WBI ENERGY TRANSMISSION, INC.
NORTH BAKKEN EXPANSION PROJECT

Resource Report 7
Revised Appendices

- Appendix 7A, Characteristics of Soil Map Units at the Proposed Project Facilities
- Appendix 7B, Selected Physical and Interpretive Characteristics of the soil Map Units within the Project Area

NORTH BAKKEN EXPANSION PROJECT

Resource Report 7

APPENDIX 7A
Characteristics of Soil Map Units at the Proposed Project Facilities

APPENDIX 7A

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
Tioga-Elkhorn Creek													
0.00	0.37	C210B	44%	Bowbells	0.16	State	N	N	N	N	N	N	N
			56%	Williams	0.20	State	N	N	N	N	N	N	N
0.37	0.43	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
0.43	0.46	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.02	State	N	N	N	N	N	N	N
0.46	0.52	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
0.52	0.55	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.02	State	N	N	N	N	N	N	N
0.55	0.58	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
0.58	0.62	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.03	State	N	N	N	N	N	N	N
0.62	0.67	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
0.67	0.76	C210A	26%	Bowbells	0.02	State	N	N	N	N	N	N	N
			74%	Williams	0.06	State	N	N	N	N	N	N	N
0.76	0.79	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
0.79	0.96	C135D	42%	Williams	0.07	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.10	N	N	N	Y	N	Y	N	N
0.96	0.99	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			45%	Zahl	0.01	N	N	N	Y	N	Y	N	N
0.99	1.93	C210B	44%	Bowbells	0.41	State	N	N	N	N	N	N	N
			56%	Williams	0.52	State	N	N	N	N	N	N	N
1.93	2.09	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.12	State	N	N	N	N	N	N	N
2.09	2.14	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
2.14	2.28	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.11	State	N	N	N	N	N	N	N
2.28	2.37	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N
			34%	Max	0.03	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.04	N	N	N	Y	N	Y	N	N
2.37	2.45	C451A	100%	Arnegard	0.08	Prime	N	N	N	N	N	N	N
2.45	2.49	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
2.49	2.60	C800B	100%	Appam	0.11	N	N	N	N	N	Y	Y	N
2.60	2.95	C210B	44%	Bowbells	0.15	State	N	N	N	N	N	N	N
			56%	Williams	0.19	State	N	N	N	N	N	N	N
2.95	3.13	C210A	26%	Bowbells	0.05	State	N	N	N	N	N	N	N
			74%	Williams	0.13	State	N	N	N	N	N	N	N
3.13	3.31	C210B	44%	Bowbells	0.08	State	N	N	N	N	N	N	N
			56%	Williams	0.10	State	N	N	N	N	N	N	N
3.31	3.52	C210A	26%	Bowbells	0.06	State	N	N	N	N	N	N	N
			74%	Williams	0.16	State	N	N	N	N	N	N	N
3.52	3.66	C210B	44%	Bowbells	0.06	State	N	N	N	N	N	N	N
			56%	Williams	0.08	State	N	N	N	N	N	N	N
3.66	3.96	C210A	26%	Bowbells	0.08	State	N	N	N	N	N	N	N
			74%	Williams	0.22	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
3.96	4.03	C132B	27%	Zahl	0.02	State	N	N	N	N	N	N	N
			73%	Williams	0.05	State	N	N	N	N	N	N	N
4.03	4.06	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
4.06	4.10	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
4.10	4.13	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
4.13	4.27	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.10	State	N	N	N	N	N	N	N
4.27	4.78	C210B	44%	Bowbells	0.23	State	N	N	N	N	N	N	N
			56%	Williams	0.28	State	N	N	N	N	N	N	N
4.78	4.90	C132C	18%	Zahill	0.02	N	N	N	Y	N	N	N	N
			24%	Zahl	0.03	N	N	N	Y	N	N	N	N
			59%	Williams	0.07	N	N	N	N	N	N	N	N
4.90	5.10	C210B	44%	Bowbells	0.09	State	N	N	N	N	N	N	N
			56%	Williams	0.11	State	N	N	N	N	N	N	N
5.10	5.17	C210A	26%	Bowbells	0.02	State	N	N	N	N	N	N	N
			74%	Williams	0.05	State	N	N	N	N	N	N	N
5.17	5.34	C210B	44%	Bowbells	0.08	State	N	N	N	N	N	N	N
			56%	Williams	0.09	State	N	N	N	N	N	N	N
5.34	5.40	C999F	19%	Orthents	0.01	N	N	N	Y	N	N	N	N
				Urban land	0.01	N	N	N	N	N	N	N	N
			20%	Aquents	0.01	N	N	Y	N	N	N	N	N
			43%	Orthents	0.02	N	N	N	Y	N	Y	N	N
5.40	5.97	C210B	44%	Bowbells	0.25	State	N	N	N	N	N	N	N
			56%	Williams	0.32	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
5.97	6.24	C451A	100%	Arnegard	0.27	Prime	N	N	N	N	N	N	N
6.24	6.39	C210B	44%	Bowbells	0.07	State	N	N	N	N	N	N	N
			56%	Williams	0.08	State	N	N	N	N	N	N	N
6.39	6.74	C210A	26%	Bowbells	0.09	State	N	N	N	N	N	N	N
			74%	Williams	0.26	State	N	N	N	N	N	N	N
6.74	7.06	C210B	44%	Bowbells	0.14	State	N	N	N	N	N	N	N
			56%	Williams	0.18	State	N	N	N	N	N	N	N
7.06	7.35	C210A	26%	Bowbells	0.07	State	N	N	N	N	N	N	N
			74%	Williams	0.21	State	N	N	N	N	N	N	N
7.35	7.55	C210B	44%	Bowbells	0.09	State	N	N	N	N	N	N	N
			56%	Williams	0.11	State	N	N	N	N	N	N	N
7.55	7.59	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
7.59	7.62	C210B	44%	Bowbells	0.01	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
7.62	7.65	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
7.65	7.69	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
7.69	7.86	C132C	18%	Zahill	0.03	N	N	N	Y	N	N	N	N
			24%	Zahl	0.04	N	N	N	Y	N	N	N	N
			59%	Williams	0.10	N	N	N	N	N	N	N	N
7.86	8.64	C210B	44%	Bowbells	0.35	State	N	N	N	N	N	N	N
			56%	Williams	0.43	State	N	N	N	N	N	N	N
8.64	8.97	C415A	100%	Tansem	0.33	State	N	N	N	N	N	N	N
8.97	9.41	C419A	100%	Wildrose	0.44	Prime	N	N	N	N	N	N	N
9.41	9.57	C415A	100%	Tansem	0.16	State	N	N	N	N	N	N	N
9.57	9.63	C419A	100%	Wildrose	0.06	Prime	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
9.63	9.70	C415A	100%	Tansem	0.07	State	N	N	N	N	N	N	N
9.70	9.72	C135C	17%	Zahill	0.00	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N
			48%	Zahl	0.01	N	N	N	Y	N	N	N	N
9.72	9.75	C451A	100%	Arnegard	0.03	Prime	N	N	N	N	N	N	N
9.75	9.78	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N
			48%	Zahl	0.01	N	N	N	Y	N	N	N	N
9.78	9.93	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.11	State	N	N	N	N	N	N	N
9.93	9.96	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
9.96	10.20	C135C	17%	Zahill	0.04	N	N	N	Y	N	N	N	N
			35%	Williams	0.08	N	N	N	N	N	N	N	N
			48%	Zahl	0.11	N	N	N	Y	N	N	N	N
10.20	10.50	C210A	26%	Bowbells	0.08	State	N	N	N	N	N	N	N
			74%	Williams	0.22	State	N	N	N	N	N	N	N
10.50	10.56	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
10.56	10.83	C210B	44%	Bowbells	0.12	State	N	N	N	N	N	N	N
			56%	Williams	0.15	State	N	N	N	N	N	N	N
10.83	10.87	C451A	100%	Arnegard	0.04	Prime	N	N	N	N	N	N	N
10.87	10.93	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
10.93	11.17	C451A	100%	Arnegard	0.25	Prime	N	N	N	N	N	N	N
11.17	11.27	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
11.27	11.78	C210B	44%	Bowbells	0.23	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			56%	Williams	0.29	State	N	N	N	N	N	N	N
11.78	11.87	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
11.87	11.98	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N
			34%	Max	0.04	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.05	N	N	N	Y	N	Y	N	N
11.98	12.02	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
12.02	12.12	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
12.12	12.24	C155F	21%	Arnegard	0.03	N	N	N	Y	N	Y	N	N
			34%	Max	0.04	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.06	N	N	N	Y	N	Y	N	N
12.24	12.28	C908F	18%	Zahl	0.01	N	N	N	Y	N	Y	N	N
			33%	Amor	0.01	N	N	N	Y	N	Y	N	Paralithic
			49%	Werner	0.02	N	N	N	Y	N	Y	N	Paralithic
12.28	12.34	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
12.34	12.56	C818B	49%	Williams	0.11	N	N	N	N	N	N	N	N
			51%	Lehr	0.11	N	N	N	N	N	N	Y	N
12.56	12.73	C135C	17%	Zahill	0.03	N	N	N	Y	N	N	N	N
			35%	Williams	0.06	N	N	N	N	N	N	N	N
			48%	Zahl	0.08	N	N	N	Y	N	N	N	N
12.73	12.80	C132B	27%	Zahl	0.02	State	N	N	N	N	N	N	N
			73%	Williams	0.05	State	N	N	N	N	N	N	N
12.80	12.83	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			48%	Zahl	0.01	N	N	N	Y	N	N	N	N
12.83	12.88	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
12.88	13.22	C132B	27%	Zahl	0.09	State	N	N	N	N	N	N	N
			73%	Williams	0.25	State	N	N	N	N	N	N	N
13.22	13.25	C419A	100%	Wildrose	0.03	Prime	N	N	N	N	N	N	N
13.25	13.31	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
13.31	13.41	C419A	100%	Wildrose	0.10	Prime	N	N	N	N	N	N	N
13.41	13.60	C451A	100%	Arnegard	0.19	Prime	N	N	N	N	N	N	N
13.60	13.73	C155F	21%	Arnegard	0.03	N	N	N	Y	N	Y	N	N
			34%	Max	0.04	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.06	N	N	N	Y	N	Y	N	N
13.73	14.03	C132B	27%	Zahl	0.08	State	N	N	N	N	N	N	N
			73%	Williams	0.22	State	N	N	N	N	N	N	N
14.03	14.19	C132C	18%	Zahill	0.03	N	N	N	Y	N	N	N	N
			24%	Zahl	0.04	N	N	N	Y	N	N	N	N
			59%	Williams	0.10	N	N	N	N	N	N	N	N
14.19	14.39	C132B	27%	Zahl	0.06	State	N	N	N	N	N	N	N
			73%	Williams	0.15	State	N	N	N	N	N	N	N
14.39	14.54	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.10	State	N	N	N	N	N	N	N
14.54	14.81	C132B	27%	Zahl	0.07	State	N	N	N	N	N	N	N
			73%	Williams	0.20	State	N	N	N	N	N	N	N
14.81	14.85	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.03	State	N	N	N	N	N	N	N
14.85	14.92	C132B	27%	Zahl	0.02	State	N	N	N	N	N	N	N
			73%	Williams	0.05	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
14.92	14.95	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.02	State	N	N	N	N	N	N	N
14.95	15.06	C132B	27%	Zahl	0.03	State	N	N	N	N	N	N	N
			73%	Williams	0.09	State	N	N	N	N	N	N	N
15.06	15.18	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
15.18	15.28	C132B	27%	Zahl	0.03	State	N	N	N	N	N	N	N
			73%	Williams	0.08	State	N	N	N	N	N	N	N
15.28	15.34	C451A	100%	Arnegard	0.06	Prime	N	N	N	N	N	N	N
15.34	15.53	C210B	44%	Bowbells	0.08	State	N	N	N	N	N	N	N
			56%	Williams	0.10	State	N	N	N	N	N	N	N
15.53	15.64	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
15.64	15.76	C210B	44%	Bowbells	0.05	State	N	N	N	N	N	N	N
			56%	Williams	0.07	State	N	N	N	N	N	N	N
15.76	15.80	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
15.80	15.87	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
15.87	15.90	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
15.90	16.14	C210B	44%	Bowbells	0.11	State	N	N	N	N	N	N	N
			56%	Williams	0.14	State	N	N	N	N	N	N	N
16.14	16.19	C451A	100%	Arnegard	0.05	Prime	N	N	N	N	N	N	N
16.19	16.22	C816B	100%	Lehr	0.03	N	N	N	N	N	N	Y	N
16.22	16.42	C210B	44%	Bowbells	0.09	State	N	N	N	N	N	N	N

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North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			56%	Williams	0.11	State	N	N	N	N	N	N	N
16.42	16.44	C816B	100%	Lehr	0.02	N	N	N	N	N	N	Y	N
16.44	16.57	C210B	44%	Bowbells	0.06	State	N	N	N	N	N	N	N
			56%	Williams	0.07	State	N	N	N	N	N	N	N
16.57	16.60	C816B	100%	Lehr	0.03	N	N	N	N	N	N	Y	N
16.60	16.67	C451A	100%	Arnegard	0.07	Prime	N	N	N	N	N	N	N
16.67	16.75	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
16.75	16.79	C135D	42%	Williams	0.02	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.02	N	N	N	Y	N	Y	N	N
16.79	16.93	C155F	21%	Arnegard	0.03	N	N	N	Y	N	Y	N	N
			34%	Max	0.05	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.07	N	N	N	Y	N	Y	N	N
16.93	16.97	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
16.97	17.03	C135D	42%	Williams	0.03	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.03	N	N	N	Y	N	Y	N	N
17.03	17.09	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
17.09	17.16	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
17.16	17.19	C132C	18%	Zahill	0.00	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.01	N	N	N	N	N	N	N	N
17.19	17.27	C210B	44%	Bowbells	0.04	State	N	N	N	N	N	N	N
			56%	Williams	0.05	State	N	N	N	N	N	N	N
17.27	17.38	C132C	18%	Zahill	0.02	N	N	N	Y	N	N	N	N
			24%	Zahl	0.03	N	N	N	Y	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			59%	Williams	0.07	N	N	N	N	N	N	N	N
17.38	17.52	C210B	44%	Bowbells	0.06	State	N	N	N	N	N	N	N
			56%	Williams	0.08	State	N	N	N	N	N	N	N
17.52	17.60	C135D	42%	Williams	0.04	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.05	N	N	N	Y	N	Y	N	N
17.60	17.80	C132C	18%	Zahill	0.03	N	N	N	Y	N	N	N	N
			24%	Zahl	0.05	N	N	N	Y	N	N	N	N
			59%	Williams	0.12	N	N	N	N	N	N	N	N
17.80	17.86	C800B	100%	Appam	0.06	N	N	N	N	N	Y	Y	N
17.86	18.01	C580A	32%	Stirum	0.05	N	Y	N	N	N	N	N	N
			33%	Regan	0.05	N	Y	Y	N	N	N	N	N
			35%	Harriet	0.05	N	Y	Y	N	N	N	N	N
18.01	18.09	C816B	100%	Lehr	0.08	N	N	N	N	N	N	Y	N
18.09	18.25	E4051A	100%	Trembles	0.16	State	N	N	N	N	N	N	N
18.25	18.28	C870E	20%	Appam	0.01	N	N	N	Y	N	Y	Y	N
			22%	Lehr	0.01	N	N	N	Y	N	Y	Y	N
			58%	Wabek	0.02	N	N	N	Y	N	Y	Y	N
18.28	18.44	E0821A	100%	Lawther	0.15	State	N	N	N	N	N	N	N
18.44	18.53	E2203B	100%	Farland	0.09	State	N	N	N	N	N	N	N
18.53	18.63	E2145A	100%	Shambo	0.10	State	N	N	N	N	N	N	N
18.63	18.90	E3203B	100%	Cherry	0.27	State	N	N	N	N	N	N	N
18.90	18.97	E3603E	26%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			29%	Zahl	0.02	N	N	N	Y	N	Y	N	N
			45%	Amor	0.03	N	N	N	Y	N	Y	N	Paralithic
18.97	19.06	E3203B	100%	Cherry	0.08	State	N	N	N	N	N	N	N
19.06	19.11	E3203C	100%	Cherry	0.05	State	N	N	N	N	N	N	N
19.11	19.25	E3609F	13%	Maschetah	0.02	N	N	N	N	N	N	N	N
			16%	Maschetah	0.02	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.05	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.06	N	N	N	Y	N	Y	N	N

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North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
19.25	19.30	E3107F	44%	Badland	0.02	N	N	N	Y	N	Y	N	Paralithic
			56%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
19.30	19.40	E3603E	26%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			29%	Zahl	0.03	N	N	N	Y	N	Y	N	N
			45%	Amor	0.05	N	N	N	Y	N	Y	N	Paralithic
19.40	19.49	E3203C	100%	Cherry	0.09	State	N	N	N	N	N	N	N
19.49	19.99	E3203B	100%	Cherry	0.50	State	N	N	N	N	N	N	N
19.99	20.04	E4137A	100%	Korchea	0.05	State	N	N	N	N	N	N	N
20.04	20.19	E0821A	100%	Lawther	0.15	State	N	N	N	N	N	N	N
20.19	20.44	E2203B	100%	Farland	0.26	State	N	N	N	N	N	N	N
20.44	20.51	E0821A	100%	Lawther	0.06	State	N	N	N	N	N	N	N
20.51	20.57	E0835A	23%	Grail	0.01	State	N	N	N	N	N	N	N
			78%	Savage	0.05	State	N	N	N	N	N	N	N
20.57	20.96	E2203B	100%	Farland	0.39	State	N	N	N	N	N	N	N
20.96	21.05	E4137A	100%	Korchea	0.09	State	N	N	N	N	N	N	N
21.05	21.12	E0821A	100%	Lawther	0.07	State	N	N	N	N	N	N	N
21.12	21.22	E4137A	100%	Korchea	0.10	State	N	N	N	N	N	N	N
21.22	21.27	E4051A	100%	Trembles	0.05	State	N	N	N	N	N	N	N
21.27	21.35	E4137A	100%	Korchea	0.08	State	N	N	N	N	N	N	N
21.35	21.49	E4051A	100%	Trembles	0.13	State	N	N	N	N	N	N	N
21.49	21.58	E4137A	100%	Korchea	0.09	State	N	N	N	N	N	N	N
21.58	21.72	E2107A	100%	Arnegard	0.14	Prime	N	N	N	N	N	N	N
21.72	21.75	E4137A	100%	Korchea	0.03	State	N	N	N	N	N	N	N
21.75	21.81	E2107A	100%	Arnegard	0.05	Prime	N	N	N	N	N	N	N
21.81	21.89	E4137A	100%	Korchea	0.09	State	N	N	N	N	N	N	N
21.89	21.91	E1805B	25%	Parshall	0.01	N	N	N	N	N	N	N	N
			75%	Lihen	0.02	N	N	N	Y	Y	Y	N	N
21.91	21.97	E4227D	16%	Banks	0.01	N	N	N	Y	Y	Y	N	N
			84%	Seroco	0.05	N	N	N	Y	Y	Y	N	N
21.97	22.22	E1805B	25%	Parshall	0.06	N	N	N	N	N	N	N	N

