	14-60	---	---	---	---	---	---	---
78:								
Doney-----	0-6	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	6-30	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	30-60	---	---	---	---	---	---	---
Bitton-----	0-5	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	5-20	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	20-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Cabba-----	0-4	10-27	10.0-15.0	7.4-9.0	0-10	---	0-4	---
	4-16	20-35	5.0-10.0	7.4-9.0	2-15	---	2-8	---
	16-60	---	---	---	---	---	---	---
79:								
Evanston-----	0-7	15-27	15.0-20.0	6.6-7.8	---	---	---	---
	7-28	27-35	20.0-25.0	7.4-8.4	1-15	---	---	---
	28-60	15-30	20.0-25.0	7.9-9.0	5-15	---	0-2	---
80:								
Fergus variant--	0-4	18-23	20.0-25.0	6.6-7.8	---	---	---	---
	4-9	18-23	20.0-25.0	6.6-7.8	---	---	---	---
	9-28	27-35	25.0-30.0	7.4-8.4	---	---	0-2	---
	28-32	20-27	15.0-20.0	7.9-8.4	5-15	---	0-2	---
	32-60	20-27	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Twin Creek-----	0-6	20-27	20.0-25.0	6.6-7.8	---	---	0-2	---
	6-24	20-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	24-60	20-32	10.0-15.0	7.9-9.0	25-35	---	0-2	---
81:								
Floweree-----	0-7	18-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	7-21	20-35	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	21-40	20-35	10.0-15.0	7.9-9.0	5-15	---	2-4	1-5
	40-60	20-35	10.0-15.0	7.9-9.0	5-15	---	2-4	1-5
82:								
Floweree-----	0-7	18-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	7-19	20-35	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	19-60	20-35	10.0-15.0	7.9-9.0	5-15	---	2-4	1-5
83:								
Floweree-----	0-6	18-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	6-16	20-35	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	16-60	20-35	10.0-15.0	7.9-9.0	5-15	---	2-4	1-5
Vanstel-----	0-4	14-25	10.0-15.0	6.6-7.8	---	---	---	---
	4-22	25-35	15.0-20.0	7.4-8.4	---	---	---	---
	22-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
84: Fluventic Haploborolls. Typic Fluvaquents.								
85: Forelle-----	0-4	20-27	15.0-20.0	6.6-7.8	---	---	---	---
	4-32	25-35	20.0-25.0	7.4-8.4	---	---	---	---
	32-60	18-30	15.0-20.0	7.9-9.0	5-15	---	0-2	---
86: Forelle-----	0-6	20-27	15.0-20.0	6.6-7.8	---	---	---	---
	6-22	25-35	20.0-25.0	7.4-8.4	---	---	---	---
	22-60	18-30	15.0-20.0	7.9-9.0	5-15	---	0-2	---
Gerdrum-----	0-7	27-40	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-18	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	18-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
87: Galbreth-----	0-7	20-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	7-13	20-30	10.0-20.0	7.4-8.4	---	---	0-2	---
	13-60	---	---	---	---	---	---	---
88: Gerdrum-----	0-7	27-40	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-18	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	18-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
89: Gerdrum-----	0-7	27-40	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-23	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	23-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
90: Gerdrum-----	0-7	27-40	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-15	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	15-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
Kobar-----	0-3	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	3-27	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	27-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
91: Gerdrum-----	0-7	27-40	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-19	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	19-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
Kobar-----	0-4	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	4-19	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	19-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
92: Gerdrum-----	0-7	40-50	25.0-30.0	6.6-7.8	---	---	0-2	---
	7-22	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	22-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
Marvan-----	0-3	40-60	25.0-30.0	7.4-8.4	1-5	---	0-4	0-4
	3-28	45-60	25.0-30.0	7.9-9.0	1-10	---	2-8	4-13
	28-60	45-60	25.0-30.0	7.9-9.0	1-15	1-5	4-16	13-38

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
93:								
Gerdrum-----	0-7	40-50	25.0-30.0	6.6-7.8	---	---	0-2	---
	7-23	35-55	25.0-35.0	7.4-9.0	0-15	---	1-8	10-20
	23-60	30-50	20.0-25.0	7.9-9.0	5-15	1-5	8-16	13-30
Vanda-----	0-7	30-60	25.0-35.0	7.8-9.6	1-5	---	2-8	13-30
	7-60	35-60	20.0-30.0	7.8-9.6	1-5	1-5	8-25	13-30
94:								
Gerdrum-----	0-6	10-15	15.0-20.0	6.6-7.8	---	---	0-2	---
	6-24	35-50	20.0-25.0	7.4-7.8	5-15	---	4-8	10-20
	24-41	30-50	20.0-25.0	7.9-8.4	5-10	---	8-16	13-30
	41-60	---	---	---	---	---	---	---
Volborg-----	0-1	40-50	30.0-35.0	4.5-6.5	---	---	0-4	5-13
	1-12	35-50	30.0-35.0	3.6-5.5	---	---	8-16	5-13
	12-60	---	---	---	---	---	---	---
95:								
Glendive-----	0-4	10-20	10.0-15.0	6.6-8.4	0-5	---	0-4	---
	4-17	5-18	10.0-15.0	7.4-8.4	2-10	---	0-4	---
	17-60	5-18	10.0-15.0	7.4-8.4	5-10	---	2-8	---
96:								
Hanly-----	0-7	10-20	15.0-20.0	7.4-8.4	1-5	---	---	---
	7-60	5-10	5.0-10.0	7.4-8.4	1-5	---	---	---
Glendive-----	0-8	10-20	10.0-15.0	6.6-8.4	1-5	---	0-4	---
	8-60	5-18	10.0-15.0	7.4-8.4	2-10	---	2-8	---
97:								
Harlem-----	0-8	27-40	20.0-25.0	7.4-8.4	1-5	---	2-4	---
	8-60	35-60	25.0-30.0	7.4-8.4	5-10	---	2-4	---
98:								
Harlem-----	0-10	40-50	20.0-25.0	7.4-8.4	1-5	---	2-4	---
	10-43	35-60	25.0-30.0	7.4-8.4	5-10	---	2-4	---
	43-60	15-35	15.0-20.0	7.9-9.0	5-10	---	4-8	---
99:								
Havre-----	0-6	15-27	15.0-20.0	7.4-8.4	1-5	---	0-2	---
	6-60	18-35	15.0-25.0	7.4-9.0	1-10	---	0-4	---
100:								
Havre-----	0-12	10-22	15.0-20.0	7.4-8.4	1-5	---	0-2	---
	12-60	18-30	15.0-25.0	7.4-8.4	1-10	---	0-4	---
101:								
Havre-----	0-10	27-35	20.0-25.0	7.4-8.4	1-5	---	0-2	---
	10-60	18-30	15.0-25.0	7.4-8.4	1-10	---	0-4	---
102:								
Havre-----	0-10	27-40	20.0-25.0	7.4-8.4	1-5	---	0-2	---
	10-60	18-32	15.0-20.0	7.4-8.4	1-10	---	0-4	---
103:								
Havre-----	0-12	27-40	20.0-25.0	7.4-9.0	1-5	---	8-16	0-4
	12-60	18-35	15.0-20.0	7.4-9.0	1-10	---	8-16	0-13
104:								
Havre-----	0-5	10-22	15.0-20.0	7.4-8.4	1-5	---	0-2	---
	5-60	18-30	15.0-25.0	7.4-8.4	1-10	---	0-4	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
104:								
Harlem-----	0-5	27-40	20.0-25.0	7.4-8.4	1-5	---	2-4	---
	5-60	35-60	25.0-30.0	7.4-8.4	5-10	---	2-4	---
Glendive-----	0-6	5-15	10.0-15.0	6.6-8.4	1-5	---	0-4	---
	6-60	5-18	10.0-15.0	7.4-8.4	2-10	---	0-4	---
105:								
Ivanell-----	0-3	18-27	15.0-20.0	6.6-7.8	---	---	---	---
	3-7	27-35	15.0-20.0	7.4-8.4	---	---	0-2	---
	7-22	27-35	10.0-15.0	7.9-9.0	5-15	---	0-4	5-10
	22-37	27-35	10.0-15.0	7.4-9.0	5-15	---	8-16	10-25
	37-60	---	---	---	---	---	---	---
106:								
Ivanell-----	0-7	27-35	15.0-20.0	6.6-7.8	---	---	---	---
	7-16	27-35	10.0-15.0	7.9-9.0	5-15	---	0-4	5-10
	16-30	27-35	10.0-15.0	7.4-9.0	5-15	---	8-16	10-25
	30-60	---	---	---	---	---	---	---
Davidell-----	0-4	15-24	10.0-15.0	6.6-7.8	---	---	---	---
	4-9	27-35	15.0-20.0	7.4-8.4	---	---	0-2	1-5
	9-25	27-32	10.0-15.0	7.9-9.0	5-15	---	4-8	8-15
	25-60	24-30	10.0-15.0	7.9-9.0	5-10	---	8-16	15-30
107:								
Ivanell-----	0-7	27-35	15.0-20.0	6.6-7.8	---	---	---	---
	7-12	27-35	15.0-20.0	7.4-8.4	---	---	0-2	---
	12-17	27-35	10.0-15.0	7.9-9.0	5-15	---	0-4	5-10
	17-36	27-35	10.0-15.0	7.4-9.0	5-15	---	8-16	10-25
	36-60	---	---	---	---	---	---	---
Niler-----	0-2	27-35	15.0-20.0	7.9-8.4	5-10	---	0-4	---
	2-16	27-35	10.0-20.0	7.9-8.4	1-10	1-5	2-4	5-10
	16-60	---	---	---	---	---	---	---
108:								
Kirby-----	0-3	10-22	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	3-11	8-22	5.0-10.0	7.9-8.4	5-15	---	0-2	---
	11-60	0-1	---	7.9-8.4	1-5	---	0-2	---
Cabbart-----	0-2	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	2-11	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	11-60	---	---	---	---	---	---	---
Rock outcrop.								
109:								
Kobar-----	0-5	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	5-22	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	22-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
110:								
Kobar-----	0-7	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	7-23	35-45	20.0-25.0	7.4-8.4	5-10	---	0-2	5-10
	23-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
111:								
Kobar-----	0-4	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	4-15	35-45	20.0-25.0	7.4-8.4	5-10	---	0-2	5-10
	15-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
112: Kobar-----	0-4	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	4-14	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	14-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
113: Kobar-----	0-6	40-45	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	6-23	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	23-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
114: Kobar-----	0-11	40-45	25.0-30.0	7.4-8.4	---	---	0-4	---
	11-18	35-45	20.0-25.0	7.4-8.4	5-10	---	0-4	3-10
	18-40	35-45	20.0-25.0	7.4-8.4	5-15	---	0-4	8-13
	40-60	27-40	15.0-20.0	7.4-8.4	5-10	1-5	0-4	8-13
115: Kobar-----	0-4	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	4-15	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	15-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13
Cabbart-----	0-3	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	3-16	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	16-60	---	---	---	---	---	---	---
Yawdim-----	0-2	27-40	20.0-25.0	6.6-7.8	---	---	---	---
	2-12	35-50	20.0-25.0	7.4-8.4	5-10	---	---	---
	12-60	---	---	---	---	---	---	---
116: Kremlin-----	0-10	18-27	15.0-20.0	6.1-7.8	---	---	---	---
	10-22	18-30	10.0-15.0	6.6-7.8	---	---	---	---
	22-36	18-30	10.0-15.0	7.4-8.4	5-15	---	0-2	---
	36-60	18-30	5.0-10.0	7.4-9.0	3-12	---	0-4	---
117: Kremlin-----	0-8	18-27	15.0-20.0	6.1-7.8	---	---	---	---
	8-13	18-30	10.0-15.0	6.6-7.8	---	---	---	---
	13-30	18-30	10.0-15.0	7.4-8.4	5-15	---	0-2	---
	30-60	18-30	5.0-10.0	7.4-9.0	3-12	---	0-4	---
118: Lamedeer-----	0-8	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	8-20	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	20-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Lamedeer, dry---	0-7	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	7-13	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	13-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Ringling-----	0-7	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	7-15	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	15-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
119: Lamedeer-----	0-6	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	6-20	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	20-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Twin Creek-----	0-5	20-27	20.0-25.0	6.6-7.8	---	---	0-2	---
	5-33	20-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	33-60	20-32	10.0-15.0	7.9-9.0	25-35	---	0-2	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
119: Ringling-----	0-5	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	5-17	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	17-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
120: Lamedeer-----	0-7	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	7-17	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	17-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Twin Creek-----	0-7	20-27	20.0-25.0	6.6-7.8	---	---	0-2	---
	7-31	20-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	31-60	20-32	10.0-15.0	7.9-9.0	25-35	---	0-2	---
Ringling-----	0-7	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	7-17	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	17-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
121: Lamedeer-----	0-7	12-23	20.0-25.0	6.1-7.3	---	---	---	---
	7-21	15-25	20.0-25.0	6.6-7.8	---	---	---	---
	21-60	8-20	15.0-20.0	7.4-8.4	5-15	---	0-2	---
Bitton-----	0-7	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	7-14	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	14-60	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
Ringling-----	0-4	10-25	15.0-20.0	6.6-7.8	---	---	---	---
	4-13	10-25	10.0-15.0	6.6-7.8	---	---	---	---
	13-60	0-5	0.0-5.0	7.4-8.4	5-10	---	---	---
122: Lihen-----	0-7	10-20	10.0-15.0	6.1-8.4	---	---	---	---
	7-60	0-10	1.0-5.0	7.4-8.4	0-15	---	0-2	---
123: Lonna-----	0-7	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	7-22	18-35	10.0-15.0	6.6-8.4	0-10	---	0-2	---
	22-60	18-35	10.0-15.0	7.9-9.0	5-15	---	2-8	1-13
124: Lonna-----	0-6	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	6-12	18-35	10.0-15.0	6.6-8.4	0-10	---	0-2	---
	12-60	18-35	10.0-15.0	7.9-9.0	5-15	---	2-8	1-13
125: Lonna-----	0-4	18-27	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	4-12	18-35	10.0-15.0	6.6-8.4	0-10	---	0-2	---
	12-38	18-35	10.0-15.0	7.9-9.0	5-15	---	2-8	1-13
	38-60	10-35	5.0-15.0	7.9-9.0	5-15	---	2-16	10-20
126: Lonna-----	0-4	27-35	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	4-22	18-35	10.0-15.0	6.6-8.4	0-10	---	0-2	---
	22-38	18-35	10.0-15.0	7.9-9.0	5-15	---	2-8	1-13
	38-60	10-35	5.0-15.0	7.9-9.0	5-15	---	2-16	10-20
127: Lonna-----	0-3	27-35	15.0-20.0	6.6-8.4	0-10	---	0-2	---
	3-18	18-35	10.0-15.0	6.6-8.4	0-10	---	0-2	---
	18-60	18-35	10.0-15.0	7.9-9.0	5-15	---	2-8	1-13

