SOILS APPENDIX

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Services (NRCS) has published a general soil association map for Montana in digital format. The State Soil Geographic Database (USDA NRCS 1996) provides a general overview of soils distribution and occurrences in the planning area, and is not suitable for site-specific evaluations. More detailed information is available from the NRCS Regional offices in Montana. General soils information presented in the State Soil Geographic Database is presented in the *Soils Technical Report* (ALL 2001a). Information presented includes the areal extent, soil series characteristics, K-factor (erosion potential), salinity, and sodium adsorption ratio (SAR) for the various soil groups in the Powder River RMP and Billings RMP areas. The *Soils Technical Report* was prepared to present the potential impacts from the coal bed methane (CBM) extraction process on land and the environment, with a focus on impacts to agriculture, and including potential effects on crops, livestock, and soils. The report was used to prepare this section and provides more detailed information pertaining to soils and CBM development impacts to the environment. The complete Soils Technical Report can be accessed at http://www.mt.blm.gov/mcfo.

The layout of the soils in the study area is shown in Figures SOI-1 and SOI-2 for the Billings Resource Management Plan (RMP) Area and Powder River RMP area, respectively. A total of 163 soil mapping units composed of 205 soil series are present in the two RMP areas. The seven principal soil mapping units based on areal extent within the two RMP areas are:

- MT421 Cambeth-Megonot-Manning (4.3 percent)
- MT089 Yamac-Birney-Cabbart (4.3 percent)
- MT676 Yawdim-Delpoint-Thurlow (4.0 percent)
- MT675 Cabbart-Yawdim-Thurlow (3.9 percent)
- MT384 Marvan-Neldore-Bascovy (3.5 percent)
- MT103 Cabbart-Delpoint-Yamac (3.0 percent)
- MT559 Tanna-Rentsac-Yawdim (2.9 percent)

These seven soil mapping units comprise 26 percent of the two RMP areas, with the remaining 156 soil mapping units making up the remainder. Table SOI-1 presents all of the soil mapping units in the Billings RMP and Powder River RMP areas, along with the percent of the total RMP areas occupied by each mapping unit. Table SOI-2 presents some of the key soil characteristics related to erosion and salinity for the topmost 25 mapping units based on percent of total area.

Soils in the RMP areas are derived mainly from sedimentary bedrock and alluvium. The soils generally range from loams to clays, but are principally loams to silty clay loams.

Slope and K-factor are values that are used in the estimation of soil erosion potential. Slope values range up to greater than 40 percent; however, there are many soils that have slopes of zero to about 10 percent. Almost all of the soils have low K-factors (below 0.37). Easily eroded soils have a K-factor between 0.37 and 0.69, and resistant soils have a K-factor less than 0.37 (Jarrett 1995). Figures presenting the mean K-factor of the soils in the Billings RMP and Powder River RMP areas are included in the *Soils Technical Report* (ALL 2001). Figures SOI-1 and SOI-2 are included here to summarize the information.

Soil salinity affects the suitability of a soil for crop production and the stability of the soil. The SAR is the measure of sodium relative to calcium and magnesium, and affects the soil structure and infiltration rate of water. The *Soils Technical Report* presents a more detailed discussion pertaining to the salinity and SAR of the soils in the Billings RMP and Powder River RMP areas. As shown in Table SOI-2, most of the soils are very low in salinity. The SAR values in the study areas and statewide vary widely and, with few exceptions, are low in sodium. Based on the generally fine texture of the surface soils (clayey), much of the soil will likely be susceptible to increasing sodicity when irrigated with water having a high SAR. Permeability is the measure of vertical water movement when the soil is saturated. The soil structure, porosity, gradation and texture all influence the permeability of the soil. Those soils with a coarser texture (sandy to loamy) and good internal drainage (higher permeability) will be the least susceptible to increasing sodicity and salinity. Much of the soil is likely to be irrigable with good management.