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North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			75%	Lihen	0.19	N	N	N	Y	Y	Y	N	N
22.22	22.31	E4227D	16%	Banks	0.01	N	N	N	Y	Y	Y	N	N
			84%	Seroco	0.07	N	N	N	Y	Y	Y	N	N
22.31	22.43	E1805B	25%	Parshall	0.03	N	N	N	N	N	N	N	N
			75%	Lihen	0.09	N	N	N	Y	Y	Y	N	N
22.43	22.53	E4582A	100%	Appam	0.10	N	N	N	N	N	Y	N	N
22.53	22.96	E1805B	25%	Parshall	0.11	N	N	N	N	N	N	N	N
			75%	Lihen	0.32	N	N	N	Y	Y	Y	N	N
22.96	23.05	E4583E	24%	Appam	0.02	N	N	N	Y	N	Y	N	N
			76%	Wabek	0.07	N	N	N	Y	N	Y	Y	N
23.05	23.19	E4582B	100%	Appam	0.13	N	N	N	N	N	Y	N	N
23.19	23.23	E4583E	24%	Appam	0.01	N	N	N	Y	N	Y	N	N
			76%	Wabek	0.03	N	N	N	Y	N	Y	Y	N
23.23	25.28	EW	100%	Water	2.04	N	N	N	N	N	N	N	N
25.28	25.57	E4999	100%	Water	0.29	N	N	N	N	N	N	N	N
25.57	25.64	E3559E	39%	Max	0.03	N	N	N	Y	N	Y	N	N
			61%	Zahl	0.05	N	N	N	Y	N	Y	N	N
25.64	25.72	E3607F	28%	Arikara	0.02	N	N	N	Y	N	Y	N	N
			30%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			42%	Zahl	0.03	N	N	N	Y	N	Y	N	N
25.72	25.89	E3559E	39%	Max	0.07	N	N	N	Y	N	Y	N	N
			61%	Zahl	0.10	N	N	N	Y	N	Y	N	N
25.89	26.03	E3703D	32%	Zahl	0.05	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.10	N	N	N	Y	N	Y	N	N
26.03	26.06	E3541B	35%	Zahl	0.01	N	N	N	N	N	N	N	N
			65%	Williams	0.02	N	N	N	N	N	N	N	N
26.06	26.12	E3703D	32%	Zahl	0.02	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.04	N	N	N	Y	N	Y	N	N
26.12	26.20	E3559E	39%	Max	0.03	N	N	N	Y	N	Y	N	N
			61%	Zahl	0.05	N	N	N	Y	N	Y	N	N

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North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
26.20	26.22	E3541B	35%	Zahl	0.01	N	N	N	N	N	N	N	N
			65%	Williams	0.01	N	N	N	N	N	N	N	N
26.22	26.25	E3703C	26%	Zahl	0.01	N	N	N	Y	N	N	N	N
			74%	Dooley	0.02	N	N	N	Y	N	N	N	N
26.25	26.59	E3513B	46%	Williams	0.16	State	N	N	N	N	N	N	N
			54%	Niobell	0.18	State	N	N	N	N	N	N	N
26.59	26.63	E3703C	26%	Zahl	0.01	N	N	N	Y	N	N	N	N
			74%	Dooley	0.03	N	N	N	Y	N	N	N	N
26.63	26.69	E2120B	100%	Farnuf	0.05	State	N	N	N	N	N	N	N
26.69	26.83	E4585B	100%	Manning	0.14	N	N	N	N	N	N	Y	N
26.83	27.01	E4561F	27%	Wabek	0.05	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.06	N	N	N	Y	N	Y	N	N
			40%	Manning	0.08	N	N	N	Y	N	Y	Y	N
27.01	27.09	E0605A	33%	Grail	0.03	State	N	N	N	N	N	N	N
			67%	Belfield	0.05	State	N	N	N	N	N	N	N
27.09	27.18	E3607F	28%	Arikara	0.03	N	N	N	Y	N	Y	N	N
			30%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			42%	Zahl	0.04	N	N	N	Y	N	Y	N	N
27.18	27.24	E4585B	100%	Manning	0.06	N	N	N	N	N	N	Y	N
27.24	27.34	E3703B	14%	Zahl	0.01	State	N	N	N	N	N	N	N
			86%	Dooley	0.08	State	N	N	N	N	N	N	N
27.34	27.46	E3541B	35%	Zahl	0.04	N	N	N	N	N	N	N	N
			65%	Williams	0.08	N	N	N	N	N	N	N	N
27.46	27.55	E3607F	28%	Arikara	0.02	N	N	N	Y	N	Y	N	N
			30%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			42%	Zahl	0.04	N	N	N	Y	N	Y	N	N
27.55	27.86	E3541B	35%	Zahl	0.11	N	N	N	N	N	N	N	N
			65%	Williams	0.20	N	N	N	N	N	N	N	N
27.86	27.97	E3541C	48%	Zahl	0.05	N	N	N	Y	N	N	N	N
			52%	Williams	0.06	N	N	N	N	N	N	N	N