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
149: Yawdim-----	0-3	40-50	25.0-30.0	6.6-7.8	---	---	---	---
	3-16	35-50	20.0-25.0	7.4-8.4	5-10	---	---	---
	16-60	---	---	---	---	---	---	---
150: Niler-----	0-3	27-35	15.0-20.0	7.9-8.4	5-10	---	0-4	---
	3-13	27-35	10.0-20.0	7.9-8.4	1-10	1-5	2-4	5-10
	13-60	---	---	---	---	---	---	---
151: Orinoco-----	0-7	30-40	25.0-30.0	7.4-8.4	5-10	---	---	---
	7-17	35-50	20.0-25.0	7.9-8.4	5-15	1-5	4-16	5-30
	17-26	35-50	20.0-25.0	7.4-8.4	1-5	---	8-16	15-30
	26-60	---	---	---	---	---	---	---
	Yawdim-----	0-2	27-40	20.0-25.0	6.6-7.8	---	---	---
	2-18	35-50	20.0-25.0	7.4-8.4	5-10	---	---	---
	18-60	---	---	---	---	---	---	---
152: Rahworth-----	0-3	20-25	10.0-15.0	7.4-8.4	---	---	0-2	---
	3-8	25-32	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	8-23	30-35	10.0-15.0	7.9-8.4	5-15	---	2-4	10-25
	23-60	30-35	10.0-15.0	7.9-8.4	---	0-2	16-30	25-45
153: Rahworth-----	0-7	27-30	15.0-20.0	7.4-8.4	---	---	0-2	---
	7-11	25-32	10.0-15.0	7.4-8.4	1-5	---	0-2	---
	11-23	30-35	10.0-15.0	7.9-8.4	5-15	---	2-4	10-25
	23-60	30-35	10.0-15.0	7.9-8.4	---	0-2	16-30	25-45
	Davidell-----	0-6	15-24	15.0-20.0	6.6-7.8	---	---	---
	6-11	27-35	15.0-20.0	7.4-8.4	---	---	0-2	1-5
	11-32	27-32	10.0-15.0	7.9-9.0	5-15	---	4-8	8-15
	32-60	24-30	10.0-15.0	7.9-9.0	5-10	---	8-16	15-30
	Sumatra-----	0-3	27-35	10.0-15.0	7.9-8.4	5-15	---	0-4
	3-11	27-35	10.0-15.0	7.9-8.4	1-5	---	4-16	10-25
	11-60	27-35	10.0-15.0	7.9-8.4	---	---	16-30	25-45
154: Riverwash.								
155: Rock outcrop.								
156: Rominell-----	0-6	10-20	10.0-15.0	6.6-8.4	---	---	0-2	---
	6-13	20-35	15.0-20.0	8.4-9.6	---	---	2-8	13-60
	13-60	10-35	10.0-15.0	7.9-9.6	0-10	1-5	2-8	13-30
157: Sagedale-----	0-4	30-40	20.0-25.0	7.4-8.4	---	---	---	---
	4-16	32-45	20.0-25.0	7.4-8.4	---	---	0-2	---
	16-28	35-45	20.0-25.0	7.4-8.4	5-15	---	0-4	---
	28-60	35-45	20.0-25.0	7.4-9.0	5-10	1-7	0-4	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
158:								
Sagedale-----	0-4	30-40	20.0-25.0	7.4-8.4	---	---	---	---
	4-11	32-45	20.0-25.0	7.4-8.4	---	---	0-2	---
	11-30	35-45	20.0-25.0	7.4-8.4	5-15	---	0-4	---
	30-60	35-45	20.0-25.0	7.4-9.0	5-10	1-7	0-4	---
Cabba-----	0-3	10-27	10.0-15.0	7.4-9.0	0-10	---	0-4	---
	3-12	20-35	5.0-10.0	7.4-9.0	2-15	---	0-8	---
	12-60	---	---	---	---	---	---	---
Wayden-----	0-4	35-40	25.0-30.0	7.4-8.4	---	---	0-4	---
	4-11	35-50	25.0-35.0	7.4-8.4	5-10	---	0-8	---
	11-60	---	---	---	---	---	---	---
159:								
Savage-----	0-6	27-35	25.0-30.0	6.1-7.8	---	---	---	---
	6-15	35-50	30.0-35.0	6.1-8.4	---	---	0-4	---
	15-60	25-45	25.0-30.0	7.4-8.4	5-15	---	0-4	---
160:								
Savage-----	0-7	27-35	25.0-30.0	6.1-7.8	---	---	---	---
	7-17	35-50	30.0-35.0	6.1-8.4	---	---	0-4	---
	17-60	25-45	25.0-30.0	7.4-8.4	5-15	---	0-4	---
161:								
Shambo-----	0-7	10-27	15.0-20.0	6.6-7.3	---	---	---	---
	7-31	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	31-60	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
162:								
Shambo-----	0-6	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	6-26	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	26-42	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
	42-60	10-20	5.0-10.0	7.4-9.0	5-10	---	---	1-3
163:								
Shambo-----	0-5	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	5-22	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	22-38	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
	38-60	10-20	5.0-10.0	7.4-9.0	5-10	---	---	1-3
164:								
Shambo-----	0-6	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	6-21	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	21-45	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
	45-60	10-20	5.0-10.0	7.4-9.0	5-10	---	---	1-3
Bitton-----	0-4	15-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-17	15-27	15.0-20.0	7.4-8.4	---	---	0-2	---
	17-30	15-27	10.0-15.0	7.4-8.4	5-15	---	0-2	---
	30-60	10-25	5.0-10.0	7.4-8.4	5-15	---	0-2	---
Cabba-----	0-4	10-27	10.0-15.0	7.4-9.0	0-10	---	0-4	---
	4-16	20-35	5.0-10.0	7.4-9.0	2-15	---	0-8	---
	16-60	---	---	---	---	---	---	---
165:								
Shambo-----	0-4	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	4-16	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	16-60	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
165:								
Doney-----	0-4	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	4-36	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	36-60	---	---	---	---	---	---	---
166:								
Shambo-----	0-7	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	7-19	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	19-60	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
Doney-----	0-3	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	3-29	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	29-60	---	---	---	---	---	---	---
Cabba-----	0-4	10-27	10.0-15.0	7.4-9.0	0-10	---	0-4	---
	4-16	20-35	5.0-10.0	7.4-9.0	2-15	---	0-8	---
	16-60	---	---	---	---	---	---	---
167:								
Shambo-----	0-8	10-27	15.0-20.0	6.6-7.8	---	---	---	---
	8-20	18-35	10.0-15.0	6.6-8.4	---	---	---	---
	20-60	18-35	10.0-15.0	7.4-9.0	10-15	---	---	1-3
Doney-----	0-3	10-27	15.0-20.0	6.6-8.4	---	---	0-2	---
	3-27	18-30	10.0-15.0	7.9-9.0	5-15	---	2-4	---
	27-60	---	---	---	---	---	---	---
Sagedale-----	0-3	30-40	20.0-25.0	7.4-8.4	---	---	---	---
	3-15	32-45	20.0-25.0	7.4-8.4	---	---	0-2	---
	15-30	35-45	20.0-25.0	7.4-8.4	5-15	---	0-4	---
	30-60	35-45	20.0-25.0	7.4-9.0	5-10	1-7	0-4	---
168:								
Spang-----	0-6	10-20	10.0-15.0	6.1-7.3	---	---	---	---
	6-18	10-20	10.0-15.0	6.6-7.3	---	---	---	---
	18-42	8-18	5.0-10.0	6.6-8.4	---	---	0-2	---
	42-60	5-15	5.0-10.0	6.6-8.4	0-5	---	0-2	---
169:								
Spang-----	0-6	10-20	10.0-15.0	6.1-7.3	---	---	---	---
	6-16	10-20	10.0-15.0	6.6-7.3	---	---	---	---
	16-60	8-18	5.0-10.0	6.6-8.4	---	---	0-2	---
Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-11	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	11-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
170:								
Spang-----	0-6	10-20	10.0-15.0	6.1-7.3	---	---	---	---
	6-17	10-20	10.0-15.0	6.6-7.3	---	---	---	---
	17-60	8-18	5.0-10.0	6.6-8.4	---	---	0-2	---
Birney, moist---	0-7	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	7-15	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	15-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-13	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	13-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
192:								
Volborg-----	0-1	40-50	30.0-35.0	4.5-6.5	---	---	0-4	5-13
	1-11	35-50	30.0-35.0	3.6-5.5	---	---	8-16	5-13
	11-60	---	---	---	---	---	---	---
193:								
Volborg-----	0-1	40-50	30.0-35.0	4.5-6.5	---	---	0-4	5-13
	1-11	35-50	30.0-35.0	3.6-5.5	---	---	8-16	5-13
	11-60	---	---	---	---	---	---	---
Rock outcrop.								
194:								
Weingart-----	0-7	40-45	30.0-35.0	5.6-7.8	---	---	0-2	10-20
	7-17	40-60	30.0-35.0	6.5-9.6	---	---	2-8	10-30
	17-23	35-55	30.0-35.0	7.8-9.6	5-15	0-5	4-16	13-30
	23-60	---	---	---	---	---	---	---
195:								
Weingart-----	0-7	40-45	30.0-35.0	5.6-7.8	---	---	0-2	10-20
	7-16	40-60	30.0-35.0	6.5-9.6	---	---	2-8	10-30
	16-25	35-55	30.0-35.0	7.8-9.6	5-15	0-5	4-16	13-30
	25-60	---	---	---	---	---	---	---
Neldore-----	0-2	40-50	30.0-35.0	5.6-7.8	---	---	0-2	---
	2-17	40-60	30.0-35.0	5.6-7.8	---	---	0-4	---
	17-60	---	---	---	---	---	---	---
196:								
Weingart-----	0-7	27-40	30.0-35.0	5.6-7.8	---	---	0-2	10-20
	7-16	40-60	30.0-35.0	6.5-9.6	---	---	2-8	10-30
	16-25	35-55	30.0-35.0	7.8-9.6	5-15	0-5	4-16	13-30
	25-60	---	---	---	---	---	---	---
Niler-----	0-3	27-35	15.0-20.0	7.9-8.4	5-10	---	2-4	---
	3-13	27-35	10.0-20.0	7.9-8.4	1-10	1-5	2-4	5-10
	13-60	---	---	---	---	---	---	---
Rock outcrop.								
197:								
Yamac-----	0-5	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	5-14	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	14-45	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
	45-60	5-15	5.0-10.0	7.9-9.0	5-10	---	0-4	1-3
198:								
Yamac-----	0-5	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	5-13	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	13-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
199:								
Yamac-----	0-6	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	6-15	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	15-43	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
	43-60	5-15	5.0-10.0	7.9-9.0	5-15	---	0-4	1-3
200:								
Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-11	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	11-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
200: Abor-----	0-3	40-55	30.0-40.0	7.4-8.4	1-5	---	0-4	---
	3-28	35-60	25.0-40.0	7.4-9.0	0-15	0-5	0-4	---
	28-60	---	---	---	---	---	---	---
201: Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-12	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	12-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Birney-----	0-5	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	5-11	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	11-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
202: Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-10	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	10-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Birney-----	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-12	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	12-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
203: Yamac-----	0-3	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	3-12	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	12-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Birney-----	0-3	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	3-10	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	10-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
204: Yamac-----	0-3	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	3-11	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	11-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Birney-----	0-4	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	4-12	10-25	15.0-20.0	7.4-8.4	1-10	---	0-2	---
	12-60	10-25	10.0-15.0	7.9-9.0	5-15	---	0-4	---
Cabbart-----	0-3	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	3-16	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	16-60	---	---	---	---	---	---	---
205: Yamac-----	0-3	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	3-13	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	13-42	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
	42-60	5-15	5.0-10.0	7.9-9.0	5-15	---	0-4	1-3
Busby-----	0-5	10-18	10.0-15.0	7.4-8.4	---	---	---	---
	5-11	10-18	10.0-15.0	7.4-8.4	---	---	---	---
	11-60	10-18	5.0-15.0	7.9-8.4	2-15	---	0-2	---
206: Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-10	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	10-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3

CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation- exchange capacity	Soil reaction	Calcium carbonate equivalent	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
206:								
Busby-----	0-5	10-18	10.0-15.0	7.4-8.4	---	---	---	---
	5-11	10-18	10.0-15.0	7.4-8.4	---	---	---	---
	11-60	10-18	5.0-15.0	7.9-8.4	2-15	---	0-2	---
207:								
Yamac-----	0-5	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	5-11	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	11-42	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
	42-60	5-15	5.0-10.0	7.9-9.0	5-15	---	0-4	1-3
Cabbart-----	0-3	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	3-18	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	18-60	---	---	---	---	---	---	---
208:								
Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-15	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	15-45	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
	45-60	5-15	5.0-10.0	7.9-9.0	5-15	---	0-4	1-3
Delpoint-----	0-6	20-27	15.0-20.0	6.6-8.4	---	---	0-4	---
	6-28	18-35	15.0-20.0	6.6-8.4	0-10	---	0-4	---
	28-60	---	---	---	---	---	---	---
209:								
Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-14	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	14-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Redcreek-----	0-4	7-18	10.0-15.0	7.4-8.4	5-10	---	---	---
	4-16	7-18	10.0-15.0	7.4-8.4	5-10	---	0-4	---
	16-60	---	---	---	---	---	---	---
210:								
Yamac-----	0-4	18-27	15.0-20.0	6.6-8.4	---	---	---	---
	4-12	18-30	10.0-15.0	6.6-8.4	---	---	---	---
	12-60	18-30	10.0-15.0	7.9-9.0	5-15	---	0-4	1-3
Rominell-----	0-7	27-32	15.0-20.0	6.6-8.4	---	---	0-2	---
	7-14	20-35	15.0-20.0	8.4-9.6	---	---	2-8	13-60
	14-60	10-35	10.0-15.0	7.9-9.6	0-10	1-5	2-8	13-30
211:								
Yawdim-----	0-3	27-40	20.0-25.0	6.6-7.8	---	---	---	---
	3-14	35-50	20.0-25.0	7.4-8.4	5-10	---	---	---
	14-60	---	---	---	---	---	---	---
212:								
Yawdim-----	0-2	27-40	20.0-25.0	6.6-7.8	---	---	---	---
	2-10	35-50	20.0-25.0	7.4-8.4	5-10	---	---	---
	10-60	---	---	---	---	---	---	---
Cabbart-----	0-2	18-27	10.0-15.0	7.4-9.0	1-10	---	0-4	---
	2-12	18-35	5.0-10.0	7.4-9.0	10-15	---	0-4	1-5
	12-60	---	---	---	---	---	---	---
Kobar-----	0-4	27-40	25.0-30.0	6.6-8.4	---	---	0-2	1-3
	4-22	35-45	20.0-25.0	7.4-8.4	5-15	---	0-2	3-10
	22-60	35-45	20.0-25.0	7.9-9.0	5-15	1-5	0-4	8-13