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT001	Abac-Peritsa-Rock Outcrop	93,754	0.48
MT003	Absarokee-Castner-Sinnigam	436,268	2.25
MT004	Absarokee-Wayden-Redcreek Family	23,322	0.12
MT006	Absarokee-Castner-Grail	15,901	0.08
MT007	Absarokee-Hilger-Big Timber	70,560	0.36
MT016	Winler-Lismas-Swanboy	21,332	0.11
MT017	Archin-Twilight-Bonfri	78,323	0.4
MT019	Assinniboine-Pring-Archin	459,121	2.37
MT024	Badland-Bullock-Neldore	129,347	0.67
MT027	Bainville-Mcrae-Rock Outcrop	453,939	2.35
MT028	Bainville-Rock Outcrop-Travessilla	205,254	1.06
MT029	Bainville-Travessilla Family-Evanston	171,636	0.89
MT037	Beauvais-Hydro-Lambeth	83,773	0.43
MT041	Bew-Toluca-Nobe	8,032	0.04
MT042	Big Timber-Cabba-Absarokee	107,565	0.56
MT048	Bitton-Shambo-Doney	428,667	2.22
MT051	Blackhall-Twilight-Zeona	21,144	0.11
MT054	Cabbart-Bonfri-Cambeth	2	<0.01
MT055	Bonfri-Gerdrum-Galbreth	3,927	0.02
MT070	Bryant-Doney-Shambo	56,522	0.29
MT075	Yamac-Busby-Cabbart	104,872	0.54
MT076	Cabba-Travessilla Family-Birney	121,597	0.63
MT078	Cabba-Campspass-Farland	6,969	0.04
MT080	Cabba-Farland-Yawdim	38,170	0.2
MT083	Cabba-Ringling-Yawdim	300,378	1.55
MT084	Cabba-Ringling-Yawdim	493,159	2.55
MT089	Yamac-Birney-Cabbart	827,152	4.27
MT090	Cabbart-Cambeth-Bonfri	183,942	0.95
MT092	Delpoint-Cabbart-Yamac	552,861	2.86

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT095	Cabbart-Keiser-Dast	57,076	0.29
MT096	Cabbart-Pultney Family-Stormitt	43,281	0.22
MT097	Cabbart-Rentsac-Delpoint	283,471	1.46
MT099	Cabbart-Rock Outcrop-Twilight	116,567	0.6
MT100	Cabbart-Twilight-Forelle	31,738	0.16
MT103	Cabbart-Delpoint-Yamac	577,016	2.98
MT112	Castner-Savage-Chama	5,667	0.03
MT113	Castner-Chama-Regent	4,089	0.02
MT114	Castner-Darret-Windham	3	<0.01
MT120	Wayden-Castner-Cabba	47,803	0.25
MT127	Chinook-Archin-Delpoint	6	<0.01
MT145	Crago-Musselshell-Attewan	545,006	2.82
MT146	Crago-Musselshell-Fairfield	7,046	0.04
MT148	Creed-Gerdrum-Forelle	1,072	0.01
MT152	Cushman-Yawdim-Bainville	54,706	0.28
MT153	Danvers-Tinsley-Oburn	72,675	0.38
MT155	Danvers-Judith-Windham	49,063	0.25
MT157	Dast-Forelle-Delpoint	31,137	0.16
MT159	Dast-Mcrae-Travessilla Family	84,373	0.44
MT161	Degrand-Kremlin-Ethridge	10,319	0.05
MT164	Cabbart-Delpoint-Yamac	278,907	1.44
MT165	Delpoint Family-Kirby-Delpoint	33,440	0.17
MT167	Delpoint-Travessilla Family-Cabbart	216,026	1.12
MT168	Delpoint-Cabbart-Yamac	105,771	0.55
MT173	Dolus-Boxwell-Castner	22,680	0.12
MT174	Doney-Reeder-Cabba	72,377	0.37
MT175	Doney-Shaak-Wayden	232,912	1.2
MT176	Doney-Winifred-Wayden	73,711	0.38
MT182	Starley-Rock Outcrop-Babb	147,700	0.76