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North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
27.97	28.08	E3609F	13%	Maschetah	0.01	N	N	N	N	N	N	N	N
			16%	Maschetah	0.02	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.04	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.04	N	N	N	Y	N	Y	N	N
28.08	28.24	E3541B	35%	Zahl	0.06	N	N	N	N	N	N	N	N
			65%	Williams	0.10	N	N	N	N	N	N	N	N
28.24	28.24	E3567F	35%	Max	0.00	N	N	N	Y	N	Y	N	N
			65%	Zahl	0.00	N	N	N	Y	N	Y	N	N
28.24	28.29	E3541B	35%	Zahl	0.02	N	N	N	N	N	N	N	N
			65%	Williams	0.03	N	N	N	N	N	N	N	N
28.29	28.37	E3567F	35%	Max	0.03	N	N	N	Y	N	Y	N	N
			65%	Zahl	0.05	N	N	N	Y	N	Y	N	N
28.37	28.48	E3703B	14%	Zahl	0.02	State	N	N	N	N	N	N	N
			86%	Dooley	0.10	State	N	N	N	N	N	N	N
28.48	28.56	E3703D	32%	Zahl	0.02	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.05	N	N	N	Y	N	Y	N	N
28.56	28.69	E3703B	14%	Zahl	0.02	State	N	N	N	N	N	N	N
			86%	Dooley	0.11	State	N	N	N	N	N	N	N
28.69	28.98	E3703D	32%	Zahl	0.10	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.20	N	N	N	Y	N	Y	N	N
28.98	29.13	E3609F	13%	Maschetah	0.02	N	N	N	N	N	N	N	N
			16%	Maschetah	0.02	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.05	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.06	N	N	N	Y	N	Y	N	N
29.13	29.20	E3541C	48%	Zahl	0.03	N	N	N	Y	N	N	N	N
			52%	Williams	0.04	N	N	N	N	N	N	N	N
29.20	29.27	E2120B	100%	Farnuf	0.06	State	N	N	N	N	N	N	N
29.27	29.36	E3555D	33%	Williams	0.03	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.07	N	N	N	Y	N	Y	N	N
29.36	29.52	E3701B	100%	Dooley	0.15	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
29.52	29.61	E3703C	26%	Zahl	0.02	N	N	N	Y	N	N	N	N
			74%	Dooley	0.06	N	N	N	Y	N	N	N	N
29.61	29.68	E3703D	32%	Zahl	0.03	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.05	N	N	N	Y	N	Y	N	N
29.68	29.75	E2120B	100%	Farnuf	0.06	State	N	N	N	N	N	N	N
29.75	29.80	E4553B	100%	Tally	0.05	State	N	N	N	N	N	N	N
29.80	29.82	E2120B	100%	Farnuf	0.02	State	N	N	N	N	N	N	N
29.82	29.90	E1423F	21%	Parshall	0.02	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.02	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.04	N	N	N	Y	Y	Y	N	Paralithic
29.90	30.23	E4195A	100%	Velva	0.33	State	N	N	N	N	N	N	N
30.23	30.43	E4137A	100%	Korchea	0.19	State	N	N	N	N	N	N	N
30.43	30.49	E2120A	100%	Farnuf	0.07	State	N	N	N	N	N	N	N
30.49	30.69	E0447B	25%	Belfield	0.05	N	N	N	N	N	N	N	N
			75%	Daglum	0.15	N	N	N	N	N	N	N	N
30.69	30.72	E4195A	100%	Velva	0.03	State	N	N	N	N	N	N	N
30.72	30.90	E4137A	100%	Korchea	0.17	State	N	N	N	N	N	N	N
30.90	30.95	E4139A	43%	Fluvaquents	0.02	N	Y	N	N	N	N	N	N
			57%	Korchea	0.03	N	N	N	N	N	N	N	N
30.95	31.22	E4195A	100%	Velva	0.28	State	N	N	N	N	N	N	N
31.22	31.28	E3567F	35%	Max	0.02	N	N	N	Y	N	Y	N	N
			65%	Zahl	0.04	N	N	N	Y	N	Y	N	N
31.28	31.37	E1865C	25%	Parshall	0.02	N	N	N	Y	N	N	N	N
			75%	Tally	0.07	N	N	N	Y	N	N	N	N
31.37	31.54	E3703D	32%	Zahl	0.05	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.11	N	N	N	Y	N	Y	N	N
31.54	31.58	E1865C	25%	Parshall	0.01	N	N	N	Y	N	N	N	N
			75%	Tally	0.03	N	N	N	Y	N	N	N	N
31.58	31.62	E3567F	35%	Max	0.01	N	N	N	Y	N	Y	N	N
			65%	Zahl	0.03	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
31.62	31.76	E2120C	100%	Farnuf	0.14	State	N	N	N	N	N	N	N
31.76	31.88	E3541C	48%	Zahl	0.06	N	N	N	Y	N	N	N	N
			52%	Williams	0.06	N	N	N	N	N	N	N	N
31.88	31.93	E3555D	33%	Williams	0.02	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.03	N	N	N	Y	N	Y	N	N
31.93	31.97	E2120B	100%	Farnuf	0.04	State	N	N	N	N	N	N	N
31.97	32.05	E2120A	100%	Farnuf	0.09	State	N	N	N	N	N	N	N
32.05	32.30	E3541C	48%	Zahl	0.12	N	N	N	Y	N	N	N	N
			52%	Williams	0.13	N	N	N	N	N	N	N	N
32.30	32.71	E2120B	100%	Farnuf	0.42	State	N	N	N	N	N	N	N
32.71	33.00	E2120C	100%	Farnuf	0.29	State	N	N	N	N	N	N	N
33.00	33.20	E2120B	100%	Farnuf	0.20	State	N	N	N	N	N	N	N
33.20	33.29	E0617B	24%	Daglum	0.02	State	N	N	N	N	N	N	N
			35%	Savage	0.03	State	N	N	N	N	N	N	N
			41%	Belfield	0.04	State	N	N	N	N	N	N	N
33.29	33.34	E2641C	24%	Werner	0.01	State	N	N	Y	N	N	N	Paralithic
			76%	Reeder	0.04	State	N	N	N	N	N	N	Paralithic
33.34	33.39	E3641D	26%	Williams	0.01	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.02	N	N	N	Y	N	Y	N	N
33.39	33.49	E2641C	24%	Werner	0.02	State	N	N	Y	N	N	N	Paralithic
			76%	Reeder	0.07	State	N	N	N	N	N	N	Paralithic
33.49	33.59	E3641D	26%	Williams	0.03	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.04	N	N	N	Y	N	Y	N	N
33.59	33.66	E3541B	35%	Zahl	0.02	N	N	N	N	N	N	N	N
			65%	Williams	0.04	N	N	N	N	N	N	N	N
33.66	33.86	E3609F	13%	Maschetah	0.03	N	N	N	N	N	N	N	N
			16%	Maschetah	0.03	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.07	N	N	N	Y	N	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			39%	Zahl	0.08	N	N	N	Y	N	Y	N	N
33.86	33.92	E3639C	25%	Cabba	0.02	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.02	N	N	N	N	N	N	N	N
			39%	Zahl	0.02	N	N	N	Y	N	N	N	N
33.92	33.97	E3555D	33%	Williams	0.02	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.03	N	N	N	Y	N	Y	N	N
33.97	34.11	E3639C	25%	Cabba	0.03	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.05	N	N	N	N	N	N	N	N
			39%	Zahl	0.05	N	N	N	Y	N	N	N	N
34.11	34.20	E3555D	33%	Williams	0.03	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.06	N	N	N	Y	N	Y	N	N
34.20	34.29	E3541C	48%	Zahl	0.04	N	N	N	Y	N	N	N	N
			52%	Williams	0.05	N	N	N	N	N	N	N	N
34.29	34.34	E3641D	26%	Williams	0.01	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.02	N	N	N	Y	N	Y	N	N
34.34	34.40	E3541C	48%	Zahl	0.03	N	N	N	Y	N	N	N	N
			52%	Williams	0.03	N	N	N	N	N	N	N	N
34.40	34.53	E3641D	26%	Williams	0.03	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.04	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.05	N	N	N	Y	N	Y	N	N
34.53	34.76	E3639C	25%	Cabba	0.06	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.08	N	N	N	N	N	N	N	N
			39%	Zahl	0.09	N	N	N	Y	N	N	N	N
34.76	34.85	E3641D	26%	Williams	0.02	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.03	N	N	N	Y	N	Y	N	N
34.85	34.88	E0559B	36%	Janesburg	0.01	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.02	N	N	N	N	N	N	N	Paralithic
34.88	35.11	E3639C	25%	Cabba	0.06	N	N	N	Y	N	N	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			36%	Williams	0.08	N	N	N	N	N	N	N	N
			39%	Zahl	0.09	N	N	N	Y	N	N	N	N
35.11	35.29	E0605A	33%	Grail	0.06	State	N	N	N	N	N	N	N
			67%	Belfield	0.12	State	N	N	N	N	N	N	N
35.29	35.37	E3701A	100%	Dooley	0.08	State	N	N	N	N	N	N	N
35.37	35.52	E0605A	33%	Grail	0.05	State	N	N	N	N	N	N	N
			67%	Belfield	0.10	State	N	N	N	N	N	N	N
35.52	35.67	E0821A	100%	Lawther	0.14	State	N	N	N	N	N	N	N
35.67	35.84	E4585B	100%	Manning	0.17	N	N	N	N	N	N	Y	N
35.84	35.87	E4561F	27%	Wabek	0.01	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.01	N	N	N	Y	N	Y	N	N
			40%	Manning	0.01	N	N	N	Y	N	Y	Y	N
35.87	35.88	E4729A	100%	Heil	0.01	N	Y	Y	N	N	N	N	N
35.88	36.00	E4561F	27%	Wabek	0.03	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.04	N	N	N	Y	N	Y	N	N
			40%	Manning	0.05	N	N	N	Y	N	Y	Y	N
36.00	36.42	E4585B	100%	Manning	0.42	N	N	N	N	N	N	Y	N
36.42	36.49	E4139A	43%	Fluvaquents	0.03	N	Y	N	N	N	N	N	N
			57%	Korchea	0.04	N	N	N	N	N	N	N	N
36.49	36.64	E4195A	100%	Velva	0.16	State	N	N	N	N	N	N	N
36.64	36.71	E0447B	25%	Belfield	0.02	N	N	N	N	N	N	N	N
			75%	Daglum	0.05	N	N	N	N	N	N	N	N
36.71	36.78	E4542B	34%	Bowdle	0.02	N	N	N	N	N	N	Y	N
			66%	Lehr	0.05	N	N	N	N	N	N	Y	N
36.78	36.92	E0447B	25%	Belfield	0.03	N	N	N	N	N	N	N	N
			75%	Daglum	0.10	N	N	N	N	N	N	N	N
36.92	37.01	E4561F	27%	Wabek	0.03	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.03	N	N	N	Y	N	Y	N	N
			40%	Manning	0.04	N	N	N	Y	N	Y	Y	N
37.01	37.30	E4585B	100%	Manning	0.28	N	N	N	N	N	N	Y	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
37.30	37.38	E3701B	100%	Dooley	0.08	State	N	N	N	N	N	N	N
37.38	37.48	E3541C	48%	Zahl	0.05	N	N	N	Y	N	N	N	N
			52%	Williams	0.05	N	N	N	N	N	N	N	N
37.48	37.51	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.02	N	N	N	N	N	N	N	N
37.51	37.66	E3541C	48%	Zahl	0.08	N	N	N	Y	N	N	N	N
			52%	Williams	0.08	N	N	N	N	N	N	N	N
37.66	37.78	E0447B	25%	Belfield	0.03	N	N	N	N	N	N	N	N
			75%	Daglum	0.09	N	N	N	N	N	N	N	N
37.78	37.79	E3701B	100%	Dooley	0.01	State	N	N	N	N	N	N	N
37.79	37.79	E3107F	44%	Badland	0.00	N	N	N	Y	N	Y	N	Paralithic
			56%	Cabba	0.00	N	N	N	Y	N	Y	N	Paralithic
37.79	37.92	E0447B	25%	Belfield	0.03	N	N	N	N	N	N	N	N
			75%	Daglum	0.10	N	N	N	N	N	N	N	N
37.92	37.97	E2120A	100%	Farnuf	0.05	State	N	N	N	N	N	N	N
37.97	38.22	E0447B	25%	Belfield	0.06	N	N	N	N	N	N	N	N
			75%	Daglum	0.19	N	N	N	N	N	N	N	N
38.22	38.22	E1333C	33%	Cohagen	0.00	N	N	N	Y	N	N	N	Paralithic
			67%	Vebar	0.00	N	N	N	Y	N	N	N	Paralithic
38.22	38.34	E3555D	33%	Williams	0.04	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.08	N	N	N	Y	N	Y	N	N
38.34	38.46	E0559B	36%	Janesburg	0.04	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.08	N	N	N	N	N	N	N	Paralithic
38.46	38.54	E4995F	100%	Pits	0.07	N	N	N	Y	N	Y	Y	N
38.54	38.73	E3609F	13%	Maschetah	0.03	N	N	N	N	N	N	N	N
			16%	Maschetah	0.03	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.06	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.08	N	N	N	Y	N	Y	N	N
38.73	39.00	E0617B	24%	Daglum	0.06	State	N	N	N	N	N	N	N
			35%	Savage	0.10	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			41%	Belfield	0.11	State	N	N	N	N	N	N	N
39.00	39.06	E4561F	27%	Wabek	0.02	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.02	N	N	N	Y	N	Y	N	N
			40%	Manning	0.02	N	N	N	Y	N	Y	Y	N
39.06	39.19	E0447B	25%	Belfield	0.03	N	N	N	N	N	N	N	N
			75%	Daglum	0.09	N	N	N	N	N	N	N	N
39.19	39.21	E4561F	27%	Wabek	0.01	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.01	N	N	N	Y	N	Y	N	N
			40%	Manning	0.01	N	N	N	Y	N	Y	Y	N
39.21	39.26	E4143A	15%	Korchea	0.01	N	N	N	N	N	N	N	N
			41%	Fluvaquents	0.02	N	Y	N	N	N	N	N	N
			43%	Korchea	0.02	N	N	N	N	N	N	N	N
39.26	39.31	E2120A	100%	Farnuf	0.05	State	N	N	N	N	N	N	N
39.31	39.35	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.03	N	N	N	N	N	N	N	N
39.35	39.43	E2120A	100%	Farnuf	0.09	State	N	N	N	N	N	N	N
39.43	39.69	E0447B	25%	Belfield	0.06	N	N	N	N	N	N	N	N
			75%	Daglum	0.19	N	N	N	N	N	N	N	N
39.69	40.01	E0515B	38%	Daglum	0.12	N	N	N	N	N	N	N	N
			63%	Rhoades	0.20	N	N	N	N	N	N	N	N
40.01	40.09	E4005A	100%	Harriet	0.08	N	Y	Y	N	N	N	N	N
40.09	40.30	E0447B	25%	Belfield	0.05	N	N	N	N	N	N	N	N
			75%	Daglum	0.16	N	N	N	N	N	N	N	N
40.30	40.40	E0559B	36%	Janesburg	0.03	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.06	N	N	N	N	N	N	N	Paralithic
40.40	40.52	E1355D	20%	Tally	0.03	N	N	N	Y	N	Y	N	Paralithic
			34%	Flasher	0.04	N	N	N	Y	Y	Y	N	Paralithic
			45%	Vebar	0.06	N	N	N	Y	N	Y	N	Paralithic
40.52	40.62	E3641D	26%	Williams	0.03	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			41%	Zahl	0.04	N	N	N	Y	N	Y	N	N
40.62	40.68	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.05	N	N	N	N	N	N	N	N
40.68	41.00	E0559B	36%	Janesburg	0.11	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.21	N	N	N	N	N	N	N	Paralithic
41.00	41.19	E1865B	32%	Parshall	0.06	State	N	N	N	N	N	N	N
			68%	Tally	0.13	State	N	N	N	N	N	N	N
41.19	41.29	E3107F	44%	Badland	0.04	N	N	N	Y	N	Y	N	Paralithic
			56%	Cabba	0.06	N	N	N	Y	N	Y	N	Paralithic
41.29	41.38	E0559B	36%	Janesburg	0.03	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.06	N	N	N	N	N	N	N	Paralithic
41.38	41.62	E0701F	27%	Cabba	0.07	N	N	N	Y	N	Y	N	Paralithic
			30%	Janesburg	0.08	N	N	N	Y	N	Y	N	Paralithic
			43%	Dogtooth	0.11	N	N	N	Y	N	Y	N	Paralithic
41.62	41.73	E1355D	20%	Tally	0.02	N	N	N	Y	N	Y	N	Paralithic
			34%	Flasher	0.03	N	N	N	Y	Y	Y	N	Paralithic
			45%	Vebar	0.05	N	N	N	Y	N	Y	N	Paralithic
41.73	41.80	E0701F	27%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			30%	Janesburg	0.02	N	N	N	Y	N	Y	N	Paralithic
			43%	Dogtooth	0.03	N	N	N	Y	N	Y	N	Paralithic
41.80	41.85	E0605A	33%	Grail	0.02	State	N	N	N	N	N	N	N
			67%	Belfield	0.03	State	N	N	N	N	N	N	N
41.85	42.07	E0701F	27%	Cabba	0.06	N	N	N	Y	N	Y	N	Paralithic
			30%	Janesburg	0.07	N	N	N	Y	N	Y	N	Paralithic
			43%	Dogtooth	0.10	N	N	N	Y	N	Y	N	Paralithic
42.07	42.13	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.04	N	N	N	N	N	N	N	N
42.13	42.20	E3641D	26%	Williams	0.02	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.03	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
42.20	42.66	E0447B	25%	Belfield	0.11	N	N	N	N	N	N	N	N
			75%	Daglum	0.35	N	N	N	N	N	N	N	N
42.66	42.85	E1333C	33%	Cohagen	0.06	N	N	N	Y	N	N	N	Paralithic
			67%	Vebar	0.13	N	N	N	Y	N	N	N	Paralithic
42.85	42.92	E2120B	100%	Farnuf	0.07	State	N	N	N	N	N	N	N
42.92	43.03	E0913C	24%	Wayden	0.02	N	N	N	N	N	N	N	Paralithic
			76%	Moreau	0.08	N	N	N	Y	N	N	N	Paralithic
43.03	43.35	E3703B	14%	Zahl	0.05	State	N	N	N	N	N	N	N
			86%	Dooley	0.28	State	N	N	N	N	N	N	N
43.35	43.36	E3701B	100%	Dooley	0.01	State	N	N	N	N	N	N	N
43.36	43.53	E3703B	14%	Zahl	0.02	State	N	N	N	N	N	N	N
			86%	Dooley	0.15	State	N	N	N	N	N	N	N
43.53	43.74	E3703C	26%	Zahl	0.05	N	N	N	Y	N	N	N	N
			74%	Dooley	0.16	N	N	N	Y	N	N	N	N
43.74	43.90	E3703B	14%	Zahl	0.02	State	N	N	N	N	N	N	N
			86%	Dooley	0.14	State	N	N	N	N	N	N	N
43.90	43.98	E4542B	34%	Bowdle	0.03	N	N	N	N	N	N	Y	N
			66%	Lehr	0.05	N	N	N	N	N	N	Y	N
43.98	44.05	E0605A	33%	Grail	0.02	State	N	N	N	N	N	N	N
			67%	Belfield	0.05	State	N	N	N	N	N	N	N
44.05	44.10	E3703B	14%	Zahl	0.01	State	N	N	N	N	N	N	N
			86%	Dooley	0.04	State	N	N	N	N	N	N	N
44.10	44.16	E0605A	33%	Grail	0.02	State	N	N	N	N	N	N	N
			67%	Belfield	0.04	State	N	N	N	N	N	N	N
44.16	44.39	E3703C	26%	Zahl	0.06	N	N	N	Y	N	N	N	N
			74%	Dooley	0.18	N	N	N	Y	N	N	N	N
44.39	44.48	E1865C	25%	Parshall	0.02	N	N	N	Y	N	N	N	N
			75%	Tally	0.06	N	N	N	Y	N	N	N	N
44.48	44.50	E3703D	32%	Zahl	0.01	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.02	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
44.50	44.55	E3559E	39%	Max	0.02	N	N	N	Y	N	Y	N	N
			61%	Zahl	0.03	N	N	N	Y	N	Y	N	N