WATER FEATURES

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					<u>Ft</u>				<u>Ft</u>
1: Abor-----	D	None	---	---	>6.0	---	---	---	---
2: Abor-----	D	None	---	---	>6.0	---	---	---	---
3: Abor-----	D	None	---	---	>6.0	---	---	---	---
Marvan-----	D	None	---	---	>6.0	---	---	---	---
4: Abor-----	D	None	---	---	>6.0	---	---	---	---
Neldore-----	D	None	---	---	>6.0	---	---	---	---
5: Absher-----	D	None	---	---	>6.0	---	---	---	---
Nobe-----	D	None	---	---	>6.0	---	---	---	---
6: Antwerp-----	C	None	---	---	>6.0	---	---	---	---
7: Armells-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
8: Armells-----	B	None	---	---	>6.0	---	---	---	---
Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
9: Armells-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
10: Armells-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
11: Assinniboine----	B	None	---	---	>6.0	---	---	---	---
12: Badland-----	---	None	---	---	---	---	---	---	---
13: Barvon-----	B	None	---	---	>6.0	---	---	---	---
Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Lamedeer, dry---	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
14: Barvon-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
15: Belfield-----	C	None	---	---	>6.0	---	---	---	---
16: Birney-----	B	None	---	---	>6.0	---	---	---	---
17: Birney-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
18: Birney-----	B	None	---	---	>6.0	---	---	---	---
Coers-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
19: Birney-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
20: Birney-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
21: Birney-----	B	None	---	---	>6.0	---	---	---	---
Armells-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
22: Birney, moist---	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
Kirby-----	A	None	---	---	>6.0	---	---	---	---
23: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
24: Bitton-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
24: Doney-----	C	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
25: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
26: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Shambo-----	B	None	---	---	>6.0	---	---	---	---
27: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
28: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
29: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
30: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
31: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
32: Bitton-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
33: Bonfri-----	C	None	---	---	>6.0	---	---	---	---
Bullock-----	D	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
34: Bonfri-----	C	None	---	---	>6.0	---	---	---	---
Galbreth-----	D	None	---	---	>6.0	---	---	---	---
35: Bonfri-----	C	None	---	---	>6.0	---	---	---	---
Marmarth-----	C	None	---	---	>6.0	---	---	---	---
Bullock-----	D	None	---	---	>6.0	---	---	---	---
36: Borollic Camborthids----	---	None	---	---	---	---	---	---	---
Ustic Torrifluvents--	---	Frequent	Brief	Apr-Jun	---	---	---	---	---
37: Brunelda-----	D	None	---	---	>6.0	---	---	---	---
38: Brunelda-----	D	None	---	---	>6.0	---	---	---	---
Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
39: Brunelda-----	D	None	---	---	>6.0	---	---	---	---
Vaeda-----	D	None	---	---	>6.0	---	---	---	---
Nobe-----	D	None	---	---	>6.0	---	---	---	---
40: Bryant-----	B	None	---	---	>6.0	---	---	---	---
41: Bryant-----	B	None	---	---	>6.0	---	---	---	---
42: Bullock-----	D	None	---	---	>6.0	---	---	---	---
Rallod-----	D	None	---	---	>6.0	---	---	---	---
43: Bullock-----	D	None	---	---	>6.0	---	---	---	---
Rominell-----	C	None	---	---	>6.0	---	---	---	---
44: Busby-----	B	None	---	---	>6.0	---	---	---	---
45: Busby-----	B	None	---	---	>6.0	---	---	---	---
46: Busby-----	B	None	---	---	>6.0	---	---	---	---
47: Busby-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
47: Rock outcrop----	---	None	---	---	---	---	---	---	---
48: Busby-----	B	None	---	---	>6.0	---	---	---	---
Twilight-----	B	None	---	---	>6.0	---	---	---	---
Blackhall-----	C	None	---	---	>6.0	---	---	---	---
49: Busby-----	B	None	---	---	>6.0	---	---	---	---
Twilight-----	B	None	---	---	>6.0	---	---	---	---
Blackhall-----	C	None	---	---	>6.0	---	---	---	---
50: Busby-----	B	None	---	---	>6.0	---	---	---	---
Yetull-----	A	None	---	---	>6.0	---	---	---	---
51: Busby-----	B	None	---	---	>6.0	---	---	---	---
Yetull-----	A	None	---	---	>6.0	---	---	---	---
52: Cabba-----	D	None	---	---	>6.0	---	---	---	---
Wayden-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
53: Cabba-----	D	None	---	---	>6.0	---	---	---	---
Wayden-----	D	None	---	---	>6.0	---	---	---	---
Sagedale-----	C	None	---	---	>6.0	---	---	---	---
54: Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Armells-----	B	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
55: Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
56: Cambeth-----	C	None	---	---	>6.0	---	---	---	---
57: Cambeth-----	C	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
58: Cambeth-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
59: Cambeth-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
60: Cambeth-----	C	None	---	---	>6.0	---	---	---	---
Niler-----	D	None	---	---	>6.0	---	---	---	---
61: Castner-----	D	None	---	---	>6.0	---	---	---	---
Shambo-----	B	None	---	---	>6.0	---	---	---	---
62: Chinook-----	B	None	---	---	>6.0	---	---	---	---
63: Chinook-----	B	None	---	---	>6.0	---	---	---	---
64: Cooers-----	B	None	---	---	>6.0	---	---	---	---
65: Cooers-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
66: Cooers-----	B	None	---	---	>6.0	---	---	---	---
Yamac-----	B	None	---	---	>6.0	---	---	---	---
67: Creed-----	C	None	---	---	>6.0	---	---	---	---
68: Davidell-----	B	None	---	---	>6.0	---	---	---	---
69: Davidell-----	B	None	---	---	>6.0	---	---	---	---
70: Davidell-----	B	None	---	---	>6.0	---	---	---	---
Antwerp-----	C	None	---	---	>6.0	---	---	---	---
71: Degrand-----	B	None	---	---	>6.0	---	---	---	---
72: Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
73: Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Yamac-----	B	None	---	---	>6.0	---	---	---	---
74: Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
75: Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Galbreth-----	D	None	---	---	>6.0	---	---	---	---
76: Delpoint, moist-	C	None	---	---	>6.0	---	---	---	---
Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
77: Delpoint, moist-	C	None	---	---	>6.0	---	---	---	---
Delpoint-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
78: Doney-----	C	None	---	---	>6.0	---	---	---	---
Bitton-----	B	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
79: Evanston-----	B	None	---	---	>6.0	---	---	---	---
80: Fergus variant--	B	None	---	---	>6.0	---	---	---	---
Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
81: Floweree-----	B	None	---	---	>6.0	---	---	---	---
82: Floweree-----	B	None	---	---	>6.0	---	---	---	---
83: Floweree-----	B	None	---	---	>6.0	---	---	---	---
Vanstel-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
84: Fluventic Haploborolls----	---	Occasional	Brief	Apr-Jun	---	---	---	---	---
Typic Fluvaquents----	---	Frequent	Brief	Apr-Jun	---	---	---	---	---
85: Forelle-----	B	None	---	---	>6.0	---	---	---	---
86: Forelle-----	B	None	---	---	>6.0	---	---	---	---
Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
87: Galbreth-----	D	None	---	---	>6.0	---	---	---	---
88: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
89: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
90: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
Kobar-----	C	None	---	---	>6.0	---	---	---	---
91: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
Kobar-----	C	None	---	---	>6.0	---	---	---	---
92: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
Marvan-----	D	None	---	---	>6.0	---	---	---	---
93: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
Vanda-----	D	None	---	---	>6.0	---	---	---	---
94: Gerdrum-----	D	None	---	---	>6.0	---	---	---	---
Volborg-----	D	None	---	---	>6.0	---	---	---	---
95: Glendive-----	B	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---
96: Hanly-----	A	Occasional	Brief	Mar-Jun	>6.0	---	---	---	---
Glendive-----	B	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---
97: Harlem-----	C	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					<u>Ft</u>				<u>Ft</u>
98: Harlem-----	C	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---
99: Havre-----	B	Rare	Brief	Jan-Jul	>6.0	---	---	---	---
100: Havre-----	B	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---
101: Havre-----	B	Occasional	Brief	Apr-Jun	>6.0	---	---	---	---
102: Havre-----	C	Occasional	Brief	Mar-Jun	3.0-5.0	Apparent	Mar-Nov	---	---
103: Havre-----	C	Frequent	Brief	Apr-Jun	3.0-5.0	Apparent	May-Aug	Long	1.0
104: Havre-----	B	Frequent	Brief	Apr-Jun	>6.0	---	---	---	---
Harlem-----	C	Frequent	Brief	Apr-Jun	>6.0	---	---	---	---
Glendive-----	B	Frequent	Brief	Apr-Jun	>6.0	---	---	---	---
105: Ivanell-----	C	None	---	---	>6.0	---	---	---	---