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT187	Ethridge-Kremlin-Marias	9,089	0.05
MT190	Evanston-Lonna-Tinsley	19,800	0.1
MT193	Fairway Family-Tetonview-Villy	8,546	0.04
MT209	Forkwood-Vonalee-Haverdad	31,675	0.16
MT213	Garlet-Cowood-Rock Outcrop	298	<0.01
MT216	Garlet-Rubble Land-Cowood	2,132	0.01
MT217	Garlet-Sebud-Cheadle	22,544	0.12
MT218	Shadow-Garlet-Macfarlane	257,150	1.33
MT224	Gerdrum-Forelle-Archin	38,201	0.2
MT225	Harlem-Gerdrum-Ethridge	26,205	0.14
MT228	Gilt Edge-Absher-Yawdim	11,675	0.06
MT247	Harlem-Vanda-Marvan	10,450	0.05
MT249	Stormitt-Harvey Family-Nihill	48,815	0.25
MT252	Haverson-Heldt-Toluca	16,832	0.09
MT254	Havre-Glendive-Water	30,577	0.16
MT255	Havre-Harlem-Attewan	25,454	0.13
MT256	Havre-Harlem-Glendive	88,473	0.46
MT258	Havre-Ryell-Harlem	50,431	0.26
MT259	Havre-Hanly-Glendive	173,933	0.9
MT261	Havre-Rivra-Water	114,549	0.59
MT263	Havre-Kobar-Spinekop	47,424	0.25
MT264	Havre-Glendive-Yamac	10,938	0.06
MT269	Heath-Charlos-Maurice	58,449	0.3
MT271	Heldt-Fort Collins-Kobar	43,967	0.23
MT273	Helmville-Whitore-Tropal	126,307	0.65
MT301	Keiser-Hydro-Gilt Edge	112,102	0.58
MT309	Kobar-Yamac-Attewan	23,490	0.12
MT321	Lamedeer-Ringling-Twin Creek	35,383	0.18
MT323	Lap-Windham-Armington	104,714	0.54

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT324	Lardell-Mckenzie-Kobar	28,542	0.15
MT327	Libeg-Leavitt-Hanson	17,866	0.09
MT336	Lihen-Delpoint-Tinsley	5,762	0.03
MT338	Lisam-Abor-Vanda	303,030	1.57
MT339	Lisam-Abor-Hesper	28,331	0.15
MT349	Lolo-Work-Shawa	39,683	0.21
MT365	Maginnis-Absarokee-Rock Outcrop	116,071	0.6
MT369	Marias-Havre-Harlem	143,781	0.74
MT374	Martinsdale-Fairfield-Reeder	7	<0.01
MT379	Marvan-Abor-Neldore	97,192	0.5
MT382	Marvan-Gerdrum-Vanda	200,503	1.04
MT383	Harlem-Vanda-Marvan	23,594	0.12
MT384	Marvan-Neldore-Bascovy	677,263	3.5
MT393	Mcrae-Harlem-Keiser	103,536	0.54
MT396	Midway-Shingle-Rock Outcrop	76,447	0.4
MT400	Mirror-Bross-Vasquez	56,548	0.29
MT407	Moyerson-Rock Outcrop-Orinoco	253,541	1.31
MT414	Neldore-Abor-Vanda	7,787	0.04
MT415	Neldore-Abor-Volborg	93,856	0.49
MT421	Cambeth-Megonot-Manning	829,387	4.29
MT433	Nunn-Toluca-Heldt	5,480	0.03
MT438	Bridger-Bynum-Owen Creek	16,109	0.08
MT456	Pinelli-Glendive-Busby	4,780	0.02
MT459	Prospect-Sublette-Teton	9,292	0.05
MT466	Reeder Family-Barvon-Mowbray	136,554	0.71
MT471	Rentsac-Cabbart-Blackhall	24,662	0.13
MT472	Yawdim-Rentsac-Lambeth	149,344	0.77
MT474	Broadus-Ridge-Cabba	42,375	0.22
MT475	Ringling-Cabba-Relan	16,537	0.09

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT484	Rock Outcrop-Dryadine-Rubble Land	3,611	0.02
MT485	Garlet-Rock Outcrop-Cryoborolls	21,066	0.11
MT486	Rock Outcrop-Hanson-Whitecow	159,584	0.82
MT488	Rock Outcrop-Midway-Travessilla Family	236,799	1.22
MT489	Abor-Rock Outcrop-Delpoint	17,571	0.09
MT492	Rock Outcrop-Rubble Land-Cowood	127,770	0.66
MT497	Rock Outcrop-Water-Rubble Land	68,075	0.35
MT499	Romberg-Calicott-Hiland	28,655	0.15
MT500	Romberg-Naturita-Heldt	40,683	0.21
MT519	Savage-Forelle-Frazer	68,982	0.36
MT522	Savage-Work-Chama	4,497	0.02
MT532	Shadow-Garlet-Water	48,413	0.25
MT538	Skaggs-Starley-Raynesford	25	<0.01
MT547	Garlet-Stemple-Tigeron	1,244	0.01
MT550	Sweetgrass-Hilger-Fairfield	227,202	1.17
MT555	Tamaneen-Judith-Windham	53,564	0.28
MT559	Tanna-Rentsac-Yawdim	567,531	2.93
MT569	Yawdim-Thurlow-Cabbart	116,568	0.6
MT572	Tigeron-Garlet-Worock	142,349	0.74
MT575	Tinsley-Keiser-Yawdim	141,874	0.73
MT588	Work-Turner-Wayden	149,865	0.77
MT590	Twilight-Blackhall-Busby	22,004	0.11
MT594	Vananda-Gerdrum-Mckenzie	60,705	0.31
MT597	Vanstel-Cabbart-Delpoint	72,598	0.38
MT612	Wanetta-Hesper-Bitton	30,042	0.16
MT617	Wayden-Abac-Rock Outcrop	91,333	0.47
MT618	Wayden-Regent-Doney	82,113	0.42
MT619	Wayden-Eltsac-Maschetah	186,591	0.96
MT623	Whitecow-Mocmont-Hughesville	41,880	0.22