44.55	44.70	E0559B	36%	Janesburg	0.05	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.10	N	N	N	N	N	N	N	Paralithic
44.70	44.77	E0605A	33%	Grail	0.02	State	N	N	N	N	N	N	N
			67%	Belfield	0.05	State	N	N	N	N	N	N	N
44.77	44.95	E4137A	100%	Korchea	0.18	State	N	N	N	N	N	N	N
44.95	45.01	E3541C	48%	Zahl	0.03	N	N	N	Y	N	N	N	N
			52%	Williams	0.03	N	N	N	N	N	N	N	N
45.01	45.48	E0563B	42%	Dogtooth	0.20	N	N	N	N	N	N	N	Paralithic
			58%	Janesburg	0.28	N	N	N	N	N	N	N	Paralithic
45.48	45.61	E0605A	33%	Grail	0.04	State	N	N	N	N	N	N	N
			67%	Belfield	0.08	State	N	N	N	N	N	N	N
45.61	45.78	E0559B	36%	Janesburg	0.06	N	N	N	N	N	N	N	Paralithic
			64%	Dogtooth	0.11	N	N	N	N	N	N	N	Paralithic
45.78	45.93	E1333B	26%	Cohagen	0.04	N	N	N	Y	N	N	N	Paralithic
			74%	Vebar	0.11	N	N	N	N	N	N	N	Paralithic
45.93	45.95	E1333C	33%	Cohagen	0.01	N	N	N	Y	N	N	N	Paralithic
			67%	Vebar	0.01	N	N	N	Y	N	N	N	Paralithic
45.95	45.99	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.03	N	N	N	N	N	N	N	N
45.99	46.07	E3703D	32%	Zahl	0.03	N	N	N	Y	N	Y	N	N
			68%	Dooley	0.05	N	N	N	Y	N	Y	N	N
46.07	46.34	E3703C	26%	Zahl	0.07	N	N	N	Y	N	N	N	N
			74%	Dooley	0.20	N	N	N	Y	N	N	N	N
46.34	46.74	E3703B	14%	Zahl	0.06	State	N	N	N	N	N	N	N
			86%	Dooley	0.35	State	N	N	N	N	N	N	N
46.74	46.88	E0605A	33%	Grail	0.05	State	N	N	N	N	N	N	N
			67%	Belfield	0.09	State	N	N	N	N	N	N	N
46.88	46.95	E4195A	100%	Velva	0.06	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
46.95	47.02	E4139A	43%	Fluvaquents	0.03	N	Y	N	N	N	N	N	N
			57%	Korchea	0.04	N	N	N	N	N	N	N	N
47.02	47.06	E4195A	100%	Velva	0.04	State	N	N	N	N	N	N	N
47.06	47.14	E0605A	33%	Grail	0.03	State	N	N	N	N	N	N	N
			67%	Belfield	0.05	State	N	N	N	N	N	N	N
47.14	47.24	E2120A	100%	Farnuf	0.10	State	N	N	N	N	N	N	N
47.24	47.42	E0835A	23%	Grail	0.04	State	N	N	N	N	N	N	N
			78%	Savage	0.14	State	N	N	N	N	N	N	N
47.42	47.57	E2120A	100%	Farnuf	0.15	State	N	N	N	N	N	N	N
47.57	47.70	E0605A	33%	Grail	0.04	State	N	N	N	N	N	N	N
			67%	Belfield	0.09	State	N	N	N	N	N	N	N
47.70	47.74	E2120A	100%	Farnuf	0.04	State	N	N	N	N	N	N	N
47.74	47.98	E0515B	38%	Daglum	0.09	N	N	N	N	N	N	N	N
			63%	Rhoades	0.15	N	N	N	N	N	N	N	N
47.98	48.13	E0835A	23%	Grail	0.03	State	N	N	N	N	N	N	N
			78%	Savage	0.12	State	N	N	N	N	N	N	N
48.13	48.18	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.04	N	N	N	N	N	N	N	N
48.18	48.37	E2120A	100%	Farnuf	0.20	State	N	N	N	N	N	N	N
48.37	48.40	E3701A	100%	Dooley	0.03	State	N	N	N	N	N	N	N
48.40	48.44	E4190F	21%	Havrelon	0.01	N	N	N	N	N	N	N	N
			36%	Chama	0.01	N	N	N	Y	N	Y	N	Paralithic
			43%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
48.44	48.62	E0605A	33%	Grail	0.06	State	N	N	N	N	N	N	N
			67%	Belfield	0.12	State	N	N	N	N	N	N	N
48.62	48.66	E2120A	100%	Farnuf	0.04	State	N	N	N	N	N	N	N
48.66	48.90	E2120B	100%	Farnuf	0.24	State	N	N	N	N	N	N	N
48.90	49.01	E3609F	13%	Maschetah	0.01	N	N	N	N	N	N	N	N
			16%	Maschetah	0.02	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			39%	Zahl	0.04	N	N	N	Y	N	Y	N	N
49.01	49.11	E3639C	25%	Cabba	0.03	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.04	N	N	N	N	N	N	N	N
			39%	Zahl	0.04	N	N	N	Y	N	N	N	N
49.11	49.21	E3555D	33%	Williams	0.03	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.06	N	N	N	Y	N	Y	N	N
49.21	49.46	E2120B	100%	Farnuf	0.25	State	N	N	N	N	N	N	N
49.46	49.60	E1865B	32%	Parshall	0.04	State	N	N	N	N	N	N	N
			68%	Tally	0.09	State	N	N	N	N	N	N	N
49.60	49.66	E1603D	43%	Telfer	0.03	N	N	N	Y	Y	Y	N	N
			57%	Beisigl	0.04	N	N	N	Y	Y	Y	N	Paralithic
49.66	49.87	E1865C	25%	Parshall	0.05	N	N	N	Y	N	N	N	N
			75%	Tally	0.15	N	N	N	Y	N	N	N	N
49.87	49.89	E2120C	100%	Farnuf	0.02	State	N	N	N	N	N	N	N
49.89	50.05	E2601D	39%	Cabba	0.06	N	N	N	Y	N	Y	N	Paralithic
			61%	Amor	0.09	N	N	N	Y	N	Y	N	Paralithic
50.05	50.19	E1403D	19%	Telfer	0.03	N	N	N	Y	Y	Y	N	N
			32%	Flasher	0.05	N	N	N	Y	Y	Y	N	Paralithic
			49%	Beisigl	0.07	N	N	N	Y	Y	Y	N	Paralithic
50.19	50.39	E1423F	21%	Parshall	0.04	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.06	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.10	N	N	N	Y	Y	Y	N	Paralithic
50.39	50.78	E1403D	19%	Telfer	0.07	N	N	N	Y	Y	Y	N	N
			32%	Flasher	0.13	N	N	N	Y	Y	Y	N	Paralithic
			49%	Beisigl	0.19	N	N	N	Y	Y	Y	N	Paralithic
50.78	50.93	E3637D	22%	Tally	0.03	N	N	N	Y	N	Y	N	N
			33%	Beisigl	0.05	N	N	N	Y	Y	Y	N	Paralithic
			44%	Zahl	0.07	N	N	N	Y	N	Y	N	N
50.93	51.00	E2601C	40%	Cabba	0.03	N	N	N	Y	N	N	N	Paralithic
			60%	Amor	0.04	N	N	N	N	N	N	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
51.00	51.04	E2120B	100%	Farnuf	0.04	State	N	N	N	N	N	N	N
51.04	51.07	E4139A	43%	Fluvaquents	0.01	N	Y	N	N	N	N	N	N
			57%	Korchea	0.02	N	N	N	N	N	N	N	N
51.07	51.18	E3555D	33%	Williams	0.04	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.08	N	N	N	Y	N	Y	N	N
51.18	51.23	E2120A	100%	Farnuf	0.05	State	N	N	N	N	N	N	N
51.23	51.30	E4561F	27%	Wabek	0.02	N	N	N	Y	N	Y	Y	N
			33%	Schaller	0.02	N	N	N	Y	N	Y	N	N
			40%	Manning	0.03	N	N	N	Y	N	Y	Y	N
51.30	51.32	E4137A	100%	Korchea	0.03	State	N	N	N	N	N	N	N
51.32	51.50	E1865B	32%	Parshall	0.05	State	N	N	N	N	N	N	N
			68%	Tally	0.12	State	N	N	N	N	N	N	N
51.50	51.60	E1423F	21%	Parshall	0.02	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.03	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.05	N	N	N	Y	Y	Y	N	Paralithic
51.60	51.70	E4137A	100%	Korchea	0.09	State	N	N	N	N	N	N	N
51.70	51.77	E1865B	32%	Parshall	0.02	State	N	N	N	N	N	N	N
			68%	Tally	0.05	State	N	N	N	N	N	N	N
51.77	51.83	E1355D	20%	Tally	0.01	N	N	N	Y	N	Y	N	Paralithic
			34%	Flasher	0.02	N	N	N	Y	Y	Y	N	Paralithic
			45%	Vebar	0.03	N	N	N	Y	N	Y	N	Paralithic
51.83	52.13	E1423F	21%	Parshall	0.06	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.09	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.15	N	N	N	Y	Y	Y	N	Paralithic
52.13	52.33	E1865B	32%	Parshall	0.06	State	N	N	N	N	N	N	N
			68%	Tally	0.13	State	N	N	N	N	N	N	N
52.33	52.63	E4137A	100%	Korchea	0.31	State	N	N	N	N	N	N	N
52.63	52.89	E2120A	100%	Farnuf	0.26	State	N	N	N	N	N	N	N
52.89	52.97	E3637D	22%	Tally	0.02	N	N	N	Y	N	Y	N	N
			33%	Beisigl	0.03	N	N	N	Y	Y	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			44%	Zahl	0.04	N	N	N	Y	N	Y	N	N
52.97	53.31	E1423F	21%	Parshall	0.07	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.10	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.17	N	N	N	Y	Y	Y	N	Paralithic
53.31	53.44	E1355D	20%	Tally	0.03	N	N	N	Y	N	Y	N	Paralithic
			34%	Flasher	0.04	N	N	N	Y	Y	Y	N	Paralithic
			45%	Vebar	0.06	N	N	N	Y	N	Y	N	Paralithic
53.44	53.60	E3637D	22%	Tally	0.04	N	N	N	Y	N	Y	N	N
			33%	Beisigl	0.06	N	N	N	Y	Y	Y	N	Paralithic
			44%	Zahl	0.07	N	N	N	Y	N	Y	N	N
53.60	53.71	E1865B	32%	Parshall	0.03	State	N	N	N	N	N	N	N
			68%	Tally	0.07	State	N	N	N	N	N	N	N
53.71	53.80	E3641D	26%	Williams	0.02	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.04	N	N	N	Y	N	Y	N	N
53.80	53.85	E3541B	35%	Zahl	0.02	N	N	N	N	N	N	N	N
			65%	Williams	0.03	N	N	N	N	N	N	N	N
53.85	53.87	E3641D	26%	Williams	0.00	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.00	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.00	N	N	N	Y	N	Y	N	N
53.87	53.97	E3567F	35%	Max	0.04	N	N	N	Y	N	Y	N	N
			65%	Zahl	0.07	N	N	N	Y	N	Y	N	N
53.97	54.08	E3555D	33%	Williams	0.04	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.08	N	N	N	Y	N	Y	N	N
54.08	54.18	E3541C	48%	Zahl	0.05	N	N	N	Y	N	N	N	N
			52%	Williams	0.05	N	N	N	N	N	N	N	N
54.18	54.23	E3555D	33%	Williams	0.02	N	N	N	Y	N	Y	N	N
			67%	Zahl	0.04	N	N	N	Y	N	Y	N	N
54.23	54.27	E3541B	35%	Zahl	0.01	N	N	N	N	N	N	N	N
			65%	Williams	0.03	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
54.27	54.38	E3527B	29%	Bowbells	0.03	State	N	N	N	N	N	N	N
			71%	Williams	0.08	State	N	N	N	N	N	N	N
54.38	54.45	E3541B	35%	Zahl	0.02	N	N	N	N	N	N	N	N
			65%	Williams	0.04	N	N	N	N	N	N	N	N
54.45	54.55	E3527B	29%	Bowbells	0.03	State	N	N	N	N	N	N	N
			71%	Williams	0.07	State	N	N	N	N	N	N	N
54.55	54.71	E3541C	48%	Zahl	0.08	N	N	N	Y	N	N	N	N
			52%	Williams	0.08	N	N	N	N	N	N	N	N
54.71	54.74	E3609F	13%	Maschetah	0.00	N	N	N	N	N	N	N	N
			16%	Maschetah	0.01	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.01	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.01	N	N	N	Y	N	Y	N	N
54.74	54.87	E1423F	21%	Parshall	0.03	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.04	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.06	N	N	N	Y	Y	Y	N	Paralithic
54.87	55.00	E1865B	32%	Parshall	0.04	State	N	N	N	N	N	N	N
			68%	Tally	0.09	State	N	N	N	N	N	N	N
55.00	55.01	E0605A	33%	Grail	0.00	State	N	N	N	N	N	N	N
			67%	Belfield	0.01	State	N	N	N	N	N	N	N
55.01	55.05	E4005A	100%	Harriet	0.03	N	Y	Y	N	N	N	N	N
55.05	55.26	E1355D	20%	Tally	0.04	N	N	N	Y	N	Y	N	Paralithic
			34%	Flasher	0.07	N	N	N	Y	Y	Y	N	Paralithic
			45%	Vebar	0.10	N	N	N	Y	N	Y	N	Paralithic
55.26	55.45	E1333C	33%	Cohagen	0.06	N	N	N	Y	N	N	N	Paralithic
			67%	Vebar	0.12	N	N	N	Y	N	N	N	Paralithic
55.45	55.64	E1423F	21%	Parshall	0.04	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.06	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.10	N	N	N	Y	Y	Y	N	Paralithic
55.64	55.82	E0701F	27%	Cabba	0.05	N	N	N	Y	N	Y	N	Paralithic
			30%	Janesburg	0.05	N	N	N	Y	N	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			43%	Dogtooth	0.07	N	N	N	Y	N	Y	N	Paralithic
55.82	56.36	E1423F	21%	Parshall	0.11	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.16	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.27	N	N	N	Y	Y	Y	N	Paralithic
56.36	56.44	E3609F	13%	Maschetah	0.01	N	N	N	N	N	N	N	N
			16%	Maschetah	0.01	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.03	N	N	N	Y	N	Y	N	N
56.44	56.59	E1423F	21%	Parshall	0.03	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.04	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.07	N	N	N	Y	Y	Y	N	Paralithic
56.59	56.72	E1403D	19%	Telfer	0.02	N	N	N	Y	Y	Y	N	N
			32%	Flasher	0.04	N	N	N	Y	Y	Y	N	Paralithic
			49%	Beisigl	0.06	N	N	N	Y	Y	Y	N	Paralithic
56.72	56.84	E2617F	18%	Shambo	0.02	N	N	N	Y	N	Y	N	Paralithic
			33%	Chama	0.04	N	N	N	Y	N	Y	N	Paralithic
			49%	Cabba	0.06	N	N	N	Y	N	Y	N	Paralithic
56.84	56.88	E1423F	21%	Parshall	0.01	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.01	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.02	N	N	N	Y	Y	Y	N	Paralithic
56.88	56.92	E2617F	18%	Shambo	0.01	N	N	N	Y	N	Y	N	Paralithic
			33%	Chama	0.01	N	N	N	Y	N	Y	N	Paralithic
			49%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
56.92	57.02	E1423F	21%	Parshall	0.02	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.03	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.05	N	N	N	Y	Y	Y	N	Paralithic
57.02	57.28	E1403D	19%	Telfer	0.05	N	N	N	Y	Y	Y	N	N
			32%	Flasher	0.08	N	N	N	Y	Y	Y	N	Paralithic
			49%	Beisigl	0.13	N	N	N	Y	Y	Y	N	Paralithic
57.28	57.45	E1009B	23%	Barkof	0.04	State	N	N	N	N	N	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			77%	Moreau	0.13	State	N	N	N	N	N	N	Paralithic
57.45	57.59	E2737C	20%	Sen	0.03	N	N	N	N	N	N	N	Paralithic
			31%	Cabba	0.05	N	N	N	Y	N	N	N	Paralithic
			48%	Chama	0.07	N	N	N	Y	N	N	N	Paralithic
57.59	57.65	E2120B	100%	Farnuf	0.06	State	N	N	N	N	N	N	N
57.65	57.70	E1423F	21%	Parshall	0.01	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.02	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.03	N	N	N	Y	Y	Y	N	Paralithic
57.70	57.75	E2737C	20%	Sen	0.01	N	N	N	N	N	N	N	Paralithic
			31%	Cabba	0.01	N	N	N	Y	N	N	N	Paralithic
			48%	Chama	0.02	N	N	N	Y	N	N	N	Paralithic
57.75	57.83	E1423F	21%	Parshall	0.02	N	N	N	Y	N	Y	N	N
			30%	Vebar	0.02	N	N	N	Y	N	Y	N	Paralithic
			49%	Flasher	0.04	N	N	N	Y	Y	Y	N	Paralithic
57.83	57.93	E1009B	23%	Barkof	0.02	State	N	N	N	N	N	N	Paralithic
			77%	Moreau	0.08	State	N	N	N	N	N	N	Paralithic
57.93	58.19	L1425F	48%	Fleak	0.12	N	N	N	Y	Y	Y	N	Paralithic
			52%	Rhame	0.13	N	N	N	Y	N	Y	N	Paralithic
58.19	58.25	L2807D	41%	Kremlin	0.03	N	N	N	Y	N	Y	N	Paralithic
			59%	Boxwell	0.04	N	N	N	Y	N	Y	N	Paralithic
58.25	58.41	L1425F	48%	Fleak	0.08	N	N	N	Y	Y	Y	N	Paralithic
			52%	Rhame	0.09	N	N	N	Y	N	Y	N	Paralithic
58.41	58.56	L3161F	43%	Cabbart	0.06	N	N	N	Y	N	Y	N	Paralithic
			57%	Lonna	0.08	N	N	N	Y	N	Y	N	N
58.56	58.69	L3241B	100%	Patent	0.13	N	N	N	Y	N	N	N	N
58.69	58.80	L3013F	23%	Scairt	0.02	N	N	N	Y	N	Y	N	Paralithic
			77%	Kirby	0.08	N	N	N	Y	N	Y	Y	N
58.80	58.92	L2807D	41%	Kremlin	0.05	N	N	N	Y	N	Y	N	Paralithic
			59%	Boxwell	0.07	N	N	N	Y	N	Y	N	Paralithic
58.92	59.05	L0454B	44%	Gerda	0.06	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			56%	Maltese	0.07	N	N	N	N	N	N	N	N
59.05	59.08	L3013F	23%	Scairt	0.01	N	N	N	Y	N	Y	N	Paralithic
			77%	Kirby	0.02	N	N	N	Y	N	Y	Y	N
59.08	59.20	L0454B	44%	Gerda	0.06	N	N	N	N	N	N	N	N
			56%	Maltese	0.07	N	N	N	N	N	N	N	N
59.20	59.32	L2633F	18%	Arikara	0.02	N	N	N	Y	N	Y	N	N
			39%	Cabbart	0.04	N	N	N	Y	N	Y	N	Paralithic
			43%	Boxwell	0.05	N	N	N	Y	N	Y	N	Paralithic
59.32	59.62	L2311E	23%	Boxwell	0.07	N	N	N	Y	N	Y	N	Paralithic
			31%	Maltese	0.09	N	N	N	Y	N	Y	N	N
			46%	Scairt	0.14	N	N	N	Y	N	Y	N	Paralithic
59.62	59.70	L2807D	41%	Kremlin	0.03	N	N	N	Y	N	Y	N	Paralithic
			59%	Boxwell	0.05	N	N	N	Y	N	Y	N	Paralithic
59.70	59.85	L2633F	18%	Arikara	0.03	N	N	N	Y	N	Y	N	N
			39%	Cabbart	0.06	N	N	N	Y	N	Y	N	Paralithic
			43%	Boxwell	0.06	N	N	N	Y	N	Y	N	Paralithic
59.85	59.87	L2807C	41%	Kremlin	0.01	State	N	N	N	N	N	N	N
			59%	Boxwell	0.02	State	N	N	N	N	N	N	Paralithic
59.87	59.94	L3107F	33%	Badland	0.02	N	N	N	Y	N	Y	N	Paralithic
			67%	Cabbart	0.05	N	N	N	Y	N	Y	N	Paralithic
59.94	60.08	E0701F	27%	Cabba	0.04	N	N	N	Y	N	Y	N	Paralithic
			30%	Janesburg	0.04	N	N	N	Y	N	Y	N	Paralithic
			43%	Dogtooth	0.06	N	N	N	Y	N	Y	N	Paralithic
60.08	60.14	E2913B	18%	Cabba	0.01	State	N	N	N	N	N	N	Paralithic
			30%	Sen	0.02	State	N	N	N	N	N	N	Paralithic
			52%	Chama	0.03	State	N	N	N	N	N	N	Paralithic
60.14	60.18	E0617B	24%	Daglum	0.01	State	N	N	N	N	N	N	N
			35%	Savage	0.01	State	N	N	N	N	N	N	N
			41%	Belfield	0.02	State	N	N	N	N	N	N	N
60.18	60.26	E2617F	18%	Shambo	0.01	N	N	N	Y	N	Y	N	Paralithic