106: Ivanell-----	C	None	---	---	>6.0	---	---	---	---
Davidell-----	B	None	---	---	>6.0	---	---	---	---
107: Ivanell-----	C	None	---	---	>6.0	---	---	---	---
Niler-----	D	None	---	---	>6.0	---	---	---	---
108: Kirby-----	A	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
109: Kobar-----	C	None	---	---	>6.0	---	---	---	---
110: Kobar-----	C	None	---	---	>6.0	---	---	---	---
111: Kobar-----	C	None	---	---	>6.0	---	---	---	---
112: Kobar-----	C	None	---	---	>6.0	---	---	---	---
113: Kobar-----	C	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
114: Kobar-----	C	None	---	---	3.0-5.0	Apparent	Jun-Nov	---	---
115: Kobar-----	C	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
116: Kremlin-----	B	None	---	---	>6.0	---	---	---	---
117: Kremlin-----	B	None	---	---	>6.0	---	---	---	---
118: Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Lamedeer, dry---	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
119: Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
120: Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
121: Lamedeer-----	B	None	---	---	>6.0	---	---	---	---
Bitton-----	B	None	---	---	>6.0	---	---	---	---
Ringling-----	A	None	---	---	>6.0	---	---	---	---
122: Lihen-----	A	None	---	---	>6.0	---	---	---	---
123: Lonna-----	B	None	---	---	>6.0	---	---	---	---
124: Lonna-----	B	None	---	---	>6.0	---	---	---	---
125: Lonna-----	B	None	---	---	>6.0	---	---	---	---
126: Lonna-----	B	None	---	---	>6.0	---	---	---	---
127: Lonna-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					<u>Ft</u>				<u>Ft</u>
128: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Alona-----	B	None	---	---	>6.0	---	---	---	---
129: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Alona-----	B	None	---	---	>6.0	---	---	---	---
130: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Antwerp-----	C	None	---	---	>6.0	---	---	---	---
131: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Antwerp-----	C	None	---	---	>6.0	---	---	---	---
132: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
133: Lonna-----	B	None	---	---	>6.0	---	---	---	---
Cambeth-----	C	None	---	---	>6.0	---	---	---	---
134: Louscot-----	C	None	---	---	>6.0	---	---	---	---
135: Macar-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
136: Marmarth-----	C	None	---	---	>6.0	---	---	---	---
137: Marmarth-----	C	None	---	---	>6.0	---	---	---	---
Galbreth-----	D	None	---	---	>6.0	---	---	---	---
138: Marvan-----	D	None	---	---	>6.0	---	---	---	---
139: Marvan-----	D	None	---	---	>6.0	---	---	---	---
140: Marvan-----	D	None	---	---	>6.0	---	---	---	---
141: Neldore-----	D	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
142: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Abor-----	D	None	---	---	>6.0	---	---	---	---
143: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Abor-----	D	None	---	---	>6.0	---	---	---	---
144: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Abor-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
145: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Neldore, saline-	D	None	---	---	>6.0	---	---	---	---
146: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
147: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
Neldore, saline-	D	None	---	---	>6.0	---	---	---	---
148: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Volborg-----	D	None	---	---	>6.0	---	---	---	---
149: Neldore-----	D	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
150: Niler-----	D	None	---	---	>6.0	---	---	---	---
151: Orinoco-----	C	None	---	---	>6.0	---	---	---	---
Yawdim-----	D	None	---	---	>6.0	---	---	---	---
152: Rahworth-----	B	None	---	---	>6.0	---	---	---	---
153: Rahworth-----	B	None	---	---	>6.0	---	---	---	---
Davidell-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
153: Sumatra-----	B	None	---	---	>6.0	---	---	---	---
154: Riverwash-----	---	Frequent	Brief	Mar-Jun	---	---	---	---	---
155: Rock outcrop----	---	None	---	---	---	---	---	---	---
156: Rominell-----	C	None	---	---	>6.0	---	---	---	---
157: Sagedale-----	C	None	---	---	>6.0	---	---	---	---
158: Sagedale-----	C	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
Wayden-----	D	None	---	---	>6.0	---	---	---	---
159: Savage-----	C	None	---	---	>6.0	---	---	---	---
160: Savage-----	C	None	---	---	>6.0	---	---	---	---
161: Shambo-----	B	None	---	---	>6.0	---	---	---	---
162: Shambo-----	B	None	---	---	>6.0	---	---	---	---
163: Shambo-----	B	None	---	---	>6.0	---	---	---	---
164: Shambo-----	B	None	---	---	>6.0	---	---	---	---
Bitton-----	B	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
165: Shambo-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
166: Shambo-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---
Cabba-----	D	None	---	---	>6.0	---	---	---	---
167: Shambo-----	B	None	---	---	>6.0	---	---	---	---
Doney-----	C	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
167: Sagedale-----	C	None	---	---	>6.0	---	---	---	---
168: Spang-----	B	None	---	---	>6.0	---	---	---	---
169: Spang-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
170: Spang-----	B	None	---	---	>6.0	---	---	---	---
Birney, moist---	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
171: Spinekop-----	B	None	---	---	>6.0	---	---	---	---
172: Straw-----	B	Rare	Brief	Jan-Jul	>6.0	---	---	---	---
Canburn-----	D	Frequent	Brief	Apr-Jun	0.0-1.5	Apparent	Apr-Jun	---	---
173: Sumatra-----	B	None	---	---	>6.0	---	---	---	---
174: Sumatra-----	B	None	---	---	>6.0	---	---	---	---
Rock outcrop---	---	None	---	---	---	---	---	---	---
175: Tinsley-----	A	None	---	---	>6.0	---	---	---	---
176: Tinsley-----	A	None	---	---	>6.0	---	---	---	---
Armells-----	B	None	---	---	>6.0	---	---	---	---
Yamac-----	B	None	---	---	>6.0	---	---	---	---
177: Tinsley-----	A	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
178: Twilight-----	B	None	---	---	>6.0	---	---	---	---
Blackhall-----	C	None	---	---	>6.0	---	---	---	---
179: Twin Creek-----	B	None	---	---	>6.0	---	---	---	---
Shambo-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
180: Typic Haplaquepts----	---	Frequent	Brief	Apr-Jun	1.0-2.0	Apparent	Apr-Jul	---	---
181: Ustic Torrifluents--	---	Frequent	Brief	Apr-Jun	---	---	---	---	---
182: Ustic Torrifluents--	---	Frequent	Brief	Apr-Jun	---	---	---	---	---
183: Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
184: Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
185: Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
186: Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
187: Ustic Torriorthents--	---	None	---	---	---	---	---	---	---
Volborg-----	D	None	---	---	>6.0	---	---	---	---
188: Vaeda-----	D	None	---	---	>6.0	---	---	---	---
189: Vanda-----	D	None	---	---	>6.0	---	---	---	---
190: Vanstel-----	B	None	---	---	>6.0	---	---	---	---
191: Volborg-----	D	None	---	---	>6.0	---	---	---	---
192: Volborg-----	D	None	---	---	>6.0	---	---	---	---
193: Volborg-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
194: Weingart-----	D	None	---	---	>6.0	---	---	---	---
195: Weingart-----	D	None	---	---	>6.0	---	---	---	---
Neldore-----	D	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
196: Weingart-----	D	None	---	---	>6.0	---	---	---	---
Niler-----	D	None	---	---	>6.0	---	---	---	---
Rock outcrop----	---	None	---	---	---	---	---	---	---
197: Yamac-----	B	None	---	---	>6.0	---	---	---	---
198: Yamac-----	B	None	---	---	>6.0	---	---	---	---
199: Yamac-----	B	None	---	---	>6.0	---	---	---	---
200: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Abor-----	D	None	---	---	>6.0	---	---	---	---
201: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
202: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
203: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
204: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Birney-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
205: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Busby-----	B	None	---	---	>6.0	---	---	---	---
206: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Busby-----	B	None	---	---	>6.0	---	---	---	---
207: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
208: Yamac-----	B	None	---	---	>6.0	---	---	---	---

WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
208: Delpoint-----	C	None	---	---	>6.0	---	---	---	---
209: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Redcreek-----	D	None	---	---	>6.0	---	---	---	---
210: Yamac-----	B	None	---	---	>6.0	---	---	---	---
Rominell-----	C	None	---	---	>6.0	---	---	---	---
211: Yawdim-----	D	None	---	---	>6.0	---	---	---	---
212: Yawdim-----	D	None	---	---	>6.0	---	---	---	---
Cabbart-----	D	None	---	---	>6.0	---	---	---	---
Kobar-----	C	None	---	---	>6.0	---	---	---	---
213: Yawdim-----	D	None	---	---	>6.0	---	---	---	---
Orinoco-----	C	None	---	---	>6.0	---	---	---	---
214: Zatoville-----	C	None	---	---	>6.0	---	---	---	---
215: Zatoville-----	C	None	---	---	3.0-5.0	Apparent	May-Nov	---	---
216: Zatoville-----	C	None	---	---	3.0-5.0	Apparent	Jun-Nov	---	---
217: Zatoville-----	C	None	---	---	>6.0	---	---	---	---
Orinoco-----	C	None	---	---	>6.0	---	---	---	---