TABLE SOI-1
AREAL EXTENT OF SOIL MAP UNITS FOR POWDER RIVER AND BILLINGS RMP AREAS

STATSGO Map Unit	Map Unit Name	Acres	Percent of Area
MT659	Wormser-Lavina-Yawdim	29,616	0.15
MT661	Worock-Garlet-Rock Outcrop	3,050	0.02
MT668	Yamac-Havre-Birney	211,006	1.09
MT669	Yamac-Kobar-Marvan	22,214	0.11
MT673	Yawdim-Abor-Vananda	179,618	0.93
MT674	Cabbart-Yawdim-Delpoint	147,969	0.76
MT675	Cabbart-Yawdim-Thurlow	758,425	3.92
MT676	Yawdim-Delpoint-Thurlow	770,758	3.98
MT677	Yawdim-Delpoint-Gerdrum	82,348	0.43
MT678	Yawdim-Ethridge-Rock Outcrop	70,647	0.37
MT679	Cabbart-Yawdim-Hesper	189,351	0.98
MT680	Yawdim-Orinoco-Amherst	214,696	1.11
MT690	Welring-Clifterson-Shavano	2,718	0.01
MT691	Ulm-Maggin-Louviers	7,403	0.04
MT692	Shingle-Renohill-Ulm	36,589	0.19
MT693	Samday-Shingle-Parmleed	7,705	0.04
MT694	Orella-Epsie-Winler	26,102	0.13
MT695	Haverdad-Havre-Zigweid	14,472	0.07