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			33%	Chama	0.02	N	N	N	Y	N	Y	N	Paralithic
			49%	Cabba	0.04	N	N	N	Y	N	Y	N	Paralithic
60.26	60.32	E0447B	25%	Belfield	0.01	N	N	N	N	N	N	N	N
			75%	Daglum	0.05	N	N	N	N	N	N	N	N
60.32	60.38	E2601C	40%	Cabba	0.02	N	N	N	Y	N	N	N	Paralithic
			60%	Amor	0.04	N	N	N	N	N	N	N	Paralithic
60.38	60.78	E2741D	19%	Sen	0.08	N	N	N	Y	N	Y	N	Paralithic
			31%	Chama	0.12	N	N	N	Y	N	Y	N	Paralithic
			50%	Cabba	0.20	N	N	N	Y	N	Y	N	Paralithic
60.78	60.86	E2120B	100%	Farnuf	0.08	State	N	N	N	N	N	N	N
60.86	60.91	E2107A	100%	Arnegard	0.05	Prime	N	N	N	N	N	N	N
60.91	60.98	E3703C	26%	Zahl	0.02	N	N	N	Y	N	N	N	N
			74%	Dooley	0.05	N	N	N	Y	N	N	N	N
60.98	61.12	E3541C	48%	Zahl	0.07	N	N	N	Y	N	N	N	N
			52%	Williams	0.07	N	N	N	N	N	N	N	N
61.12	61.14	E2913B	18%	Cabba	0.00	State	N	N	N	N	N	N	Paralithic
			30%	Sen	0.01	State	N	N	N	N	N	N	Paralithic
			52%	Chama	0.01	State	N	N	N	N	N	N	Paralithic
61.14	61.31	E2120B	100%	Farnuf	0.16	State	N	N	N	N	N	N	N
61.31	61.44	E1865B	32%	Parshall	0.04	State	N	N	N	N	N	N	N
			68%	Tally	0.09	State	N	N	N	N	N	N	N
61.44	61.51	E2617F	18%	Shambo	0.01	N	N	N	Y	N	Y	N	Paralithic
			33%	Chama	0.02	N	N	N	Y	N	Y	N	Paralithic
			49%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
61.51	61.83	E3639C	25%	Cabba	0.08	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.12	N	N	N	N	N	N	N	N
			39%	Zahl	0.13	N	N	N	Y	N	N	N	N
61.83	61.89	E3641D	26%	Williams	0.02	N	N	N	Y	N	Y	N	N
			33%	Cabba	0.02	N	N	N	Y	N	Y	N	Paralithic
			41%	Zahl	0.02	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
61.89	62.12	E2120B	100%	Farnuf	0.23	State	N	N	N	N	N	N	N
62.12	62.21	E2737C	20%	Sen	0.02	N	N	N	N	N	N	N	Paralithic
			31%	Cabba	0.03	N	N	N	Y	N	N	N	Paralithic
			48%	Chama	0.04	N	N	N	Y	N	N	N	Paralithic
62.21	62.26	E2120B	100%	Farnuf	0.04	State	N	N	N	N	N	N	N
62.26	62.37	E2737C	20%	Sen	0.02	N	N	N	N	N	N	N	Paralithic
			31%	Cabba	0.04	N	N	N	Y	N	N	N	Paralithic
			48%	Chama	0.06	N	N	N	Y	N	N	N	Paralithic
62.37	62.46	E3609F	13%	Maschetah	0.01	N	N	N	N	N	N	N	N
			16%	Maschetah	0.01	N	N	N	Y	N	Y	N	N
			32%	Cabba	0.03	N	N	N	Y	N	Y	N	Paralithic
			39%	Zahl	0.03	N	N	N	Y	N	Y	N	N
62.46	62.47	E2120C	100%	Farnuf	0.01	State	N	N	N	N	N	N	N
62.47	62.56	E2741D	19%	Sen	0.02	N	N	N	Y	N	Y	N	Paralithic
			31%	Chama	0.03	N	N	N	Y	N	Y	N	Paralithic
			50%	Cabba	0.05	N	N	N	Y	N	Y	N	Paralithic
62.56	62.75	E3013F	21%	Dogtooth	0.04	N	N	N	Y	N	Y	N	Paralithic
			24%	Cabba	0.05	N	N	N	Y	N	Y	N	Paralithic
			54%	Brandenburg	0.10	N	N	N	Y	N	Y	Y	N
62.75	62.77	E3013D	19%	Dogtooth	0.00	N	N	N	Y	N	Y	N	Paralithic
			33%	Searing	0.01	N	N	N	Y	N	N	Y	N
			48%	Brandenburg	0.01	N	N	N	Y	N	Y	Y	N
Elkhorn Creek-Northern Border													
0.00	0.18	E3541B	35%	Zahl	0.06	N	N	N	N	N	N	N	N
			65%	Williams	0.12	N	N	N	N	N	N	N	N
0.18	0.20	E3639C	25%	Cabba	0.01	N	N	N	Y	N	N	N	Paralithic
			36%	Williams	0.01	N	N	N	N	N	N	N	N
			39%	Zahl	0.01	N	N	N	Y	N	N	N	N
0.20	0.25	E3541B	35%	Zahl	0.02	N	N	N	N	N	N	N	N
			65%	Williams	0.03	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
0.25	0.29	E3013D	19%	Dogtooth	0.01	N	N	N	Y	N	Y	N	Paralithic
			33%	Searing	0.02	N	N	N	Y	N	N	Y	N
			48%	Brandenburg	0.02	N	N	N	Y	N	Y	Y	N
0.29	0.30	E3541B	35%	Zahl	0.00	N	N	N	N	N	N	N	N
			65%	Williams	0.00	N	N	N	N	N	N	N	N
Line Section 25 Loop													
0.00	0.66	C210B	44%	Bowbells	0.30	State	N	N	N	N	N	N	N
			56%	Williams	0.37	State	N	N	N	N	N	N	N
0.66	0.90	C165F	27%	Parnell	0.06	N	Y	Y	N	N	N	N	N
			32%	Max	0.07	N	N	N	Y	N	Y	N	N
			41%	Zahl	0.09	N	N	N	Y	N	Y	N	N
0.90	1.07	C148C	26%	Parnell	0.05	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.06	N	N	N	Y	N	N	N	N
			42%	Williams	0.07	N	N	N	N	N	N	N	N
1.07	1.11	C800B	100%	Appam	0.04	N	N	N	N	N	Y	Y	N
1.11	1.18	C877B	34%	Lehr	0.02	N	N	N	N	N	N	Y	N
			66%	Wabek	0.04	N	N	N	N	N	N	Y	N
1.18	1.20	C818B	49%	Williams	0.01	N	N	N	N	N	N	N	N
			51%	Lehr	0.01	N	N	N	N	N	N	Y	N
1.20	1.21	C800B	100%	Appam	0.01	N	N	N	N	N	Y	Y	N
1.21	1.25	C816B	100%	Lehr	0.04	N	N	N	N	N	N	Y	N
1.25	1.30	C800B	100%	Appam	0.05	N	N	N	N	N	Y	Y	N
1.30	1.51	C451A	100%	Arnegard	0.22	Prime	N	N	N	N	N	N	N
1.51	1.59	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
1.59	1.64	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
1.64	1.67	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
1.67	1.72	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
1.72	2.01	C135C	17%	Zahill	0.05	N	N	N	Y	N	N	N	N
			35%	Williams	0.10	N	N	N	N	N	N	N	N
			48%	Zahl	0.14	N	N	N	Y	N	N	N	N
2.01	2.06	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.04	State	N	N	N	N	N	N	N
2.06	2.12	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
2.12	2.16	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
2.16	2.22	C156F	19%	Bowbells	0.01	N	N	N	N	N	N	N	N
			23%	Max	0.01	N	N	N	Y	N	Y	N	N
			57%	Zahl	0.03	N	N	N	Y	N	Y	N	N
2.22	2.32	C210B	44%	Bowbells	0.04	State	N	N	N	N	N	N	N
			56%	Williams	0.05	State	N	N	N	N	N	N	N
2.32	2.36	C874B	26%	Appam	0.01	N	N	N	N	N	Y	Y	N
			74%	Wabek	0.03	N	N	N	N	N	Y	Y	N
2.36	2.42	C451A	100%	Arnegard	0.07	Prime	N	N	N	N	N	N	N
2.42	2.49	C906E	26%	Werner	0.02	N	N	N	Y	N	Y	N	Paralithic
			29%	Zahl	0.02	N	N	N	Y	N	Y	N	N
			45%	Amor	0.03	N	N	N	Y	N	Y	N	Paralithic
2.49	2.54	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
2.54	2.73	C210B	44%	Bowbells	0.09	State	N	N	N	N	N	N	N
			56%	Williams	0.11	State	N	N	N	N	N	N	N
2.73	2.79	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
2.79	2.86	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
2.86	2.89	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.02	State	N	N	N	N	N	N	N
2.89	2.95	C135D	42%	Williams	0.02	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.03	N	N	N	Y	N	Y	N	N
2.95	3.06	C210B	44%	Bowbells	0.05	State	N	N	N	N	N	N	N
			56%	Williams	0.06	State	N	N	N	N	N	N	N
3.06	3.14	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
3.14	3.69	C210B	44%	Bowbells	0.25	State	N	N	N	N	N	N	N
			56%	Williams	0.31	State	N	N	N	N	N	N	N
3.69	3.85	C148C	26%	Parnell	0.04	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.05	N	N	N	Y	N	N	N	N
			42%	Williams	0.07	N	N	N	N	N	N	N	N
3.85	3.93	C272A	40%	Tonka	0.03	N	Y	Y	N	N	N	N	N
			60%	Hamerly	0.05	N	N	Y	N	N	N	N	N
3.93	4.00	C419A	100%	Wildrose	0.07	Prime	N	N	N	N	N	N	N
4.00	4.07	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
4.07	4.24	C135C	17%	Zahill	0.03	N	N	N	Y	N	N	N	N
			35%	Williams	0.06	N	N	N	N	N	N	N	N
			48%	Zahl	0.08	N	N	N	Y	N	N	N	N
4.24	4.46	C132B	27%	Zahl	0.06	State	N	N	N	N	N	N	N
			73%	Williams	0.16	State	N	N	N	N	N	N	N
4.46	4.59	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.05	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			48%	Zahl	0.06	N	N	N	Y	N	N	N	N
4.59	4.71	C3A	100%	Parnell	0.12	N	Y	Y	N	N	N	N	N
4.71	4.80	C135D	42%	Williams	0.04	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.05	N	N	N	Y	N	Y	N	N
4.80	4.84	C3A	100%	Parnell	0.04	N	Y	Y	N	N	N	N	N
4.84	4.87	C135C	17%	Zahill	0.00	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N
			48%	Zahl	0.01	N	N	N	Y	N	N	N	N
4.87	4.98	C135D	42%	Williams	0.05	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.06	N	N	N	Y	N	Y	N	N
4.98	5.10	C148C	26%	Parnell	0.03	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.04	N	N	N	Y	N	N	N	N
			42%	Williams	0.05	N	N	N	N	N	N	N	N
5.10	5.16	C132B	27%	Zahl	0.02	State	N	N	N	N	N	N	N
			73%	Williams	0.04	State	N	N	N	N	N	N	N
5.16	5.23	C135D	42%	Williams	0.03	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.04	N	N	N	Y	N	Y	N	N
5.23	5.63	C148C	26%	Parnell	0.11	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.13	N	N	N	Y	N	N	N	N
			42%	Williams	0.17	N	N	N	N	N	N	N	N
5.63	5.73	C135D	42%	Williams	0.04	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.06	N	N	N	Y	N	Y	N	N
5.73	5.91	C132B	27%	Zahl	0.05	State	N	N	N	N	N	N	N
			73%	Williams	0.13	State	N	N	N	N	N	N	N
5.91	5.98	C156F	19%	Bowbells	0.01	N	N	N	N	N	N	N	N
			23%	Max	0.02	N	N	N	Y	N	Y	N	N
			57%	Zahl	0.04	N	N	N	Y	N	Y	N	N
5.98	6.08	C148C	26%	Parnell	0.03	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.03	N	N	N	Y	N	N	N	N
			42%	Williams	0.04	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
6.08	6.12	C825A	100%	Divide	0.05	N	N	Y	N	N	N	N	N
6.12	6.27	C148C	26%	Parnell	0.04	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.05	N	N	N	Y	N	N	N	N
			42%	Williams	0.06	N	N	N	N	N	N	N	N
6.27	6.31	C816B	100%	Lehr	0.03	N	N	N	N	N	N	Y	N
6.31	6.35	C148C	26%	Parnell	0.01	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.01	N	N	N	Y	N	N	N	N
			42%	Williams	0.02	N	N	N	N	N	N	N	N
6.35	6.61	C210B	44%	Bowbells	0.12	State	N	N	N	N	N	N	N
			56%	Williams	0.14	State	N	N	N	N	N	N	N
6.61	6.68	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.02	N	N	N	Y	N	N	N	N
			59%	Williams	0.04	N	N	N	N	N	N	N	N
6.68	6.69	C210B	44%	Bowbells	0.00	State	N	N	N	N	N	N	N
			56%	Williams	0.00	State	N	N	N	N	N	N	N
6.69	6.73	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
6.73	6.78	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.03	State	N	N	N	N	N	N	N
6.78	6.91	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.10	State	N	N	N	N	N	N	N
6.91	6.97	C210A	26%	Bowbells	0.02	State	N	N	N	N	N	N	N
			74%	Williams	0.05	State	N	N	N	N	N	N	N
6.97	7.44	C132B	27%	Zahl	0.12	State	N	N	N	N	N	N	N
			73%	Williams	0.34	State	N	N	N	N	N	N	N
7.44	7.53	C816B	100%	Lehr	0.10	N	N	N	N	N	N	Y	N
7.53	7.66	C874C	30%	Appam	0.04	N	N	N	Y	N	Y	Y	N
			70%	Wabek	0.09	N	N	N	N	N	Y	Y	N
7.66	7.71	C816B	100%	Lehr	0.05	N	N	N	N	N	N	Y	N
7.71	7.77	C415A	100%	Tansem	0.06	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
7.77	7.78	C825A	100%	Divide	0.01	N	N	Y	N	N	N	N	N
7.78	7.83	C415A	100%	Tansem	0.05	State	N	N	N	N	N	N	N
7.83	8.10	C825A	100%	Divide	0.27	N	N	Y	N	N	N	N	N
8.10	8.21	C132B	27%	Zahl	0.03	State	N	N	N	N	N	N	N
			73%	Williams	0.08	State	N	N	N	N	N	N	N
8.21	8.47	C154C	20%	Bowbells	0.05	N	N	N	N	N	N	N	N
			30%	Williams	0.08	N	N	N	N	N	N	N	N
			50%	Zahl	0.13	N	N	N	Y	N	N	N	N
8.47	8.77	C816B	100%	Lehr	0.30	N	N	N	N	N	N	Y	N
8.77	8.77	C3A	100%	Parnell	0.01	N	Y	Y	N	N	N	N	N
8.77	8.90	C825A	100%	Divide	0.12	N	N	Y	N	N	N	N	N
8.90	9.38	C135C	17%	Zahill	0.08	N	N	N	Y	N	N	N	N
			35%	Williams	0.17	N	N	N	N	N	N	N	N
			48%	Zahl	0.23	N	N	N	Y	N	N	N	N
9.38	9.49	C154C	20%	Bowbells	0.02	N	N	N	N	N	N	N	N
			30%	Williams	0.03	N	N	N	N	N	N	N	N
			50%	Zahl	0.05	N	N	N	Y	N	N	N	N
9.49	9.53	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.03	State	N	N	N	N	N	N	N
9.53	9.56	C154C	20%	Bowbells	0.01	N	N	N	N	N	N	N	N
			30%	Williams	0.01	N	N	N	N	N	N	N	N
			50%	Zahl	0.01	N	N	N	Y	N	N	N	N
9.56	9.61	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.04	State	N	N	N	N	N	N	N
9.61	9.70	C154C	20%	Bowbells	0.02	N	N	N	N	N	N	N	N
			30%	Williams	0.03	N	N	N	N	N	N	N	N
			50%	Zahl	0.04	N	N	N	Y	N	N	N	N
9.70	9.90	C135C	17%	Zahill	0.03	N	N	N	Y	N	N	N	N
			35%	Williams	0.07	N	N	N	N	N	N	N	N
			48%	Zahl	0.09	N	N	N	Y	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
9.90	10.13	C135D	42%	Williams	0.10	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.13	N	N	N	Y	N	Y	N	N
10.13	10.14	C132B	27%	Zahl	0.00	State	N	N	N	N	N	N	N
			73%	Williams	0.01	State	N	N	N	N	N	N	N
10.14	10.34	C154C	20%	Bowbells	0.04	N	N	N	N	N	N	N	N
			30%	Williams	0.06	N	N	N	N	N	N	N	N
			50%	Zahl	0.10	N	N	N	Y	N	N	N	N
10.34	10.35	C154C	20%	Bowbells	0.00	N	N	N	N	N	N	N	N
			30%	Williams	0.00	N	N	N	N	N	N	N	N
			50%	Zahl	0.00	N	N	N	Y	N	N	N	N
10.35	11.01	C135C	17%	Zahill	0.11	N	N	N	Y	N	N	N	N
			35%	Williams	0.23	N	N	N	N	N	N	N	N
			48%	Zahl	0.31	N	N	N	Y	N	N	N	N
11.01	11.07	C819A	30%	Wabek	0.02	N	N	N	N	N	N	Y	N
			70%	Lehr	0.05	N	N	N	N	N	N	Y	N
11.07	11.74	C135C	17%	Zahill	0.12	N	N	N	Y	N	N	N	N
			35%	Williams	0.23	N	N	N	N	N	N	N	N
			48%	Zahl	0.32	N	N	N	Y	N	N	N	N
11.74	11.77	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.02	State	N	N	N	N	N	N	N
11.77	11.80	C135D	42%	Williams	0.01	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.01	N	N	N	Y	N	Y	N	N
11.80	11.96	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.12	State	N	N	N	N	N	N	N
11.96	12.56	C135C	17%	Zahill	0.10	N	N	N	Y	N	N	N	N
			35%	Williams	0.21	N	N	N	N	N	N	N	N
			48%	Zahl	0.29	N	N	N	Y	N	N	N	N
12.56	12.70	C819A	30%	Wabek	0.04	N	N	N	N	N	N	Y	N
			70%	Lehr	0.10	N	N	N	N	N	N	Y	N
12.70	12.79	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
12.79	12.83	C819A	30%	Wabek	0.01	N	N	N	N	N	N	Y	N
			70%	Lehr	0.03	N	N	N	N	N	N	Y	N
12.83	12.99	C135C	17%	Zahill	0.03	N	N	N	Y	N	N	N	N
			35%	Williams	0.06	N	N	N	N	N	N	N	N
			48%	Zahl	0.08	N	N	N	Y	N	N	N	N
12.99	13.04	C153E	40%	Max	0.02	N	N	N	Y	N	Y	N	N
			60%	Zahl	0.03	N	N	N	Y	N	Y	N	N
13.04	13.10	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
13.10	13.13	C153E	40%	Max	0.01	N	N	N	Y	N	Y	N	N
			60%	Zahl	0.01	N	N	N	Y	N	Y	N	N
13.13	13.19	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
13.19	13.26	C153E	40%	Max	0.03	N	N	N	Y	N	Y	N	N
			60%	Zahl	0.04	N	N	N	Y	N	Y	N	N
13.26	13.33	C819A	30%	Wabek	0.02	N	N	N	N	N	N	Y	N
			70%	Lehr	0.05	N	N	N	N	N	N	Y	N
13.33	13.39	C870E	20%	Appam	0.01	N	N	N	Y	N	Y	Y	N
			22%	Lehr	0.01	N	N	N	Y	N	Y	Y	N
			58%	Wabek	0.04	N	N	N	Y	N	Y	Y	N
13.39	13.53	C580A	32%	Stirum	0.04	N	Y	N	N	N	N	N	N
			33%	Regan	0.04	N	Y	Y	N	N	N	N	N
			35%	Harriet	0.05	N	Y	Y	N	N	N	N	N
13.53	13.56	C870E	20%	Appam	0.01	N	N	N	Y	N	Y	Y	N
			22%	Lehr	0.01	N	N	N	Y	N	Y	Y	N
			58%	Wabek	0.02	N	N	N	Y	N	Y	Y	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
13.56	13.61	C819A	30%	Wabek	0.02	N	N	N	N	N	N	Y	N
			70%	Lehr	0.03	N	N	N	N	N	N	Y	N
13.61	13.66	C870E	20%	Appam	0.01	N	N	N	Y	N	Y	Y	N
			22%	Lehr	0.01	N	N	N	Y	N	Y	Y	N
			58%	Wabek	0.03	N	N	N	Y	N	Y	Y	N
13.66	13.93	C819A	30%	Wabek	0.08	N	N	N	N	N	N	Y	N
			70%	Lehr	0.19	N	N	N	N	N	N	Y	N
13.93	14.12	C874C	30%	Appam	0.06	N	N	N	Y	N	Y	Y	N
			70%	Wabek	0.13	N	N	N	N	N	Y	Y	N
14.12	14.27	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.11	State	N	N	N	N	N	N	N
14.27	14.31	C135D	42%	Williams	0.02	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.02	N	N	N	Y	N	Y	N	N
14.31	14.52	C135C	17%	Zahill	0.04	N	N	N	Y	N	N	N	N
			35%	Williams	0.07	N	N	N	N	N	N	N	N
			48%	Zahl	0.10	N	N	N	Y	N	N	N	N
14.52	14.69	C132B	27%	Zahl	0.05	State	N	N	N	N	N	N	N
			73%	Williams	0.13	State	N	N	N	N	N	N	N
14.69	14.79	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
14.79	14.88	C135D	42%	Williams	0.04	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.05	N	N	N	Y	N	Y	N	N
14.88	14.93	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
14.93	15.17	C132B	27%	Zahl	0.06	State	N	N	N	N	N	N	N
			73%	Williams	0.17	State	N	N	N	N	N	N	N
15.17	15.28	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
15.28	15.49	C132B	27%	Zahl	0.06	State	N	N	N	N	N	N	N
			73%	Williams	0.15	State	N	N	N	N	N	N	N
15.49	15.59	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
15.59	15.82	C132B	27%	Zahl	0.06	State	N	N	N	N	N	N	N
			73%	Williams	0.17	State	N	N	N	N	N	N	N
15.82	15.84	C135C	17%	Zahill	0.00	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N
			48%	Zahl	0.01	N	N	N	Y	N	N	N	N
15.84	15.88	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.03	State	N	N	N	N	N	N	N
15.88	15.96	C272A	40%	Tonka	0.04	N	Y	Y	N	N	N	N	N
			60%	Hamerly	0.05	N	N	Y	N	N	N	N	N
15.96	16.01	C132B	27%	Zahl	0.01	State	N	N	N	N	N	N	N
			73%	Williams	0.04	State	N	N	N	N	N	N	N
16.01	16.10	C3A	100%	Parnell	0.08	N	Y	Y	N	N	N	N	N
16.10	16.24	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.10	State	N	N	N	N	N	N	N
16.24	16.32	C825A	100%	Divide	0.09	N	N	Y	N	N	N	N	N
16.32	16.46	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.10	State	N	N	N	N	N	N	N
16.46	16.50	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
16.50	16.59	C135D	42%	Williams	0.04	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.05	N	N	N	Y	N	Y	N	N
16.59	17.18	C132B	27%	Zahl	0.16	State	N	N	N	N	N	N	N
			73%	Williams	0.43	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
17.18	17.21	C418B	18%	Sakakawea	0.01	State	N	N	N	N	N	N	N
			82%	Tansem	0.03	State	N	N	N	N	N	N	N
17.21	17.22	C272A	40%	Tonka	0.00	N	Y	Y	N	N	N	N	N
			60%	Hamerly	0.00	N	N	Y	N	N	N	N	N
17.22	17.53	C415A	100%	Tansem	0.31	State	N	N	N	N	N	N	N
17.53	17.68	C418B	18%	Sakakawea	0.03	State	N	N	N	N	N	N	N
			82%	Tansem	0.12	State	N	N	N	N	N	N	N
17.68	17.96	C415A	100%	Tansem	0.28	State	N	N	N	N	N	N	N
17.96	18.00	C410C	25%	Tansem	0.01	State	N	N	N	N	N	N	N
			75%	Sakakawea	0.03	State	N	N	Y	N	N	N	N
18.00	18.09	C819A	30%	Wabek	0.02	N	N	N	N	N	N	Y	N
			70%	Lehr	0.06	N	N	N	N	N	N	Y	N
18.09	18.38	C132B	27%	Zahl	0.08	State	N	N	N	N	N	N	N
			73%	Williams	0.22	State	N	N	N	N	N	N	N
18.38	18.44	C272A	40%	Tonka	0.02	N	Y	Y	N	N	N	N	N
			60%	Hamerly	0.04	N	N	Y	N	N	N	N	N
18.44	18.93	C424A	100%	Nutley	0.49	State	N	N	N	N	N	N	N
18.93	19.43	C415A	100%	Tansem	0.49	State	N	N	N	N	N	N	N
19.43	19.64	C410E	35%	Tansem	0.07	N	N	N	Y	N	Y	N	N
			65%	Sakakawea	0.14	N	N	N	Y	N	Y	N	N
19.64	19.79	C415A	100%	Tansem	0.15	State	N	N	N	N	N	N	N
19.79	19.84	C272A	40%	Tonka	0.02	N	Y	Y	N	N	N	N	N
			60%	Hamerly	0.03	N	N	Y	N	N	N	N	N
19.84	19.90	C874C	30%	Appam	0.02	N	N	N	Y	N	Y	Y	N
			70%	Wabek	0.04	N	N	N	N	N	Y	Y	N
19.90	20.15	C819A	30%	Wabek	0.08	N	N	N	N	N	N	Y	N
			70%	Lehr	0.17	N	N	N	N	N	N	Y	N
20.15	20.19	C424A	100%	Nutley	0.04	State	N	N	N	N	N	N	N
20.19	20.24	C819A	30%	Wabek	0.02	N	N	N	N	N	N	Y	N
			70%	Lehr	0.03	N	N	N	N	N	N	Y	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
20.24	20.32	C424A	100%	Nutley	0.08	State	N	N	N	N	N	N	N
Line Section 30 Loop													
0.00	0.24	C135C	17%	Zahill	0.04	N	N	N	Y	N	N	N	N
			35%	Williams	0.08	N	N	N	N	N	N	N	N
			48%	Zahl	0.12	N	N	N	Y	N	N	N	N
0.24	0.30	C2A	100%	Tonka	0.06	N	Y	Y	N	N	N	N	N
0.30	0.46	C135C	17%	Zahill	0.03	N	N	N	Y	N	N	N	N
			35%	Williams	0.06	N	N	N	N	N	N	N	N
			48%	Zahl	0.08	N	N	N	Y	N	N	N	N
0.46	0.52	C135D	42%	Williams	0.02	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.03	N	N	N	Y	N	Y	N	N
0.52	0.56	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
0.56	0.59	C135D	42%	Williams	0.01	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.02	N	N	N	Y	N	Y	N	N
0.59	0.67	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
0.67	0.70	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.01	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
0.70	0.92	C419A	100%	Wildrose	0.21	Prime	N	N	N	N	N	N	N
0.92	1.06	C418B	18%	Sakakawea	0.03	State	N	N	N	N	N	N	N
			82%	Tansem	0.12	State	N	N	N	N	N	N	N
1.06	1.17	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
1.17	1.30	C210B	44%	Bowbells	0.06	State	N	N	N	N	N	N	N
			56%	Williams	0.08	State	N	N	N	N	N	N	N
1.30	1.41	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			35%	Williams	0.04	N	N	N	N	N	N	N	N
			48%	Zahl	0.05	N	N	N	Y	N	N	N	N
1.41	1.46	C148C	26%	Parnell	0.01	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.02	N	N	N	Y	N	N	N	N
			42%	Williams	0.02	N	N	N	N	N	N	N	N
1.46	1.61	C132B	27%	Zahl	0.04	State	N	N	N	N	N	N	N
			73%	Williams	0.11	State	N	N	N	N	N	N	N
1.61	1.70	C418B	18%	Sakakawea	0.02	State	N	N	N	N	N	N	N
			82%	Tansem	0.07	State	N	N	N	N	N	N	N
1.70	1.75	C135D	42%	Williams	0.02	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.03	N	N	N	Y	N	Y	N	N
1.75	1.87	C132B	27%	Zahl	0.03	State	N	N	N	N	N	N	N
			73%	Williams	0.09	State	N	N	N	N	N	N	N
1.87	1.93	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
1.93	2.05	C148C	26%	Parnell	0.03	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.04	N	N	N	Y	N	N	N	N
			42%	Williams	0.05	N	N	N	N	N	N	N	N
2.05	2.10	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.03	N	N	N	Y	N	N	N	N
2.10	2.26	C135D	42%	Williams	0.07	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.09	N	N	N	Y	N	Y	N	N
2.26	2.29	C148C	26%	Parnell	0.01	N	Y	Y	N	N	N	N	N
			32%	Zahl	0.01	N	N	N	Y	N	N	N	N
			42%	Williams	0.01	N	N	N	N	N	N	N	N
2.29	2.32	C135D	42%	Williams	0.01	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.02	N	N	N	Y	N	Y	N	N
2.32	2.37	C148C	26%	Parnell	0.01	N	Y	Y	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			32%	Zahl	0.02	N	N	N	Y	N	N	N	N
			42%	Williams	0.02	N	N	N	N	N	N	N	N
2.37	2.47	C135C	17%	Zahill	0.02	N	N	N	Y	N	N	N	N
			35%	Williams	0.03	N	N	N	N	N	N	N	N
			48%	Zahl	0.04	N	N	N	Y	N	N	N	N
2.47	2.80	C210B	44%	Bowbells	0.15	State	N	N	N	N	N	N	N
			56%	Williams	0.19	State	N	N	N	N	N	N	N
2.80	2.84	C135C	17%	Zahill	0.01	N	N	N	Y	N	N	N	N
			35%	Williams	0.02	N	N	N	N	N	N	N	N
			48%	Zahl	0.02	N	N	N	Y	N	N	N	N
2.84	2.95	C210B	44%	Bowbells	0.05	State	N	N	N	N	N	N	N
			56%	Williams	0.06	State	N	N	N	N	N	N	N
2.95	2.99	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.03	N	N	N	N	N	N	N	N
2.99	3.07	C818B	49%	Williams	0.04	N	N	N	N	N	N	N	N
			51%	Lehr	0.04	N	N	N	N	N	N	Y	N
3.07	3.17	C210B	44%	Bowbells	0.05	State	N	N	N	N	N	N	N
			56%	Williams	0.06	State	N	N	N	N	N	N	N
3.17	3.26	C210A	26%	Bowbells	0.02	State	N	N	N	N	N	N	N
			74%	Williams	0.07	State	N	N	N	N	N	N	N
3.26	3.39	C816B	100%	Lehr	0.14	N	N	N	N	N	N	Y	N
3.39	3.42	C2A	100%	Tonka	0.02	N	Y	Y	N	N	N	N	N
3.42	3.84	C210B	44%	Bowbells	0.19	State	N	N	N	N	N	N	N
			56%	Williams	0.24	State	N	N	N	N	N	N	N
3.84	3.93	C132B	27%	Zahl	0.02	State	N	N	N	N	N	N	N
			73%	Williams	0.07	State	N	N	N	N	N	N	N
3.93	4.01	C3A	100%	Parnell	0.08	N	Y	Y	N	N	N	N	N
4.01	4.18	C210B	44%	Bowbells	0.07	State	N	N	N	N	N	N	N
			56%	Williams	0.09	State	N	N	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
4.18	4.20	C132C	18%	Zahill	0.00	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.01	N	N	N	N	N	N	N	N
4.20	4.25	C210B	44%	Bowbells	0.02	State	N	N	N	N	N	N	N
			56%	Williams	0.02	State	N	N	N	N	N	N	N
4.25	4.27	C132C	18%	Zahill	0.01	N	N	N	Y	N	N	N	N
			24%	Zahl	0.01	N	N	N	Y	N	N	N	N
			59%	Williams	0.02	N	N	N	N	N	N	N	N
4.27	4.56	C210B	44%	Bowbells	0.13	State	N	N	N	N	N	N	N
			56%	Williams	0.16	State	N	N	N	N	N	N	N
4.56	5.22	C210A	26%	Bowbells	0.17	State	N	N	N	N	N	N	N
			74%	Williams	0.49	State	N	N	N	N	N	N	N
5.22	5.42	C210B	44%	Bowbells	0.09	State	N	N	N	N	N	N	N
			56%	Williams	0.11	State	N	N	N	N	N	N	N
5.42	5.58	C800B	100%	Appam	0.17	N	N	N	N	N	Y	Y	N
5.58	5.67	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N
			34%	Max	0.03	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.04	N	N	N	Y	N	Y	N	N
5.67	5.76	C800B	100%	Appam	0.08	N	N	N	N	N	Y	Y	N
5.76	5.94	C155F	21%	Arnegard	0.04	N	N	N	Y	N	Y	N	N
			34%	Max	0.06	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.08	N	N	N	Y	N	Y	N	N
5.94	6.30	C210B	44%	Bowbells	0.16	State	N	N	N	N	N	N	N
			56%	Williams	0.20	State	N	N	N	N	N	N	N
6.30	6.37	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N
			34%	Max	0.03	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.03	N	N	N	Y	N	Y	N	N
6.37	6.45	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
6.45	6.53	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
			34%	Max	0.03	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.04	N	N	N	Y	N	Y	N	N
6.53	6.96	C210B	44%	Bowbells	0.19	State	N	N	N	N	N	N	N
			56%	Williams	0.24	State	N	N	N	N	N	N	N
6.96	7.08	C800B	100%	Appam	0.11	N	N	N	N	N	Y	Y	N
7.08	7.12	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
7.12	7.20	C451A	100%	Arnegard	0.08	Prime	N	N	N	N	N	N	N
7.20	7.28	C155F	21%	Arnegard	0.02	N	N	N	Y	N	Y	N	N
			34%	Max	0.03	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.04	N	N	N	Y	N	Y	N	N
7.28	7.29	C210B	44%	Bowbells	0.00	State	N	N	N	N	N	N	N
			56%	Williams	0.00	State	N	N	N	N	N	N	N
7.29	7.42	C210A	26%	Bowbells	0.03	State	N	N	N	N	N	N	N
			74%	Williams	0.10	State	N	N	N	N	N	N	N
7.42	7.49	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.04	State	N	N	N	N	N	N	N
7.49	7.63	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.10	State	N	N	N	N	N	N	N
7.63	8.57	C210B	44%	Bowbells	0.42	State	N	N	N	N	N	N	N
			56%	Williams	0.52	State	N	N	N	N	N	N	N
8.57	8.60	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.01	N	N	N	Y	N	Y	N	N
8.60	8.77	C135D	42%	Williams	0.07	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.10	N	N	N	Y	N	Y	N	N
8.77	8.81	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
8.81	8.90	C210A	26%	Bowbells	0.02	State	N	N	N	N	N	N	N
			74%	Williams	0.07	State	N	N	N	N	N	N	N
8.90	8.93	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.01	N	N	N	Y	N	Y	N	N
8.93	9.07	C210A	26%	Bowbells	0.04	State	N	N	N	N	N	N	N
			74%	Williams	0.10	State	N	N	N	N	N	N	N
9.07	9.09	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.01	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.01	N	N	N	Y	N	Y	N	N
9.09	9.14	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.04	State	N	N	N	N	N	N	N
9.14	9.19	C155F	21%	Arnegard	0.01	N	N	N	Y	N	Y	N	N
			34%	Max	0.02	N	N	N	Y	N	Y	N	N
			45%	Zahl	0.02	N	N	N	Y	N	Y	N	N
9.19	9.55	C210B	44%	Bowbells	0.16	State	N	N	N	N	N	N	N
			56%	Williams	0.20	State	N	N	N	N	N	N	N
Tioga Compressor Lateral													
0.00	0.28	C210B	44%	Bowbells	0.12	State	N	N	N	N	N	N	N
			56%	Williams	0.16	State	N	N	N	N	N	N	N
0.28	0.41	C132C	18%	Zahill	0.02	N	N	N	Y	N	N	N	N
			24%	Zahl	0.03	N	N	N	Y	N	N	N	N
			59%	Williams	0.08	N	N	N	N	N	N	N	N
0.41	0.47	C210B	44%	Bowbells	0.03	State	N	N	N	N	N	N	N
			56%	Williams	0.03	State	N	N	N	N	N	N	N
86th Street NW Bore													
0.00	0.06	C424A	100%	Nutley	0.06	State	N	N	N	N	N	N	N
0.06	0.06	C819A	30%	Wabek	0.00	N	N	N	N	N	N	Y	N
			70%	Lehr	0.00	N	N	N	N	N	N	Y	N
0.06	0.19	C75A	100%	Vallers	0.13	N	Y	Y	N	N	N	N	N