SOIL FEATURES

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
1: Abor-----	20-40	Soft	Low	High	Low
2: Abor-----	20-40	Soft	Low	High	Low
3: Abor-----	20-40	Soft	Low	High	Low
Marvan-----	>60	---	Low	High	Moderate
4: Abor-----	20-40	Soft	Low	High	Low
Neldore-----	10-20	Soft	Low	High	Moderate
5: Absher-----	>60	---	Low	High	Moderate
Nobe-----	>60	---	Low	High	High
6: Antwerp-----	>60	---	Moderate	High	High
7: Armells-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
8: Armells-----	>60	---	Moderate	High	Low
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
9: Armells-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
10: Armells-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
11: Assinniboine----	>60	---	Moderate	High	Low
12: Badland.					
13: Barvon-----	20-40	Soft	Moderate	High	Low
Lamedeer-----	>60	---	Moderate	High	Low
Lamedeer, dry---	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
14:					
Barvon-----	20-40	Soft	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
15:					
Belfield-----	>60	---	Low	High	Moderate
16:					
Birney-----	>60	---	Moderate	High	Low
17:					
Birney-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
18:					
Birney-----	>60	---	Moderate	High	Low
Cooers-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
19:					
Birney-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
20:					
Birney-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
21:					
Birney-----	>60	---	Moderate	High	Low
Armells-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
22:					
Birney, moist---	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
Kirby-----	>60	---	Low	High	Low
23:					
Bitton-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
24:					
Bitton-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
24: Ringling-----	>60	---	Low	Moderate	Low
25: Bitton-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
26: Bitton-----	>60	---	Moderate	High	Low
Shambo-----	>60	---	Moderate	High	Low
27: Bitton-----	>60	---	Moderate	High	Low
Twin Creek-----	>60	---	Moderate	High	Low
28: Bitton-----	>60	---	Moderate	High	Low
Twin Creek-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
29: Bitton-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
30: Bitton-----	>60	---	Moderate	High	Low
Lamedeer-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
31: Bitton-----	>60	---	Moderate	High	Low
Lamedeer-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
32: Bitton-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
Cabba-----	10-20	Soft	Moderate	High	Low
33: Bonfri-----	20-40	Soft	Moderate	High	Low
Bullock-----	20-40	Soft	Moderate	High	Moderate
Cabbart-----	10-20	Soft	Moderate	High	Low
34: Bonfri-----	20-40	Soft	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
34: Galbreth-----	10-20	Soft	Moderate	High	Low
35: Bonfri-----	20-40	Soft	Moderate	High	Low
Marmarth-----	20-40	Soft	Moderate	High	Low
Bullock-----	20-40	Soft	Moderate	High	Moderate
36: Borollic Camborthids----	>60	---	---	---	---
Ustic Torrifluvents--	>60	---	---	---	---
37: Brunelda-----	>60	---	Moderate	High	High
38: Brunelda-----	>60	---	Moderate	High	High
Gerdrum-----	>60	---	Low	High	Moderate
39: Brunelda-----	>60	---	Moderate	High	High
Vaeda-----	>60	---	Low	High	High
Nobe-----	>60	---	Low	High	High
40: Bryant-----	>60	---	Moderate	High	Low
41: Bryant-----	>60	---	Moderate	High	Low
42: Bullock-----	20-40	Soft	Moderate	High	Moderate
Rallod-----	10-20	Soft	Low	---	---
43: Bullock-----	20-40	Soft	Moderate	High	Moderate
Rominell-----	>60	---	Moderate	High	Low
44: Busby-----	>60	---	Moderate	High	Low
45: Busby-----	>60	---	Moderate	High	Low
46: Busby-----	>60	---	Moderate	High	Low
47: Busby-----	>60	---	Moderate	High	Low
Rock outcrop.					

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
48:					
Busby-----	>60	---	Moderate	High	Low
Twilight-----	20-40	Soft	Moderate	High	Low
Blackhall-----	10-20	Soft	Moderate	High	Low
49:					
Busby-----	>60	---	Moderate	High	Low
Twilight-----	20-40	Soft	Moderate	High	Low
Blackhall-----	10-20	Soft	Moderate	High	Low
50:					
Busby-----	>60	---	Moderate	High	Low
Yetull-----	>60	---	Low	High	Low
51:					
Busby-----	>60	---	Moderate	High	Low
Yetull-----	>60	---	Low	High	Low
52:					
Cabba-----	10-20	Soft	Moderate	High	Low
Wayden-----	10-20	Soft	Low	High	Low
Rock outcrop.					
53:					
Cabba-----	10-20	Soft	Moderate	High	Low
Wayden-----	10-20	Soft	Low	High	Low
Sagedale-----	>60	---	Low	High	Low
54:					
Cabbart-----	10-20	Soft	Moderate	High	Low
Armells-----	>60	---	Moderate	High	Low
Rock outcrop.					
55:					
Cabbart-----	10-20	Soft	Moderate	High	Low
Yawdim-----	10-20	Soft	Low	High	Low
Rock outcrop.					
56:					
Cambeth-----	20-40	Soft	Moderate	High	Low
57:					
Cambeth-----	20-40	Soft	Moderate	High	Low
58:					
Cambeth-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
59:					
Cambeth-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
60:					
Cambeth-----	20-40	Soft	Moderate	High	Low
Niler-----	10-20	Soft	Moderate	High	Low
61:					
Castner-----	10-20	Hard	Moderate	High	Low
Shambo-----	>60	---	Moderate	High	Low
62:					
Chinook-----	>60	---	Moderate	High	Low
63:					
Chinook-----	>60	---	Moderate	High	Low
64:					
Coopers-----	>60	---	Moderate	High	Low
65:					
Coopers-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
66:					
Coopers-----	>60	---	Moderate	High	Low
Yamac-----	>60	---	Moderate	High	Low
67:					
Creed-----	>60	---	Low	High	Moderate
68:					
Davidell-----	>60	---	Moderate	High	Low
69:					
Davidell-----	>60	---	Moderate	High	Low
70:					
Davidell-----	>60	---	Moderate	High	Low
Antwerp-----	>60	---	Moderate	High	High
71:					
Degrad-----	>60	---	Moderate	High	Low
72:					
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
73:					
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Yamac-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
74:					
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Yawdim-----	10-20	Soft	Low	High	Low
75:					
Delpoint-----	20-40	Soft	Moderate	High	Low
Galbreth-----	10-20	Soft	Moderate	High	Low
76:					
Delpoint, moist-	20-40	Soft	Moderate	High	Low
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
77:					
Delpoint, moist-	20-40	Soft	Moderate	High	Low
Delpoint-----	20-40	Soft	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
78:					
Doney-----	20-40	Soft	Moderate	High	Low
Bitton-----	>60	---	Moderate	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
79:					
Evanston-----	>60	---	Moderate	High	Low
80:					
Fergus variant--	>60	---	Moderate	High	Low
Twin Creek-----	>60	---	Moderate	High	Low
81:					
Floweree-----	>60	---	Moderate	High	Low
82:					
Floweree-----	>60	---	Moderate	High	Low
83:					
Floweree-----	>60	---	Moderate	High	Low
Vanstel-----	>60	---	Moderate	High	Low
84:					
Fluventic Haploborolls---	>60	---	---	---	---
Typic Fluvaquents---	>60	---	---	---	---
85:					
Forelle-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
86: Forelle-----	>60	---	Moderate	High	Low
Gerdrum-----	>60	---	Low	High	Moderate
87: Galbreth-----	10-20	Soft	Moderate	High	Low
88: Gerdrum-----	>60	---	Low	High	Moderate
89: Gerdrum-----	>60	---	Low	High	Moderate
90: Gerdrum-----	>60	---	Low	High	Moderate
Kobar-----	>60	---	Low	High	Low
91: Gerdrum-----	>60	---	Low	High	Moderate
Kobar-----	>60	---	Low	High	Low
92: Gerdrum-----	>60	---	Low	High	Moderate
Marvan-----	>60	---	Low	High	Moderate
93: Gerdrum-----	>60	---	Low	High	Moderate
Vanda-----	>60	---	Low	High	Moderate
94: Gerdrum-----	40-60	Soft	Low	High	Moderate
Volborg-----	10-14	Soft	Low	High	High
95: Glendive-----	>60	---	Moderate	High	Low
96: Hanly-----	>60	---	Low	Moderate	Low
Glendive-----	>60	---	Moderate	High	Low
97: Harlem-----	>60	---	Low	High	Low
98: Harlem-----	>60	---	Low	High	Low
99: Havre-----	>60	---	Moderate	High	Low
100: Havre-----	>60	---	Moderate	High	Low
101: Havre-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
102: Havre-----	>60	---	Moderate	High	Low
103: Havre-----	>60	---	Moderate	High	Moderate
104: Havre-----	>60	---	Moderate	High	Low
Harlem-----	>60	---	Low	High	Low
Glendive-----	>60	---	Moderate	High	Low
105: Ivanell-----	20-40	Soft	Moderate	High	Moderate
106: Ivanell-----	20-40	Soft	Moderate	High	Moderate
Davidell-----	>60	---	Moderate	High	Low
107: Ivanell-----	20-40	Soft	Moderate	High	Moderate
Niler-----	10-20	Soft	Moderate	High	Low
108: Kirby-----	>60	---	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Rock outcrop.					
109: Kobar-----	>60	---	Low	High	Low
110: Kobar-----	>60	---	Low	High	Low
111: Kobar-----	>60	---	Low	High	Low
112: Kobar-----	>60	---	Low	High	Low
113: Kobar-----	>60	---	Low	High	Low
114: Kobar-----	>60	---	Low	High	Low
115: Kobar-----	>60	---	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Yawdim-----	10-20	Soft	Low	High	Low
116: Kremlin-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
117: Kremlin-----	>60	---	Moderate	High	Low
118: Lamedeer-----	>60	---	Moderate	High	Low
Lamedeer, dry---	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
119: Lamedeer-----	>60	---	Moderate	High	Low
Twin Creek-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
120: Lamedeer-----	>60	---	Moderate	High	Low
Twin Creek-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
121: Lamedeer-----	>60	---	Moderate	High	Low
Bitton-----	>60	---	Moderate	High	Low
Ringling-----	>60	---	Low	Moderate	Low
122: Lihen-----	>60	---	Low	High	Low
123: Lonna-----	>60	---	Moderate	High	Low
124: Lonna-----	>60	---	Moderate	High	Low
125: Lonna-----	>60	---	Moderate	High	Low
126: Lonna-----	>60	---	Moderate	High	Low
127: Lonna-----	>60	---	Moderate	High	Low
128: Lonna-----	>60	---	Moderate	High	Low
Alona-----	>60	---	Moderate	High	High
129: Lonna-----	>60	---	Moderate	High	Low
Alona-----	>60	---	Moderate	High	High
130: Lonna-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
130: Antwerp-----	>60	---	Moderate	High	High
131: Lonna-----	>60	---	Moderate	High	Low
Antwerp-----	>60	---	Moderate	High	High
132: Lonna-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Yawdim-----	10-20	Soft	Low	High	Low
133: Lonna-----	>60	---	Moderate	High	Low
Cambeth-----	20-40	Soft	Moderate	High	Low
134: Louscot-----	>60	---	Moderate	High	High
135: Macar-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Rock outcrop.					
136: Marmarth-----	20-40	Soft	Moderate	High	Low
137: Marmarth-----	20-40	Soft	Moderate	High	Low
Galbreth-----	10-20	Soft	Moderate	High	Low
138: Marvan-----	>60	---	Low	High	Moderate
139: Marvan-----	>60	---	Low	High	Moderate
140: Marvan-----	40-60	Soft	Low	High	Moderate
141: Neldore-----	10-20	Soft	Low	High	Moderate
142: Neldore-----	10-20	Soft	Low	High	Moderate
Abor-----	20-40	Soft	Low	High	Low
143: Neldore-----	10-20	Soft	Low	High	Moderate
Abor-----	20-40	Soft	Low	High	Low
144: Neldore-----	10-20	Soft	Low	High	Moderate