Source: USDA NRSC State Soil Geographic Database 1996

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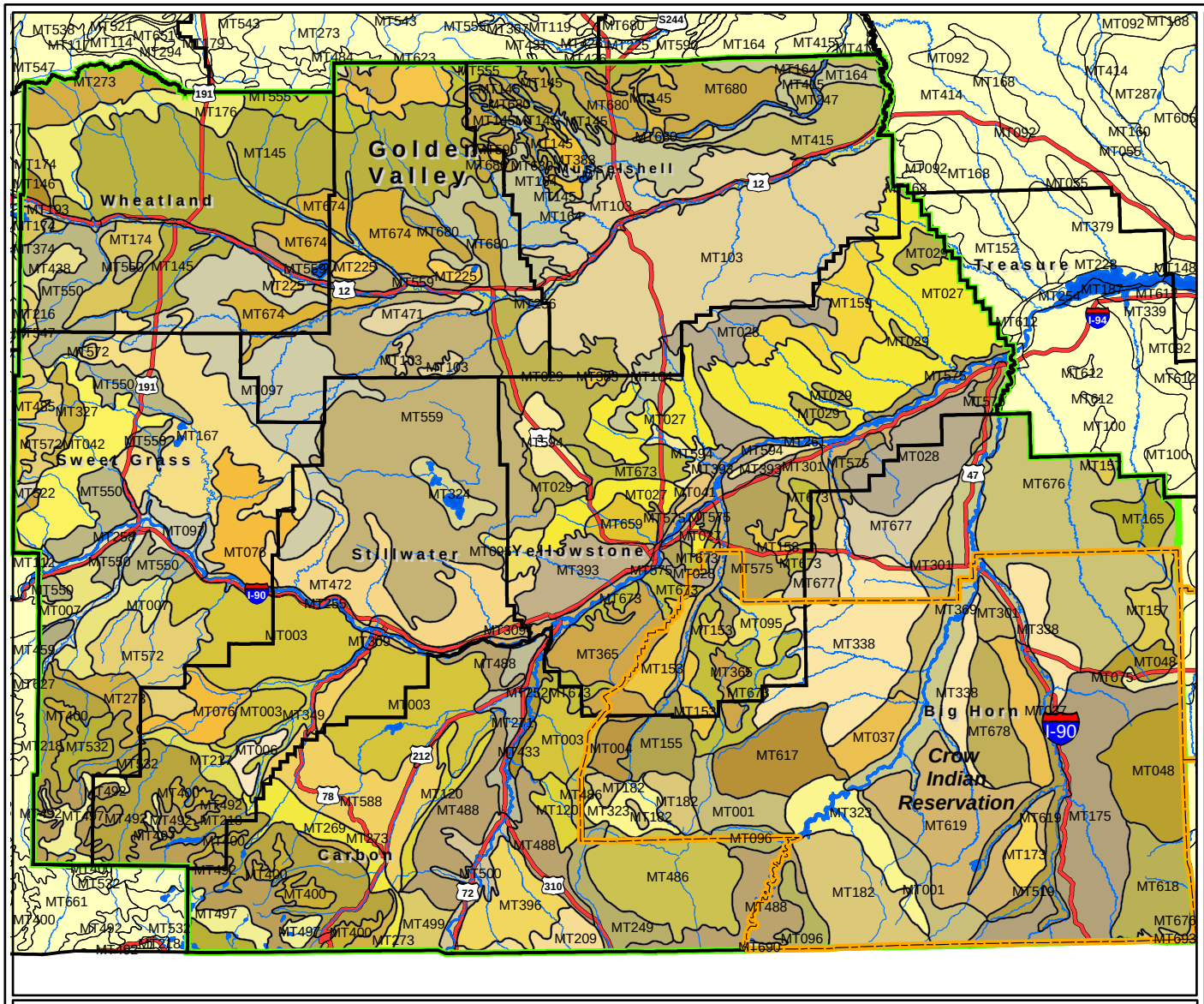
SOI-1: STATSGO Soils Types Billings RMP Area



Legend

- Rivers
- Highways
- Billings RMP Area
- Native American Reservations

Map Unit

MT001, MT003, MT004, MT006, MT007, MT027, MT028, MT029, MT037, MT041, MT042, MT048, MT075, MT076, MT092, MT095, MT096, MT097, MT100, MT103, MT112, MT113, MT114, MT120, MT145, MT146, MT152, MT153, MT155, MT157, MT159, MT164, MT165, MT167, MT168, MT173, MT174, MT175, MT176, MT182, MT193, MT209, MT213, MT216, MT217, MT218, MT249, MT252, MT255, MT256, MT258, MT261, MT269, MT271, MT273, MT301, MT309, MT323, MT324, MT327, MT338, MT349, MT365, MT369, MT374, MT383, MT393, MT396, MT400, MT433, MT438, MT459, MT471, MT472, MT484, MT485, MT486, MT488, MT492, MT497, MT499, MT500, MT519, MT522, MT532, MT538, MT547, MT550, MT555, MT559, MT572, MT575, MT588, MT590, MT594, MT617, MT618, MT619, MT659, MT661, MT673, MT676, MT677, MT678, MT680, MT690, MT693, MTW