APPENDIX 7A (cont'd)

North Bakken Expansion Project
Characteristics of the Soil Map Units at the Proposed Project Facilities

Milepost In	Milepost Out	Map Unit Symbol	Component Percent	Component Name	Total Length (miles)	Prime Farmland [a]	Hydric Soils [a]	Compaction Prone [b]	Highly Erodible		Revegetation Concerns [e]	Rocky [f]	Shallow Bedrock [g]
									Water [c]	Wind [d]			
0.19	0.22	C210A	26%	Bowbells	0.01	State	N	N	N	N	N	N	N
			74%	Williams	0.03	State	N	N	N	N	N	N	N
92nd Avene Bore													
0.00	0.08	C135D	42%	Williams	0.03	N	N	N	Y	N	Y	N	N
			58%	Zahl	0.05	N	N	N	Y	N	Y	N	N
93rd Street NW/89th Avenue NW Bore													
0.00	0.06	C165F	27%	Parnell	0.02	N	Y	Y	N	N	N	N	N
			32%	Max	0.02	N	N	N	Y	N	Y	N	N
			41%	Zahl	0.02	N	N	N	Y	N	Y	N	N
Highway 40 Bore													
0.00	0.10	C165F	27%	Parnell	0.03	N	Y	Y	N	N	N	N	N
			32%	Max	0.03	N	N	N	Y	N	Y	N	N
			41%	Zahl	0.04	N	N	N	Y	N	Y	N	N

[a] As designated by the Natural Resources Conservation Service. Prime refers to prime farmland and prime farmland if mitigated. State refers to farmland of statewiode importance.

[b] Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.

[c] Includes land in capability subclasses IVE through VIIIE and soils with an average slope greater than or equal to 9 percent.

[d] Includes soils with Wind Erodibility Group classification of 1 or 2.

[e] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained and soils with an average slope greater than or equal to 9 percent.

[f] Includes soils that have either: (1) a very gravelly, extremely gravelly, cobbley, stony, bouldery, flaggy, or channery modifier to the textural class, or (2) have greater than 5 percent (weight basis) of rock fragments larger than 3 inches in any layer within the profile.

[g] Includes soils that have bedrock within 60 inches of the soil surface. Paralithic refers to "soft" bedrock that will not likely require blasting during construction. Lithic refers to "hard" bedrock that may require blasting or other special construction techniques during installation of the proposed pipeline segments.

Note: Y = Yes; N = No

NORTH BAKKEN EXPANSION PROJECT

Resource Report 7

APPENDIX 7B
Selected Physical and Interpretive Characteristics of the soil Map Units within the Project Area

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
Tioga-Elkhorn Creek											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C132C	Williams-Zahl-Zahill complex, 6 to 9 percent slopes	Williams	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	18%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	24%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	42%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, ridges, till plains
		Zahl	58%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, ridges, till plains
C155F	Zahl-Max-Arnegard loams, 15 to 60 percent slopes	Arnegard	21%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Max	34%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Zahl	45%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C2A	Tonka silt loam, 0 to 1 percent slopes	Tonka	100%	0	1	SIL	P	M	Fine, smectitic, frigid Argiaquic Argialbolls	local alluvium over till	depressions, till plains
C415A	Tansem loam, 0 to 2 percent slopes	Tansem	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C419A	Wildrose silty clay, 0 to 2 percent slopes	Wildrose	100%	0	2	SIC	W	VS	Fine, smectitic, frigid Typic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C451A	Arnegard loam, 0 to 2 percent slopes	Arnegard	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
C580A	Harriet-Regan-Stirum complex, 0 to 2 percent slopes, occasionally flooded	Harriet	35%	0	2	L	P	MS	Fine, smectitic, frigid Typic Natraquolls	local alluvium	drainageways, till plains
		Regan	33%	0	2	SICL	VP	M	Fine-silty, mixed, superactive, frigid Typic Calciaquolls	local alluvium	drainageways, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Stirum	32%	0	2	FSL	P	MR	Coarse-loamy, mixed, superactive, frigid Typic Natraquolls	eolian deposits	outwash plains, till plains
C800B	Appam sandy loam, 2 to 6 percent slopes	Appam	100%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C816B	Lehr loam, 2 to 6 percent slopes	Lehr	100%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
C818B	Lehr-Williams loams, 0 to 6 percent slopes	Lehr	51%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, till plains
		Williams	49%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	Appam	20%	9	15	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	hills, outwash plains
		Lehr	22%	9	25	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, ridges
		Wabek	58%	9	25	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, ridges
C908F	Werner-Amor-Zahl loams, 25 to 60 percent slopes	Amor	33%	25	50	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy residuum weathered from mudstone	hills, ridges, uplands

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Werner	49%	25	50	L	W	M	Loamy, mixed, superactive, frigid, shallow Entic Haplustolls	fine-loamy residuum weathered from sandstone	ridges, uplands
		Zahl	18%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C999F	Orthents-Aquents-Urban land, highway complex, 0 to 35 percent slopes	Aquents	20%	0	3	L	SP	M	Fine-loamy, mixed (calcareous), frigid Aeric Endoaquents	fine-loamy till	swales, till plains
		Orthents	19%	0	6	L	W	M	Orthents	fine-loamy till	cuts (road, railroad, etc.), scalped areas, till plains
			43%	6	35	L	W	M	Orthents	fine-loamy till	cuts (road, railroad, etc.), scalped areas, till plains
E0447B	Daglum-Belfield complex, 0 to 6 percent slopes	Belfield	25%	0	6	SIL	MW	M	Fine, smectitic, frigid Glossic Natrustolls	clayey alluvium derived from sedimentary rock	flats, uplands
		Daglum	75%	0	6	CL	MW	M	Fine, smectitic, frigid Vertic Natrustolls	clayey alluvium	alluvial fans, uplands
E0515B	Rhoades-Daglum complex, 0 to 6 percent slopes	Daglum	38%	0	6	SIL	MW	M	Fine, smectitic, frigid Vertic Natrustolls	alluvium derived from shale and siltstone	hillslopes, plains
		Rhoades	63%	0	6	L	MW	M	Fine, smectitic, frigid Leptic Vertic Natrustolls	alluvium derived from shale and siltstone	hillslopes, plains
E0559B	Dogtooth-Janesburg silt loams, 0 to 6 percent slopes	Dogtooth	64%	0	6	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	pediments, uplands
		Janesburg	36%	0	6	SIL	W	MS	Fine, smectitic, frigid Typic Natrustolls	clayey residuum weathered from shale	pediments, uplands