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
144: Abor-----	20-40	Soft	Low	High	Low
Rock outcrop.					
145: Neldore-----	10-20	Soft	Low	High	Moderate
Neldore, saline-	10-20	Soft	Low	High	Moderate
146: Neldore-----	10-20	Soft	Low	High	Moderate
Rock outcrop.					
147: Neldore-----	10-20	Soft	Low	High	Moderate
Ustic Torriorthents.					
Neldore, saline-	10-20	Soft	Low	High	Moderate
148: Neldore-----	10-20	Soft	Low	High	Moderate
Volborg-----	10-20	Soft	Low	High	High
149: Neldore-----	10-20	Soft	Low	High	Moderate
Yawdim-----	10-20	Soft	Low	High	Low
150: Niler-----	10-20	Soft	Moderate	High	Low
151: Orinoco-----	20-40	Soft	Low	High	High
Yawdim-----	10-20	Soft	Low	High	Low
152: Rahworth-----	>60	---	Moderate	High	High
153: Rahworth-----	>60	---	Moderate	High	High
Davidell-----	>60	---	Moderate	High	Low
Sumatra-----	>60	---	Moderate	High	Low
154: Riverwash.					
155: Rock outcrop.					
156: Rominell-----	>60	---	Moderate	High	Low
157: Sagedale-----	>60	---	Low	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
158:					
Sagedale-----	>60	---	Low	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
Wayden-----	10-20	Soft	Low	High	Low
159:					
Savage-----	>60	---	Low	High	Low
160:					
Savage-----	>60	---	Low	High	Low
161:					
Shambo-----	>60	---	Moderate	High	Low
162:					
Shambo-----	>60	---	Moderate	High	Low
163:					
Shambo-----	>60	---	Moderate	High	Low
164:					
Shambo-----	>60	---	Moderate	High	Low
Bitton-----	>60	---	Moderate	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
165:					
Shambo-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
166:					
Shambo-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Cabba-----	10-20	Soft	Moderate	High	Low
167:					
Shambo-----	>60	---	Moderate	High	Low
Doney-----	20-40	Soft	Moderate	High	Low
Sagedale-----	>60	---	Low	High	Low
168:					
Spang-----	>60	---	Moderate	High	Low
169:					
Spang-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
170:					
Spang-----	>60	---	Moderate	High	Low
Birney, moist---	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
171: Spinekop-----	>60	---	Moderate	High	Low
172: Straw-----	>60	---	Moderate	High	Low
Canburn-----	>60	---	High	High	Low
173: Sumatra-----	>60	---	Moderate	High	Low
174: Sumatra-----	>60	---	Moderate	High	Low
Rock outcrop.					
175: Tinsley-----	>60	---	Low	High	Low
176: Tinsley-----	>60	---	Low	High	Low
Armells-----	>60	---	Moderate	High	Low
Yamac-----	>60	---	Moderate	High	Low
177: Tinsley-----	>60	---	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
178: Twilight-----	20-40	Soft	Moderate	High	Low
Blackhall-----	10-20	Soft	Moderate	High	Low
179: Twin Creek-----	>60	---	Moderate	High	Low
Shambo-----	>60	---	Moderate	High	Low
180: Typic Haplaquepts----	>60	---	---	---	---
181: Ustic Torrifluvents--	>60	---	---	---	---
182: Ustic Torrifluvents--	>60	---	---	---	---
183: Ustic Torriorthents.					
184: Ustic Torriorthents--	>60	---	---	---	---

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
185: Ustic Torriorthents--	>60	---	---	---	---
186: Ustic Torriorthents.					
187: Ustic Torriorthents.					
Volborg-----	10-15	Soft	Low	High	High
188: Vaeda-----	>60	---	Low	High	High
189: Vanda-----	>60	---	Low	High	Moderate
190: Vanstel-----	>60	---	Moderate	High	Low
191: Volborg-----	10-20	Soft	Low	High	High
192: Volborg-----	10-14	Soft	Low	High	High
193: Volborg-----	10-14	Soft	Low	High	High
Rock outcrop.					
194: Weingart-----	20-40	Soft	Low	High	Moderate
195: Weingart-----	20-40	Soft	Low	High	Moderate
Neldore-----	10-20	Soft	Low	High	Moderate
196: Weingart-----	20-40	Soft	Low	High	Moderate
Niler-----	10-20	Soft	Moderate	High	Low
Rock outcrop.					
197: Yamac-----	>60	---	Moderate	High	Low
198: Yamac-----	>60	---	Moderate	High	Low
199: Yamac-----	>60	---	Moderate	High	Low
200: Yamac-----	>60	---	Moderate	High	Low
Abor-----	20-40	Soft	Low	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
201:					
Yamac-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
202:					
Yamac-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
203:					
Yamac-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
204:					
Yamac-----	>60	---	Moderate	High	Low
Birney-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
205:					
Yamac-----	>60	---	Moderate	High	Low
Busby-----	>60	---	Moderate	High	Low
206:					
Yamac-----	>60	---	Moderate	High	Low
Busby-----	>60	---	Moderate	High	Low
207:					
Yamac-----	>60	---	Moderate	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
208:					
Yamac-----	>60	---	Moderate	High	Low
Delpoint-----	20-40	Soft	Moderate	High	Low
209:					
Yamac-----	>60	---	Moderate	High	Low
Redcreek-----	10-20	Hard	Moderate	High	Low
210:					
Yamac-----	>60	---	Moderate	High	Low
Rominell-----	>60	---	Moderate	High	Low
211:					
Yawdim-----	10-20	Soft	Low	High	Low
212:					
Yawdim-----	10-20	Soft	Low	High	Low
Cabbart-----	10-20	Soft	Moderate	High	Low
Kobar-----	>60	---	Low	High	Low

SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Potential frost action	Risk of corrosion	
	Depth	Hardness		Uncoated steel	Concrete
	In				
213:					
Yawdim-----	10-20	Soft	Low	High	Low
Orinoco-----	20-40	Soft	Low	High	High
214:					
Zatoville-----	40-60	Soft	Low	High	Moderate
215:					
Zatoville-----	>60	---	Moderate	High	High
216:					
Zatoville-----	>60	---	Moderate	High	High
217:					
Zatoville-----	40-60	Soft	Low	High	Moderate
Orinoco-----	20-40	Soft	Low	High	High

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Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. A body of alluvium, with overflow of water and debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a less sloping surface. Source uplands range in relief and areal extent from mountains to gullied terrains on hill slopes.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal-unit-month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillite. Weakly metamorphosed mudstone or shale.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low 0 to 3.75

Low 3.75 to 5.0

Moderate 5.0 to 7.5

High more than 7.5

Avalanche chute. The track or path formed by an avalanche.