1:1,400,000

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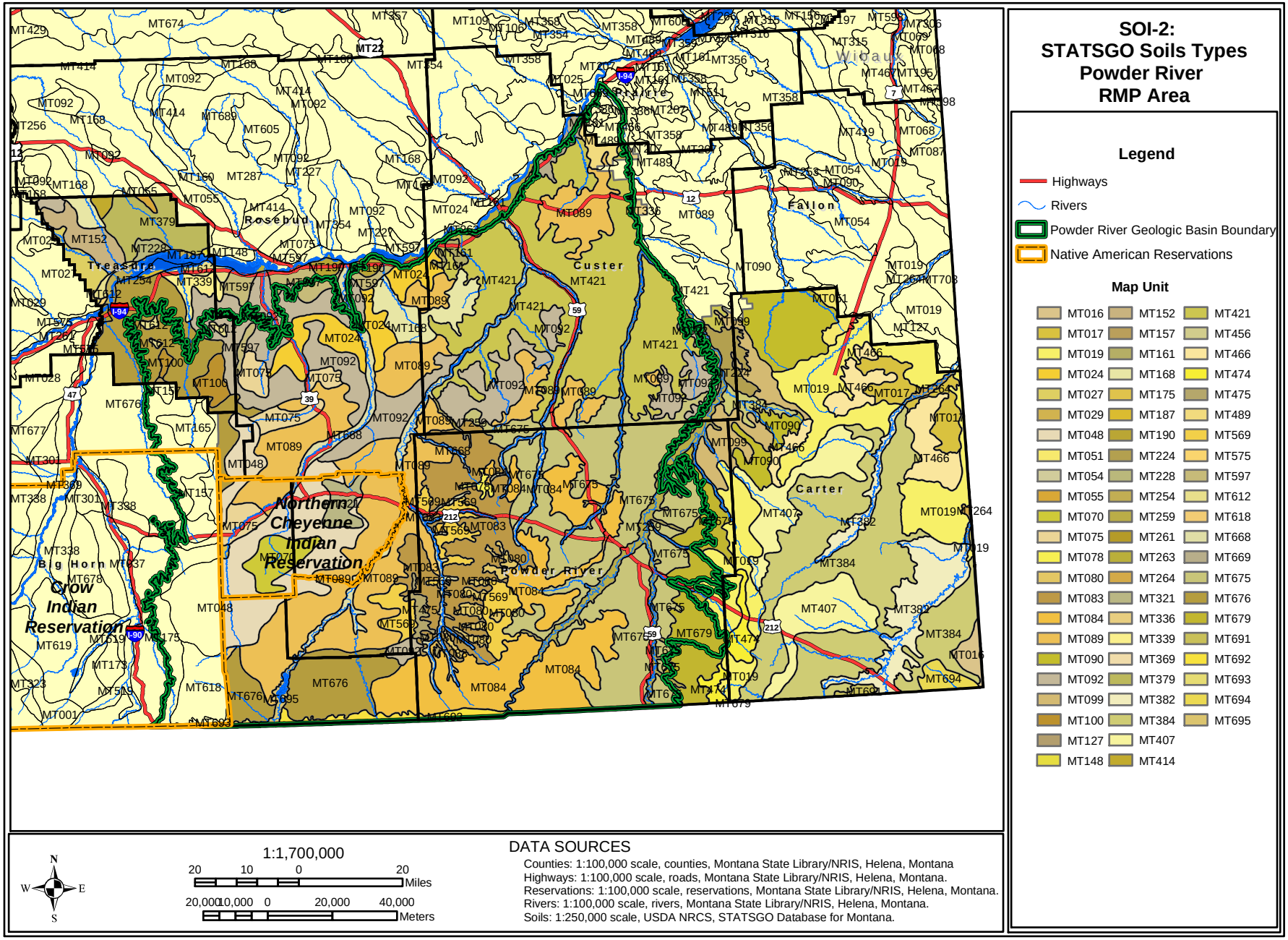
N W E S

DATA SOURCES

Counties: 1:100,000 scale, counties, Montana State Library/NRIS, Helena, Montana
Highways: 1:100,000 scale, roads, Montana State Library/NRIS, Helena, Montana.
Reservations: 1:100,000 scale, reservations, Montana State Library/NRIS, Helena, Montana.
Rivers: 1:100,000 scale, rivers, Montana State Library/NRIS, Helena, Montana.
Soils: 1:250,000 scale, USDA NRCS, STATSGO Database for Montana.


SOI-2:
STATSGO Soils Types
Powder River
RMP Area
Legend
Highways
Rivers
Powder River Geologic Basin Boundary
Native American Reservations
Map Unit
MT016 MT017 MT019 MT024 MT027 MT029 MT048 MT051 MT054 MT055 MT070 MT075 MT078 MT080 MT083 MT084 MT089 MT090 MT092 MT099 MT100 MT127 MT148 MT152 MT157 MT161 MT168 MT175 MT187 MT190 MT224 MT228 MT254 MT259 MT261 MT263 MT264 MT321 MT336 MT339 MT369 MT379 MT382 MT384 MT407 MT414 MT421 MT456 MT466 MT474 MT475 MT489 MT569 MT575 MT597 MT612 MT618 MT668 MT669 MT675 MT676 MT679 MT691 MT692 MT693 MT694 MT695
Custer
Carter
Fallon
Rosebud
Treasure
Powder River
Wibaux
Northern Cheyenne Indian Reservation
Crow Indian Reservation
Big Horn
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DATA SOURCES
Counties: 1:100,000 scale, counties, Montana State Library/NRIS, Helena, Montana
Highways: 1:100,000 scale, roads, Montana State Library/NRIS, Helena, Montana.
Reservations: 1:100,000 scale, reservations, Montana State Library/NRIS, Helena, Montana.
Rivers: 1:100,000 scale, rivers, Montana State Library/NRIS, Helena, Montana.
Soils: 1:250,000 scale, USDA NRCS, STATSGO Database for Montana.