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E0563B	Janesburg-Dogtooth silt loams, 0 to 6 percent slopes	Dogtooth	42%	0	6	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	pediments, uplands
		Janesburg	58%	0	6	SIL	W	MS	Fine, smectitic, frigid Typic Natrustolls	clayey residuum weathered from shale	pediments, uplands
E0605A	Belfield-Grail clay loams, 0 to 2 percent slopes	Belfield	67%	0	2	CL	MW	MS	Fine, smectitic, frigid Glossic Natrustolls	slope alluvium derived from shale and siltstone	drainageways, plains
		Grail	33%	0	2	CL	MW	MS	Fine, smectitic, frigid Pachic Vertic Argiustolls	slope alluvium derived from shale and siltstone	drainageways, plains
E0617B	Belfield-Savage-Daglum complex, 2 to 6 percent slopes	Belfield	41%	2	6	SIL	MW	M	Fine, smectitic, frigid Glossic Natrustolls	slope alluvium derived from shale and siltstone	hillslopes, plains
		Daglum	24%	2	6	CL	MW	MS	Fine, smectitic, frigid Vertic Natrustolls	slope alluvium derived from shale and siltstone	hillslopes, plains
		Savage	35%	2	6	CL	W	MS	Fine, smectitic, frigid Vertic Argiustolls	slope alluvium derived from shale and siltstone	hillslopes, plains
E0701F	Dogtooth-Janesburg-Cabba complex, 6 to 35 percent slopes	Cabba	27%	9	35	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	residuum weathered from mudstone	hillslopes, plains
		Dogtooth	43%	6	25	L	W	M	Fine, smectitic, frigid Leptic Natrustolls	residuum weathered from shale and siltstone	hillslopes, plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Janesburg	30%	6	25	SICL	W	MS	Fine, smectitic, frigid Typic Natrustolls	residuum weathered from shale and siltstone	hillslopes, plains
E0821A	Lawther silty clay, 0 to 2 percent slopes	Lawther	100%	0	2	SIC	W	S	Fine, smectitic, frigid Typic Haplusterts	clayey alluvium derived from sedimentary rock	alluvial flats, uplands
E0835A	Savage-Grail silty clay loams, 0 to 2 percent slopes	Grail	23%	0	2	SICL	MW	MS	Fine, smectitic, frigid Pachic Vertic Argiustolls	clayey alluvium derived from sedimentary rock	swales, uplands
		Savage	78%	0	2	SICL	W	MS	Fine, smectitic, frigid Vertic Argiustolls	clayey alluvium derived from sedimentary rock	alluvial flats, uplands
E0913C	Moreau-Wayden silty clays, 6 to 9 percent slopes	Moreau	76%	6	9	SIC	W	S	Fine, smectitic, frigid Vertic Haplustolls	clayey residuum weathered from calcareous shale	ridges, uplands
		Wayden	24%	6	9	SIC	W	S	Clayey, smectitic, calcareous, frigid, shallow Typic Ustorthents	clayey residuum weathered from shale	pediments, rises, uplands
E1009B	Moreau-Barkof silty clays, 3 to 6 percent slopes	Barkof	23%	3	6	SIC	W	VS	Fine, smectitic, frigid Leptic Haplusterts	clayey residuum weathered from shale	pediments, uplands
		Moreau	77%	3	6	SIC	W	S	Fine, smectitic, frigid Vertic Haplustolls	clayey residuum weathered from calcareous shale	pediments, uplands
E1333B	Vebar-Cohagen fine sandy loams, 3 to 6 percent slopes	Cohagen	26%	3	6	FSL	W	MR	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	coarse-loamy residuum weathered from sandstone	rises, uplands
		Vebar	74%	3	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy residuum weathered from calcareous sandstone	pediments, uplands

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E1333C	Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	Cohagen	33%	6	9	FSL	W	MR	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	residuum weathered from sandstone	hillslopes, plains
		Vebar	67%	6	9	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sandstone	hillslopes, plains
E1355D	Vebar-Flasher-Tally complex, 9 to 15 percent slopes	Flasher	34%	9	15	LFS	SE	R	Mixed, frigid, shallow Typic Ustipsamments	residuum weathered from sandstone	hillslopes, plains
		Tally	20%	9	15	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	slope alluvium derived from sandstone	hillslopes, plains
		Vebar	45%	9	15	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sandstone	hillslopes, plains
E1403D	Beisigl-Flasher-Telfer loamy fine sands, 6 to 15 percent slopes	Beisigl	49%	6	15	LFS	SE	R	Mixed, frigid Typic Ustipsamments	sandy residuum weathered from sandstone	hills, uplands
		Flasher	32%	6	15	LFS	SE	R	Mixed, frigid, shallow Typic Ustipsamments	sandy residuum weathered from sandstone	hills, uplands
		Telfer	19%	6	9	LFS	SE	R	Sandy, mixed, frigid Entic Haplustolls	sandy alluvium derived from sedimentary rock	hills, uplands
E1423F	Flasher-Vebar-Parshall complex, 9 to 35 percent slopes	Flasher	49%	9	35	LFS	SE	R	Mixed, frigid, shallow Typic Ustipsamments	residuum weathered from sandstone	hillslopes, plains
		Parshall	21%	9	15	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	slope alluvium derived from sandstone	hillslopes, plains
		Vebar	30%	9	25	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sandstone	hillslopes, plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E1603D	Beisigl-Telfer loamy fine sands, 6 to 15 percent slopes	Beisigl	57%	6	15	LFS	SE	R	Mixed, frigid Typic Ustipsamments	sandy residuum weathered from sandstone	hills, uplands
		Telfer	43%	6	15	LFS	SE	R	Sandy, mixed, frigid Entic Haplustolls	sandy alluvium derived from sedimentary rock	hills, uplands
E1805B	Lihen-Parshall complex, 0 to 6 percent slopes	Lihen	75%	0	6	LFS	SE	R	Sandy, mixed, frigid Entic Haplustolls	sandy alluvium derived from sedimentary rock	alluvial fans, uplands
		Parshall	25%	0	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	swales, uplands
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Parshall	32%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
		Tally	68%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E1865C	Tally-Parshall fine sandy loams, 6 to 9 percent slopes	Parshall	25%	6	9	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	hills, uplands
		Tally	75%	6	9	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	hills, uplands
E2107A	Arnegard loam, 0 to 2 percent slopes	Arnegard	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	alluvium derived from mudstone	plains, swales
E2120A	Farnuf loam, 0 to 2 percent slopes	Farnuf	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium derived from sedimentary rock	alluvial flats, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E2120B	Farnuf loam, 2 to 6 percent slopes	Farnuf	100%	2	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E2120C	Farnuf loam, 6 to 9 percent slopes	Farnuf	100%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E2145A	Shambo loam, 0 to 2 percent slopes	Shambo	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	alluvium derived from mudstone	hillslopes, plains
E2203B	Farland silt loam, 2 to 6 percent slopes	Farland	100%	2	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Argiustolls	fine-silty alluvium	alluvial fans, uplands
E2601C	Amor-Cabba loams, 6 to 9 percent slopes	Amor	60%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sedimentary rock	hillslopes, plains
		Cabba	40%	6	9	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	residuum weathered from sedimentary rock	hillslopes, plains
E2601D	Amor-Cabba loams, 9 to 15 percent slopes	Amor	61%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sedimentary rock	hillslopes, plains
		Cabba	39%	9	15	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	residuum weathered from sedimentary rock	hillslopes, plains
E2617F	Cabba-Chama-Shambo loams, 9 to 50 percent slopes	Cabba	49%	15	50	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	residuum weathered from sedimentary rock	hillslopes, plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Chama	33%	9	35	L	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	residuum weathered from sedimentary rock	hillslopes, plains
		Shambo	18%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	alluvium derived from sedimentary rock	hillslopes, plains
E2641C	Reeder-Werner loams, 6 to 9 percent slopes	Reeder	76%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy residuum weathered from mudstone	ridges, uplands
		Werner	24%	6	9	L	W	M	Loamy, mixed, superactive, frigid, shallow Entic Haplustolls	fine-loamy residuum weathered from sandstone	knolls, uplands
E2737C	Chama-Cabba-Sen silt loams, 6 to 9 percent slopes	Cabba	31%	6	9	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Chama	48%	6	9	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty residuum weathered from siltstone	hills, uplands
		Sen	20%	6	9	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustolls	fine-silty residuum weathered from siltstone	ridges, uplands
E2741D	Cabba-Chama-Sen silt loams, 9 to 15 percent slopes	Cabba	50%	9	15	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Chama	31%	9	15	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty residuum weathered from siltstone	hills, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Sen	19%	9	15	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustolls	fine-silty residuum weathered from siltstone	hills, uplands
E2913B	Chama-Sen-Cabba silt loams, 3 to 6 percent slopes	Cabba	18%	3	6	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	rises, uplands
		Chama	52%	3	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty residuum weathered from siltstone	pediments, uplands
		Sen	30%	3	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustolls	fine-silty residuum weathered from siltstone	pediments, uplands
E3013D	Brandenburg-Searing-Dogtooth complex, 6 to 15 percent slopes	Brandenburg	48%	6	15	CN-L	E	M	Fragmental, mixed, frigid Typic Ustorthents	loamy residuum weathered from porcellanite	knobs, uplands
		Dogtooth	19%	6	15	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	hills, uplands
		Searing	33%	6	9	L	W	M	Fine-loamy over fragmental, mixed, superactive, frigid Typic Haplustolls	fine-loamy residuum weathered from porcellanite	hills, uplands
E3013F	Brandenburg-Cabba-Dogtooth complex, 15 to 70 percent slopes	Brandenburg	54%	15	70	CN-L	E	M	Fragmental, mixed, frigid Typic Ustorthents	loamy residuum weathered from porcellanite	ridges, uplands
		Cabba	24%	15	70	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-loamy residuum weathered from sedimentary rock	ridges, uplands

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Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Dogtooth	21%	15	25	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	ridges, uplands
E3107F	Cabba-Badland complex, 6 to 70 percent slopes	Badland	44%	9	150	SIL	N/A	M	NULL	sedimentary rock	ridges, uplands
		Cabba	56%	6	70	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-loamy residuum weathered from sedimentary rock	ridges, uplands
E3197F	Badland, 9 to 150 percent slopes	Badland	100%	9	150	SIL	N/A	M	NULL	sedimentary rock	ridges, uplands
E3203B	Cherry silt loam, 0 to 6 percent slopes	Cherry	100%	0	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustepts	fine-silty alluvium	alluvial fans, uplands
E3203C	Cherry silt loam, 6 to 9 percent slopes	Cherry	100%	6	9	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustepts	fine-silty alluvium	alluvial fans, uplands
E3513A	Niobell-Williams loams, 0 to 3 percent slopes	Niobell	63%	0	3	L	MW	M	Fine, smectitic, frigid Glossic Natrustolls	fine-loamy till	flats, till plains
		Williams	37%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
E3513B	Niobell-Williams loams, 3 to 6 percent slopes	Niobell	54%	3	6	L	MW	M	Fine, smectitic, frigid Glossic Natrustolls	fine-loamy till	rises, till plains
		Williams	46%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	29%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	swales, till plains
		Williams	71%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains

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Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E3541B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	35%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3541C	Williams-Zahl loams, 6 to 9 percent slopes	Williams	52%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	33%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, till plains
		Zahl	67%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
E3559E	Zahl-Max loams, 15 to 25 percent slopes	Max	39%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	ridges, till plains
		Zahl	61%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3567F	Zahl-Max loams, dissected, 15 to 45 percent slopes	Max	35%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	ridges, till plains
		Zahl	65%	15	45	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3603E	Amor-Zahl-Cabba loams, 9 to 25 percent slopes	Amor	45%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy residuum weathered from mudstone	hills, uplands

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Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Cabba	26%	9	25	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-loamy residuum weathered from sedimentary rock	ridges, uplands
		Zahl	29%	9	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3607F	Zahl-Cabba-Arikara complex, 9 to 70 percent slopes	Arikara	28%	15	70	SPM	W	VR	Fine-loamy, mixed, superactive, frigid Typic Haplustepts	loamy colluvium derived from mudstone	ridges, uplands
		Cabba	30%	9	70	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Zahl	42%	9	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3609F	Zahl-Cabba-Maschetah complex, 6 to 70 percent slopes	Cabba	32%	6	70	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Maschetah	13%	2	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty alluvium derived from sedimentary rock	alluvial fans, uplands
			16%	6	15	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty alluvium derived from sedimentary rock	ridges, uplands
		Zahl	39%	9	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3637D	Zahl-Beisigl-Tally complex, 9 to 15 percent slopes	Beisigl	33%	9	15	LFS	SE	R	Mixed, frigid Typic Ustipsamments	sandy residuum weathered from sandstone	hills, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Tally	22%	9	15	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	hills, uplands
		Zahl	44%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
E3639C	Zahl-Williams-Cabba complex, 6 to 9 percent slopes	Cabba	25%	6	9	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	36%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	39%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
E3641D	Zahl-Cabba-Williams complex, 9 to 15 percent slopes	Cabba	33%	9	15	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	26%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, till plains
		Zahl	41%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
E3701A	Dooley fine sandy loam, 0 to 3 percent slopes	Dooley	100%	0	3	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains
E3701B	Dooley fine sandy loam, 3 to 6 percent slopes	Dooley	100%	3	6	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Dooley	86%	3	6	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains
		Zahl	14%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3703C	Dooley-Zahl complex, 6 to 9 percent slopes	Dooley	74%	6	9	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium	knolls, till plains
		Zahl	26%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
E3703D	Dooley-Zahl complex, 9 to 15 percent slopes	Dooley	68%	9	15	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium	knolls, till plains
		Zahl	32%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
E3763B	Temvik-Wilton-Williams silt loams, 3 to 6 percent slopes	Temvik	58%	3	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Haplustolls	fine-silty loess over till	rises, till plains
		Williams	19%	3	6	SIL	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Wilton	23%	3	6	SIL	W	M	Fine-silty, mixed, superactive, frigid Pachic Haplustolls	fine-silty loess over fine-loamy till	rises, till plains
E4005A	Harriet loam, 0 to 2 percent slopes, occasionally flooded	Harriet	100%	0	2	L	P	M	Fine, smectitic, frigid Typic Natraquolls	clayey alluvium derived from sedimentary rock	drainageways, uplands
E4051A	Trembles fine sandy loam, slightly wet, 0 to 2 percent slopes, occasionally flooded	Trembles	100%	0	2	FSL	MW	MR	Coarse-loamy, mixed, superactive, calcareous, frigid Typic Ustifluvents	coarse-loamy alluvium derived from sedimentary rock	flood plains, leveled land, river valleys

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E4137A	Korchea loam, 0 to 2 percent slopes, occasionally flooded	Korchea	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Mollic Ustifluvents	stratified fine-loamy alluvium derived from sedimentary rock	flood plains, river valleys, uplands
E4139A	Korchea-Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	Fluvaquents	43%	0	2	FSL	VP	MR	Fluvaquents	alluvium	channels, flood plains, uplands
		Korchea	57%	0	2	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Mollic Ustifluvents	stratified fine-loamy alluvium derived from sedimentary rock	flood plains, river valleys, uplands
E4143A	Korchea, wooded-Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	Fluvaquents	41%	0	2	FSL	VP	MR	Fluvaquents	alluvium	channels, flood plains, uplands
		Korchea	15%	0	2	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Mollic Ustifluvents	stratified fine-loamy alluvium derived from sedimentary rock	flood plains, river valleys, uplands
			43%	0	2	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Mollic Ustifluvents	stratified fine-loamy alluvium derived from sedimentary rock	flood plains, river valleys, uplands
E4190F	Cabba-Chama-Havrelon, occasionally flooded complex, 2 to 70 percent slopes	Cabba	43%	6	70	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Chama	36%	6	25	SIL	W	M	Fine-silty, mixed, superactive, frigid Typic Calciustolls	fine-silty residuum weathered from siltstone	hills, uplands
		Havrelon	21%	2	6	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Typic Ustifluvents	fine-loamy alluvium derived from sedimentary rock	flood plains, river valleys, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E4195A	Velva fine sandy loam, 0 to 2 percent slopes, occasionally flooded	Velva	100%	0	2	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Fluventic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	flood plains, river valleys
E4227D	Seroco, hummocky-Banks, occasionally flooded loamy fine sands, 0 to 15 percent slopes	Banks	16%	0	2	LFS	E	MR	Sandy, mixed, frigid Typic Ustifluvents	sandy alluvium	flood plains, river valleys, uplands
		Seroco	84%	2	15	LFS	E	R	Mixed, frigid Typic Ustipsamments	sandy alluvium derived from sedimentary rock and/or eolian sands	ridges, uplands
E4542B	Lehr-Bowdle loams, 2 to 6 percent slopes	Bowdle	34%	2	6	L	W	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Pachic Haplustolls	loamy alluvium	terraces, uplands
		Lehr	66%	2	6	L	SE	MR	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	fine-loamy alluvium	terraces, uplands
E4553B	Tally fine sandy loam, gravelly substratum, 2 to 6 percent slopes	Tally	100%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	stream terraces, uplands
E4561F	Manning-Schaller-Wabek complex, 6 to 35 percent slopes	Manning	40%	6	15	FSL	SE	MR	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	escarpments, stream terraces, uplands
		Schaller	33%	6	25	SL	E	MR	Sandy, mixed, frigid Entic Haplustolls	sandy alluvium derived from sedimentary rock	escarpments, stream terraces, uplands
		Wabek	27%	9	35	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly alluvium	escarpments, terraces, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E4582A	Appam sandy loam, 0 to 2 percent slopes	Appam	100%	0	2	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	glacial drainage channels, till plains
E4582B	Appam sandy loam, 2 to 6 percent slopes	Appam	100%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	glacial drainage channels, till plains
E4583E	Wabek-Appam sandy loams, 6 to 25 percent slopes	Appam	24%	6	15	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	glacial drainage channels, till plains
		Wabek	76%	15	25	SL	E	MR	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly alluvium	escarpments, terraces, uplands
E4585B	Manning fine sandy loam, 2 to 6 percent slopes	Manning	100%	2	6	FSL	SE	MR	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	river valleys, stream terraces, uplands
E4729A	Heil silty clay loam, 0 to 1 percent slopes	Heil	100%	0	1	SICL	P	MS	Fine, smectitic, frigid Typic Natraquerts	clayey alluvium derived from sedimentary rock	depressions, uplands
E4995F	Pits, gravel and sand	Pits	100%	0	60	GRX-S	E	R	NULL	alluvium	stream terraces, uplands
L0454B	Maltese-Gerda complex, 0 to 6 percent slopes	Gerda	44%	0	6	L	MW	M	Fine, smectitic, frigid Leptic Torrertic Natrustolls	slope alluvium derived from shale and siltstone	badlands, hillslopes
		Maltese	56%	0	6	SIL	MW	M	Fine, smectitic, frigid Torrertic Natrustolls	slope alluvium derived from shale and siltstone	badlands, hillslopes
L1425F	Rhame-Fleak complex, 9 to 50 percent slopes	Fleak	48%	9	50	LFS	E	R	Mixed, frigid, shallow Aridic Ustipsamments	residuum weathered from calcareous sandstone	badlands, hillslopes