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hill slopes. Back slopes in profile are commonly steep and linear and descend to a foot slope. In terms of gradational process, back slopes are erosional forms produced mainly by mass wasting and running water.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-floored plain. An extensive, nearly level to gently rolling or moderately sloping area that is underlain by hard bedrock and has a slope of 0 to 8 percent.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material,

and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Board foot. A unit of measure of the wood in lumber, logs, or trees. The amount of wood in a board one foot wide, one foot long, and one inch thick before finishing.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep or very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to reduce or eliminate competition from woody vegetation and thus to allow understory grasses and forbs to recover or to make conditions favorable for reseeding. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, a felled tree generally is reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds just beneath the solum, or it is exposed at the surface by erosion.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of a standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed

limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation by use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Cirque. A semicircular, concave, bowl-like area that has steep faces primarily resulting from erosive activity of a mountain glacier.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clayey soil. Silty clay, sandy clay, or clay.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Clearcut. A method of forest harvesting that removes the entire stand of trees in one cutting.

Reproduction is achieved artificially or by natural seeding from adjacent stands.

Climax plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Codominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forest. Forest land capable of producing 20 cubic feet or more per acre per year at the culmination of mean annual increment.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conglomerate. A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer material.

Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. Any tillage and planting system in which a cover of crop residue is maintained on at least 30 percent of the soil surface after planting in order to reduce the hazard of water erosion; in areas where soil blowing is the primary concern, a system that maintains a cover of at least 1,000 pounds of flat residue of small grain or the equivalent during the critical erosion period.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Consolidated sandstone. Sandstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry, are not easily crushed, and cannot be textured by the usual field method.

Consolidated shale. Shale that disperses within a few hours when fragments are placed in water. The

fragments are extremely hard or very hard when dry and are not easily crushed.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of mean annual increment (CMAI).

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of

digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming with the dip of underlying bedded rock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit the use of a full stripcropping pattern.

Dominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.

Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.

Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.

Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that

planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Duff. A term used to identify a generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A mound, ridge, or hill of loose, windblown granular material (generally sand), either bare or covered with vegetation.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, for example, fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. The term is more often applied to cliffs resulting from differential erosion.

Esker. A long, narrow, sinuous, steep-sided ridge composed of irregularly stratified sand and gravel that were deposited by a subsurface stream flowing between ice walls or through ice tunnels of a retreating glacier and that were left behind when the ice melted. Eskers range from less than a mile to more than 100 miles in length and from 10 to 100 feet in height.

Even aged. Refers to a stand of trees in which only small differences in age occur between the individuals. A range of 20 years is allowed.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least

one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tillage, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. A firebreak also serves as a line from which to work and to facilitate the movement of fire fighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the stream.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothills. A region of relatively low, rounded hills at the base of a mountain range.

Foot slope. The geomorphic component that forms the inner, gently inclined surface at the base of a hill slope. The surface profile is dominantly concave. In terms of gradational processes, a foot slope is a transition zone between an upslope site of erosion (back slope) and a downslope site of deposition (toe slope).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Giant ripple mark. The undulating surface sculpture produced in noncoherent granular materials by currents of water and by the agitation of water in wave action during the draining of large glacial lakes, such as Glacial Lake Missoula.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciated uplands. Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other

elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. A gullied map unit is one that has numerous gullies.

Gypsum. A mineral consisting of hydrous calcium sulfate.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Heavy metal. Inorganic substances that are solid at ordinary temperatures and are not soluble in water. They form oxides and hydroxides that are basic. Examples are copper, iron, cadmium, zinc, manganese, lead, and arsenic.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Crops such as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as

much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 8 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the number 2 precedes the letter C.

Cr horizon.—Sedimentary beds of consolidated sandstone and semiconsolidated and consolidated shale. Generally, roots can penetrate this horizon only along fracture planes.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The

slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasesers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasesers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate

1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. A moundlike hill of glacial drift, composed chiefly of stratified sand and gravel.

Kame terrace. A terracelike ridge consisting of stratified sand and gravel that were deposited by a meltwater stream flowing between a melting glacier and a higher valley wall or lateral moraine and that remained after the disappearance of the ice. It is commonly pitted with kettles and has an irregular ice-contact slope.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

- Lake plain.** A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.
- Landslide.** The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.
- Large stones (in tables).** Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.
- Lateral moraine.** A ridgelike moraine carried on and deposited at the side margin of a valley glacier. It is composed chiefly of rock fragments derived from the valley walls by glacial abrasion and plucking or by mass wasting.
- Leaching.** The removal of soluble material from soil or other material by percolating water.
- Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.
- Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.
- Loamy soil.** Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.
- Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.
- Low-residue crops.** Crops such as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.
- Low strength.** The soil is not strong enough to support loads.
- Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.
- Mean annual increment (MAI).** The average annual increase in volume of a tree during the entire life of the tree.
- Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.
- Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.
- Merchantable trees.** Trees that are of sufficient size to be economically processed into wood products.
- Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.
- Microhigh.** An area that is 2 to 12 inches higher than the adjacent microlow.
- Microlow.** An area that is 2 to 12 inches lower than the adjacent microhigh.
- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.
- Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.
- Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately deep soil.** A soil that is 20 to 40 inches deep over bedrock or to other material that restricts the penetration of plant roots.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Moraine.** An accumulation of glacial drift in a topographic landform of its own, resulting chiefly from the direct action of glacial ice. Some types are lateral, recessional, and terminal.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain.** A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of limited summit area and generally commonly of limited summit area and generally having steep sides (slopes greater than 25 percent) and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are primarily formed by deep-seated earth movements or volcanic action and secondarily by differential erosion.
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Mudstone.** Sedimentary rock formed by induration of silt and clay in approximately equal amounts.
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma.

For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash plain. An extensive area of glaciofluvial material that was deposited by meltwater streams.

Overstory. The trees in a forest that form the upper crown cover.

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

- Very slow less than 0.06 inch
- Slow 0.06 to 0.2 inch
- Moderately slow 0.2 to 0.6 inch
- Moderate 0.6 inch to 2.0 inches
- Moderately rapid 2.0 to 6.0 inches

- Rapid 6.0 to 20 inches
- Very rapid more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quartzite, metamorphic. Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

Quartzite, sedimentary. Very hard but unmetamorphosed sandstone consisting chiefly of quartz grains.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid.....	5.1 to 5.5
Medium acid.....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Recessional moraine. A moraine formed during a temporary but significant halt in the retreat of a glacier.

Red beds. Sedimentary strata mainly red in color and composed largely of sandstone and shale.

Regeneration. The new growth of a natural plant community, developing from seed.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict stream terrace. One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Riser. The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Rubble land. Areas that have more than 90 percent of the surface covered by stones or boulders. Voids contain no soil material and virtually no vegetation other than lichens. The areas commonly are at the base of mountain slopes, but some are on mountain slopes as deposits of cobbles, stones, and boulders left by Pleistocene glaciation or by periglacial phenomena.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount

that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The electrical conductivity of a saline soil. It is expressed, in millimhos per centimeter, as follows:

Nonsaline	0 to 4
Slightly saline	4 to 8
Moderately saline.....	8 to 16
Strongly saline.....	more than 16

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sawlogs. Logs of suitable size and quality for the production of lumber.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Scribner's log rule. A method of estimating the number of board feet that can be cut from a log of a given diameter and length.

Sedimentary plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by sedimentary bedrock and that has a slope of 0 to 8 percent.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Sedimentary uplands. Land areas of bedrock formed from water- or wind-deposited sediments. They are higher on the landscape than the flood plain.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Semiconsolidated sedimentary beds. Soft geologic sediments that disperse when fragments are placed in water. The fragments are hard or very

hard when dry. Determining the texture by the usual field method is difficult.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shallow soil. A soil that is 10 to 20 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shelterwood system. A forest management system requiring the removal of a stand in a series of cuts so that regeneration occurs under a partial canopy. After regeneration, a final cut removes the shelterwood and allows the stand to develop in the open as an even-aged stand. The system is well suited to sites where shelter is needed for regeneration, and it can aid regeneration of the more intolerant tree species in a stand.

Shoulder. The uppermost inclined surface at the top of a hillside. It is the transition zone from the back slope to the summit of a hill or mountain. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for the range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant or dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skid trails. Pathways along which logs are dragged to a common site for loading onto a logging truck.

Slash. The branches, bark, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

Slickens. Accumulations of fine-textured material, such as material separated in placer-mine and ore-mill operations. Slickens from ore mills commonly consist of freshly ground rock that has undergone chemical treatment during the milling process.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is loamy or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

In this survey the following slope classes are recognized:

Nearly level.....	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping.....	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep.....	more than 45 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate.....	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand.....	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation

are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Species. A single, distinct kind of plant or animal having certain distinguishing characteristics.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A surface cut formed by the erosion of hard or semiconsolidated bedrock and thinly mantled with stream deposits.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are: *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter or loosen a layer that is restrictive to roots.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Tailwater. The water directly downstream of a structure.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances. It commonly is a massive arcuate ridge or complex of ridges underlain by till and other types of drift.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be

further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by or consists of till and that has a slope of 0 to 8 percent.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill. Toe slopes are commonly gentle and linear in profile.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.

Tread. The relatively flat terrace surface that was cut or built by stream or wave action.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Understory. Any plants in a forest community that grow to a height of less than 5 feet.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley. An elongated depressional area primarily developed by stream action.

Valley fill. In glaciated regions, material deposited in

stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very deep soil. A soil that is more than 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Very shallow soil. A soil that is less than 10 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Waterspreading. Diverting runoff from natural channels by means of a system of dams, dikes, or ditches and spreading it over relatively flat surfaces.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The action of uprooting and tipping over trees by the wind.

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