TABLE SOI-2

SOIL SERIES CHARACTERISTICS FOR POWDER RIVER & BILLINGS RMP AREAS

STATSGO Map Unit	Major Soil Series	Surface Texture	K-factor[1]	Depth (in)	Slope (%)	Salinity[2] (mmhos/cm)	Permeability (in/hr)
MT421	Cambeth	silt loam	0.37	6	4-25		0.6-0.2
(4.3 %)	Megonot	silty clay loam	0.37	5	4-15		0.06-0.2
	Manning	loam	0.32	5	8-15		2-6
MT089	Cabbart	loam	0.37	3	15-70	0-4	0.6-0.2
(4.3 %)	Birney	channery-loam	0.2	5	25-70	0-2	0.6-0.2
	Yamac	loam	0.37	5	15-25		0.6-0.2
MT676	Yawdim	silty clay loam	0.37	3	8-35		0.2-0.6
(4.0 %)	Delpoint	loam	0.37	3	8-35	0-4	0.6-2
	Thurlow	silty clay loam	0.32	4	0-8		0.6-2
MT675	Yawdim	clay loam	0.37	3	8-70		0.2-0.6
(3.9 %)	Cabbart	silt loam	0.37	3	15-75	0-4	0.2-0.6
	Thurlow	silty clay loam	0.32	4	2-15		0.2-0.6
MT384	Marvan	silty clay	0.37	4	0-8	0-4	0.06-0.2
(3.5 %)	Neldore	clay	0.32	3	4-15	0-2	0.06-0.2
	Bascovy	clay	0.37	6	2-15	2-4	0.06-0.2
MT103	Cabbart	loam	0.37	3	6-45	0-4	0.6-2
(3.0 %)	Delpoint	loam	0.37	3	15-35	0-4	0.6-2
	Yamac	loam	0.37	5	2-8		0.6-2
MT559	Tanna	clay loam	0.37	6	2-8		0.06-0.2
(2.9 %)	Rentsac	channery-loam	0.2	7	4-15		0.6-2
	Yawdim	clay loam	0.37	3	25-60		0.2-0.6
MT092	Cabbart	loam	0.37	3	8-70	0-4	0.6-2
(2.9 %)	Delpoint	loam	0.37	3	15-25	0-4	0.6-2
	Yamac	loam	0.37	5	2-8		0.6-2
MT145	Crago	loam	0.37	4	0-4		0.6-2
(2.8%)	Musselshell	loam	0.37	3	0-2		0.6-2
	Attewan	loam	0.37	6	0-2		0.6-2

TABLE SOI-2

SOIL SERIES CHARACTERISTICS FOR POWDER RIVER & BILLINGS RMP AREAS

STATSGO Map Unit	Major Soil Series	Surface Texture	K-factor[1]	Depth (in)	Slope (%)	Salinity[2] (mmhos/cm)	Permeability (in/hr)
MT084	Cabba	silt loam	0.37	3	15-50	0-4	0.6-2
(2.6 %)	Ringling	slaty-loam	0.17	5	5-50		0.6-2
	Yawdim	clay loam	0.37	3	8-70		0.2-0.6
MT019	Assinniboine	sandy clay loam	0.32	6	2-8		0.6-2
(2.4 %)	Pring	sandy loam	0.2	10	2-8		2-6
	Archin	loam	0.43	12	2-8	0-2	0.6-2
MT027	Bainville	loam	0.37	4	2-15		0.6-2
(2.4 %)	Rock Outcrop	unweathered bedrock	0	60	25-60		0.6-2
	Mcrae	loam	0.37	5	7-15	0-2	0.6-2
MT003	Absarokee	clay loam	0.32	8	2-50	0-2	0.6-2
(2.3 %)	Castner	channery-loam	0.2	6	15-50		0.6-2
	Sinnigam	clay loam	0.37	6	2-15		0.06-0.2
MT048	Bitton	channery-loam	0.24	11	25-70	0-2	2-6
(2.2 %)	Shambo	loam	0.37	5	0-8		0.6-2
	Doney	loam	0.37	4	2-70	0-2	0.6-2
MT338	Lisam	clay	0.37	3	4-35	0-2	0.06-0.2
(1.6 %)	Abor	clay	0.37	6	4-15	0-4	0.2-0.6
	Vanda	clay	0.37	4	0-8	2-8	0.01-0.06
MT083	Cabba	silt loam	0.37	3	15-50	0-4	0.6-2
(1.6 %)	Ringling	slaty-loam	0.17	5	6-50		0.6-2
	Yawdim	clay loam	0.37	3	8-70		0.2-0.6
MT097	Cabbart	loam	0.37	3	8-35	0-4	0.6-2
(1.5 %)	Rentsac	channery-loam	0.2	7	8-35		2-6
	Delpoint	loam	0.37	3	8-15	0-4	0.6-2
MT164	Delpoint	loam	0.37	3	2-15	0-4	0.6-2
(1.4 %)	Cabbart	loam	0.37	3	2-35	0-4	0.6-2
	Yamac	Loam	0.37	5	2-15		0.6-2

TABLE SOI-2

SOIL SERIES CHARACTERISTICS FOR POWDER RIVER & BILLINGS RMP AREAS

STATSGO Map Unit	Major Soil Series	Surface Texture	K-factor[1]	Depth (in)	Slope (%)	Salinity[2] (mmhos/cm)	Permeability (in/hr)
MT218	Shadow	stony-loam	0.1	3	25-60		2-6
(1.3 %)	Macfarlane	very stony-loam	0.05	18	25-50		2-6
	Garlet	stony-loam	0.2	4	25-60		0.6-2
MT407	Moyerson	silty clay loam	0.32	4	4-50	0-4	0.06-0.2
(1.3 %)	Orinoco	silty clay loam	0.32	7	2-15		0.2-0.6
	Rock Outcrop	unweathered bedrock	0	60	0-99		0.2-0.6
MT488	Midway	silty clay loam	0.43	3	15-45	2-4	0.2-0.6
(1.2 %)	Travessilla Family	silt loam	0.32	2	15-70		0.6-2
	Rock Outcrop	unweathered bedrock	0	60	0-99		0.6-2
MT175	Doney	loam	0.37	4	8-70	0-2	0.6-2
(1.2 %)	Wayden	silty clay loam	0.37	6	8-35	0-4	0.6-2
	Shaak	clay loam	0.37	6	1-15		0.06-0.2
MT550	Sweetgrass	cobbly-clay loam	0.17	4	0-4		0.6-2
(1.2 %)	Hilger	cobbly-loam	0.2	5	2-4		0.6-2
	Fairfield	gravelly-clay	0.17	7	2-4		0.6-2
MT167	Travessilla Family	fine sandy loam	0.2	2	8-35		2-6
(1.1 %)	Delpoint	loam	0.37	3	8-15	0-4	0.6-2
	Cabbart	loam	0.37	3	8-35	0-4	0.6-2
MT680	Yawdim	silty clay	0.32	3	4-15		0.06-0.2
(1.1 %)	Orinoco	silty clay	0.28	7	4-15		0.2-0.6
	Amherst	clay loam	0.32	5	1-15		0.6-2

TABLE SOI-2

SOIL SERIES CHARACTERISTICS FOR POWDER RIVER & BILLINGS RMP AREAS

STATSGO Map Unit	Major Soil Series	Surface Texture	K-factor[1]	Depth (in)	Slope (%)	Salinity[2] (mmhos/cm)	Permeability (in/hr)
MT668	Yamac	loam	0.37	5	0-8		0.6-2
(1.1 %)	Havre	silty clay loam	0.32	8	0-2	0-2	0.2-0.6
	Birney	channery-loam	0.2	5	15-35	0-2	0.6-2

Source: USDA NRCS State Soil Geographic Database 1996

Note: Only the top 25 Map Units based on total acreage are included (percent in parenthesis). 58 percent of the soils in the study area are represented.

[1] Soil erosion factor indicates the susceptibility of a soil to sheet and rill erosion. Possible range of values is from 0.02 to 0.69, with higher values being more susceptible to erosion.

[2] Measure of the amount of soluble salts in a soil at saturation, also expressed as electrical conductivity (EC).