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Rhame	52%	9	35	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Aridic Haplustolls	residuum weathered from sandstone	badlands, hillslopes
L2311E	Scairt-Maltese-Boxwell complex, 2 to 25 percent slopes	Boxwell	23%	6	15	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	fine-loamy residuum weathered from mudstone	badlands, ridges
		Maltese	31%	2	25	SIL	W	M	Fine, smectitic, frigid Torrertic Natrustolls	silty and clayey alluvium	badlands, ridges
		Scairt	46%	6	15	SIL	W	M	Fine, smectitic, frigid Aridic Leptic Natrustolls	silty and clayey residuum weathered from shale and siltstone	badlands, hills
L2633F	Boxwell-Cabbart-Arikara complex, 9 to 70 percent slopes	Arikara	18%	15	70	SPM	W	VR	Fine-loamy, mixed, superactive, frigid Typic Haplustepts	loamy colluvium derived from mudstone	badlands, ridges
		Boxwell	43%	9	50	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	fine-loamy residuum weathered from mudstone	badlands, ridges
		Cabbart	39%	9	50	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents	loamy residuum weathered from siltstone and mudstone	badlands, ridges
L2807C	Boxwell-Kremlin loams, 6 to 9 percent slopes	Boxwell	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	residuum weathered from mudstone	badlands, hillslopes
		Kremlin	41%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	slope alluvium derived from mudstone	badlands, hillslopes
L2807D	Boxwell-Kremlin loams, 9 to 15 percent slopes	Boxwell	59%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	residuum weathered from mudstone	badlands, hillslopes

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Kremlin	41%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Aridic Haplustolls	slope alluvium derived from mudstone	badlands, hillslopes
L3013F	Kirby-Scairt complex, 9 to 70 percent slopes	Kirby	77%	9	70	CN-L	E	MR	Loamy-skeletal over fragmental, mixed, superactive, calcareous, frigid Aridic Ustorthents	channery residuum weathered from porcellanite	badlands, ridges
		Scairt	23%	9	25	SIL	W	M	Fine, smectitic, frigid Aridic Leptic Natrustolls	silty and clayey residuum weathered from shale and siltstone	badlands, ridges
L3107F	Cabbart-Badland complex, 6 to 70 percent slopes	Badland	33%	9	150	SIL	N/A	M	NULL	shale and siltstone	badlands, hillslopes
		Cabbart	67%	6	70	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents	residuum weathered from calcareous siltstone	badlands, hillslopes
L3161F	Lonna-Cabbart silt loams, 6 to 35 percent slopes	Cabbart	43%	6	35	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents	residuum weathered from calcareous siltstone	badlands, hillslopes
		Lonna	57%	6	15	SIL	W	M	Fine-silty, mixed, superactive, frigid Aridic Haplustepts	slope alluvium derived from siltstone	alluvial fans, badlands
L3241B	Patent loam, 0 to 6 percent slopes, occasionally flooded	Patent	100%	0	6	L	W	M	Fine-loamy, mixed, superactive, calcareous, frigid Aridic Ustorthents	fine-loamy alluvium	alluvial fans, badlands

Elkhorn Creek-Northern Border

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E3541B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	35%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3639C	Zahl-Williams-Cabba complex, 6 to 9 percent slopes	Cabba	25%	6	9	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	36%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	39%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
Line Section 25 Loop											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C132C	Williams-Zahl-Zahill complex, 6 to 9 percent slopes	Williams	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	18%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	24%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	42%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, ridges, till plains
		Zahl	58%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, ridges, till plains
C148C	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	Parnell	26%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
		Williams	42%	0	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	32%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
C153E	Zahl-Max loams, 15 to 25 percent slopes	Max	40%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	disintegration moraines, till plains
		Zahl	60%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	disintegration moraines, till plains
C154C	Zahl-Williams-Bowbells loams, 3 to 9 percent slopes	Bowbells	20%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	30%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	50%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
C156F	Zahl-Max-Bowbells loams, 6 to 35 percent slopes	Bowbells	19%	6	9	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Max	23%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Zahl	57%	15	35	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C165F	Zahl-Max-Parnell complex, 0 to 35 percent slopes	Max	32%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Parnell	27%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
		Zahl	41%	15	35	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C272A	Hamerly-Tonka complex, 0 to 3 percent slopes	Hamerly	60%	0	3	L	SP	M	Fine-loamy, mixed, superactive, frigid Aeric Calciaquolls	fine-loamy till	flats, till plains
		Tonka	40%	0	1	SIL	P	M	Fine, smectitic, frigid Argiaquic Argialbolls	local alluvium over till	depressions, till plains
C2A	Tonka silt loam, 0 to 1 percent slopes	Tonka	100%	0	1	SIL	P	M	Fine, smectitic, frigid Argiaquic Argialbolls	local alluvium over till	depressions, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
C328C	Lihen-Sakakawea complex, 2 to 9 percent slopes	Lihen	55%	2	9	FSL	W	MR	Sandy, mixed, frigid Entic Haplustolls	sandy glaciofluvial deposits	outwash plains, rises
		Sakakawea	45%	2	9	SICL	W	M	Coarse-silty, mixed, superactive, frigid Typic Calciustolls	calcareous coarse-silty glaciolacustrine deposits	glacial lakes (relict), rises, till plains
C3A	Parnell silty clay loam, 0 to 1 percent slopes	Parnell	100%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
C410C	Sakakawea-Tansem loams, 6 to 9 percent slopes	Sakakawea	75%	6	9	L	W	M	Coarse-silty, mixed, superactive, frigid Typic Calciustolls	calcareous coarse-silty glaciolacustrine deposits	glacial lakes (relict), rises, till plains
		Tansem	25%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	glacial lakes (relict), rises, till plains
C410E	Sakakawea-Tansem loams, 9 to 25 percent slopes	Sakakawea	65%	9	25	L	W	M	Coarse-silty, mixed, superactive, frigid Typic Calciustolls	calcareous coarse-silty glaciolacustrine deposits	glacial lakes (relict), ridges, till plains
		Tansem	35%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	glacial lakes (relict), hills, till plains
C415A	Tansem loam, 0 to 2 percent slopes	Tansem	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C418B	Tansem-Sakakawea loams, 2 to 6 percent slopes	Sakakawea	18%	2	6	SICL	W	M	Coarse-silty, mixed, superactive, frigid Typic Calciustolls	calcareous coarse-silty glaciolacustrine deposits	glacial lakes (relict), rises, till plains
		Tansem	82%	2	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	glacial lakes (relict), rises, till plains
C419A	Wildrose silty clay, 0 to 2 percent slopes	Wildrose	100%	0	2	SIC	W	VS	Fine, smectitic, frigid Typic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
C424A	Nutley silty clay, low precipitation, 0 to 2 percent slopes	Nutley	100%	0	2	SIC	W	S	Fine, smectitic, frigid Chromic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C451A	Arnegard loam, 0 to 2 percent slopes	Arnegard	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
C580A	Harriet-Regan-Stirum complex, 0 to 2 percent slopes, occasionally flooded	Harriet	35%	0	2	L	P	MS	Fine, smectitic, frigid Typic Natraquolls	local alluvium	drainageways, till plains
		Regan	33%	0	2	SICL	VP	M	Fine-silty, mixed, superactive, frigid Typic Calciaquolls	local alluvium	drainageways, till plains
		Stirum	32%	0	2	FSL	P	MR	Coarse-loamy, mixed, superactive, frigid Typic Natraquolls	eolian deposits	outwash plains, till plains
C800B	Appam sandy loam, 2 to 6 percent slopes	Appam	100%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C816B	Lehr loam, 2 to 6 percent slopes	Lehr	100%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
C818B	Lehr-Williams loams, 0 to 6 percent slopes	Lehr	51%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, till plains
		Williams	49%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
C819A	Lehr-Wabek loams, 0 to 2 percent slopes	Lehr	70%	0	2	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	30%	0	2	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C825A	Divide loam, 0 to 2 percent slopes	Divide	100%	0	2	L	SP	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Aeric Calciaquolls	local alluvium	flats, outwash plains
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	Appam	20%	9	15	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	hills, outwash plains
		Lehr	22%	9	25	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, ridges
		Wabek	58%	9	25	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, ridges
C874B	Wabek-Appam complex, 2 to 6 percent slopes	Appam	26%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	74%	2	6	GR-SL	E	MR	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C874C	Wabek-Appam complex, 6 to 9 percent slopes	Appam	30%	6	9	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	knolls, outwash plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Wabek	70%	6	9	GR-SL	E	MR	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C877B	Wabek-Lehr complex, 2 to 6 percent slopes	Lehr	34%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	66%	2	6	GR-L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C906E	Amor-Zahl-Werner loams, 9 to 25 percent slopes	Amor	45%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy residuum weathered from mudstone	hills, ridges, uplands
		Werner	26%	9	25	L	W	M	Loamy, mixed, superactive, frigid, shallow Entic Haplustolls	fine-loamy residuum weathered from sandstone	hills, ridges, uplands
		Zahl	29%	9	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C990F	Pits, gravel and sand, 0 to 60 percent slopes	Pits	100%	0	60	GRX-S	E	R	NULL	alluvium	stream terraces, uplands
Line Section 30 Loop											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C132C	Williams-Zahl-Zahill complex, 6 to 9 percent slopes	Williams	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Zahill	18%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	24%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	42%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, ridges, till plains
		Zahl	58%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, ridges, till plains
C148C	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	Parnell	26%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
		Williams	42%	0	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	32%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
C155F	Zahl-Max-Arnegard loams, 15 to 60 percent slopes	Arnegard	21%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
		Max	34%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
		Zahl	45%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C2A	Tonka silt loam, 0 to 1 percent slopes	Tonka	100%	0	1	SIL	P	M	Fine, smectitic, frigid Argiaquic Argialbolls	local alluvium over till	depressions, till plains
C3A	Parnell silty clay loam, 0 to 1 percent slopes	Parnell	100%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
C418B	Tansem-Sakakawea loams, 2 to 6 percent slopes	Sakakawea	18%	2	6	SICL	W	M	Coarse-silty, mixed, superactive, frigid Typic Calciustolls	calcareous coarse-silty glaciolacustrine deposits	glacial lakes (relict), rises, till plains
		Tansem	82%	2	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	loamy glaciolacustrine deposits	glacial lakes (relict), rises, till plains
C419A	Wildrose silty clay, 0 to 2 percent slopes	Wildrose	100%	0	2	SIC	W	VS	Fine, smectitic, frigid Typic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C451A	Arnegard loam, 0 to 2 percent slopes	Arnegard	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
C800B	Appam sandy loam, 2 to 6 percent slopes	Appam	100%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
C816B	Lehr loam, 2 to 6 percent slopes	Lehr	100%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
C818B	Lehr-Williams loams, 0 to 6 percent slopes	Lehr	51%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, till plains
		Williams	49%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
C818C	Lehr-Williams loams, 6 to 9 percent slopes	Lehr	57%	6	9	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, till plains
		Williams	43%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
Tioga Compressor Lateral											
C132C	Williams-Zahl-Zahill complex, 6 to 9 percent slopes	Williams	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	18%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	24%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
Uprating Existing Line											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	42%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, ridges, till plains
		Zahl	58%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, ridges, till plains
C165F	Zahl-Max-Parnell complex, 0 to 35 percent slopes	Max	32%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Parnell	27%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
		Zahl	41%	15	35	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
C424A	Nutley silty clay, low precipitation, 0 to 2 percent slopes	Nutley	100%	0	2	SIC	W	S	Fine, smectitic, frigid Chromic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C75A	Vallers loam, moderately saline, 0 to 1 percent slopes	Vallers	100%	0	1	L	P	M	Fine-loamy, mixed, superactive, frigid Typic Calciaquolls	fine-loamy till	flats, till plains
C819A	Lehr-Wabek loams, 0 to 2 percent slopes	Lehr	70%	0	2	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	30%	0	2	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	Appam	20%	9	15	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	hills, outwash plains
		Lehr	22%	9	25	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, ridges
		Wabek	58%	9	25	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, ridges
Elkhorn Creek Compressor Station											
E3013D	Brandenburg-Searing-Dogtooth complex, 6 to 15 percent slopes	Brandenburg	48%	6	15	CN-L	E	M	Fragmental, mixed, frigid Typic Ustorthents	loamy residuum weathered from porcellanite	knobs, uplands
		Dogtooth	19%	6	15	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	hills, uplands

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Searing	33%	6	9	L	W	M	Fine-loamy over fragmental, mixed, superactive, frigid Typic Haplustolls	fine-loamy residuum weathered from porcellanite	hills, uplands
E3013F	Brandenburg-Cabba-Dogtooth complex, 15 to 70 percent slopes	Brandenburg	54%	15	70	CN-L	E	M	Fragmental, mixed, frigid Typic Ustorthents	loamy residuum weathered from porcellanite	ridges, uplands
		Cabba	24%	15	70	L	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-loamy residuum weathered from sedimentary rock	ridges, uplands
		Dogtooth	21%	15	25	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	ridges, uplands
E3541B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	35%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3639C	Zahl-Williams-Cabba complex, 6 to 9 percent slopes	Cabba	25%	6	9	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	36%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	39%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
Tioga Compressor Station											
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
Lignite Plant Receipt Sation and Lignite Town Border Station											
2031	Williams-Zahl loams, 3 to 6 percent slopes	Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	35%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
Norse Plant Receipt Station											
C424A	Nutley silty clay, low precipitation, 0 to 2 percent slopes	Nutley	100%	0	2	SIC	W	S	Fine, smectitic, frigid Chromic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C819A	Lehr-Wabek loams, 0 to 2 percent slopes	Lehr	70%	0	2	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	30%	0	2	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
Norse Transfer Station											
C424A	Nutley silty clay, low precipitation, 0 to 2 percent slopes	Nutley	100%	0	2	SIC	W	S	Fine, smectitic, frigid Chromic Haplusterts	clayey glaciolacustrine deposits	flats, glacial lakes (relict), till plains
C819A	Lehr-Wabek loams, 0 to 2 percent slopes	Lehr	70%	0	2	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	30%	0	2	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
Northern Border Interconnect											
E3013D	Brandenburg-Searing-Dogtooth complex, 6 to 15 percent slopes	Brandenburg	48%	6	15	CN-L	E	M	Fragmental, mixed, frigid Typic Ustorthents	loamy residuum weathered from porcellanite	knobs, uplands
		Dogtooth	19%	6	15	SIL	W	M	Fine, smectitic, frigid Leptic Natrustolls	clayey residuum weathered from shale	hills, uplands
		Searing	33%	6	9	L	W	M	Fine-loamy over fragmental, mixed, superactive, frigid Typic Haplustolls	fine-loamy residuum weathered from porcellanite	hills, uplands
E3541B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	35%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3639C	Zahl-Williams-Cabba complex, 6 to 9 percent slopes	Cabba	25%	6	9	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	36%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	39%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains
E3641D	Zahl-Cabba-Williams complex, 9 to 15 percent slopes	Cabba	33%	9	15	SIL	W	M	Loamy, mixed, superactive, calcareous, frigid, shallow Typic Ustorthents	fine-silty residuum weathered from sedimentary rock	ridges, uplands
		Williams	26%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Zahl	41%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
Robinson Lake Plant Receipt Station											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C154C	Zahl-Williams-Bowbells loams, 3 to 9 percent slopes	Bowbells	20%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	30%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	50%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
Springbrook Plant Receipt Station											
2014	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
2015	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	35%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	65%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
Tioga Plant Receipt Station											

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
Block Valves											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Parshall	32%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
		Tally	68%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
Pig Launchers/\Receivers											
C451A	Arnegard loam, 0 to 2 percent slopes	Arnegard	100%	0	2	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
68th Street Yard											
C156F	Zahl-Max-Bowbells loams, 6 to 35 percent slopes	Bowbells	19%	6	9	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Max	23%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Zahl	57%	15	35	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
C3A	Parnell silty clay loam, 0 to 1 percent slopes	Parnell	100%	0	1	SICL	VP	MS	Fine, smectitic, frigid Vertic Argiaquolls	local alluvium	depressions, till plains
C816B	Lehr loam, 2 to 6 percent slopes	Lehr	100%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
Boehm Staging Yard											
E4195A	Velva fine sandy loam, 0 to 2 percent slopes, occasionally flooded	Velva	100%	0	2	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Fluventic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	flood plains, river valleys
E4542B	Lehr-Bowdle loams, 2 to 6 percent slopes	Bowdle	34%	2	6	L	W	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Pachic Haplustolls	loamy alluvium	terraces, uplands
		Lehr	66%	2	6	L	SE	MR	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	fine-loamy alluvium	terraces, uplands
E4553B	Tally fine sandy loam, gravelly substratum, 2 to 6 percent slopes	Tally	100%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	stream terraces, uplands
CRS Yard											
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C2A	Tonka silt loam, 0 to 1 percent slopes	Tonka	100%	0	1	SIL	P	M	Fine, smectitic, frigid Argiaquic Argialbolls	local alluvium over till	depressions, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
C810A	Bowdle loam, 0 to 2 percent slopes	Bowdle	100%	0	2	L	W	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Pachic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, swales
C825A	Divide loam, 0 to 2 percent slopes	Divide	100%	0	2	L	SP	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Aeric Calciaquolls	local alluvium	flats, outwash plains
C874C	Wabek-Appam complex, 6 to 9 percent slopes	Appam	30%	6	9	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	knolls, outwash plains
		Wabek	70%	6	9	GR-SL	E	MR	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C877B	Wabek-Lehr complex, 2 to 6 percent slopes	Lehr	34%	2	6	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, rises
		Wabek	66%	2	6	GR-L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
Delta Contractors Yard											
E0605A	Belfield-Grail clay loams, 0 to 2 percent slopes	Belfield	67%	0	2	CL	MW	MS	Fine, smectitic, frigid Glossic Natrustolls	slope alluvium derived from shale and siltstone	drainageways, plains
		Grail	33%	0	2	CL	MW	MS	Fine, smectitic, frigid Pachic Vertic Argiustolls	slope alluvium derived from shale and siltstone	drainageways, plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Parshall	32%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
		Tally	68%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	29%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	swales, till plains
		Williams	71%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Dooley	86%	3	6	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains
		Zahl	14%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
E3703D	Dooley-Zahl complex, 9 to 15 percent slopes	Dooley	68%	9	15	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy alluvium	knolls, till plains
		Zahl	32%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
Enget Yard											
C153E	Zahl-Max loams, 15 to 25 percent slopes	Max	40%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	disintegration moraines, till plains
		Zahl	60%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	disintegration moraines, till plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
C154C	Zahl-Williams-Bowbells loams, 3 to 9 percent slopes	Bowbells	20%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	30%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
		Zahl	50%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
C5A	Southam silty clay loam, 0 to 1 percent slopes	Southam	100%	0	1	SICL	VP	MS	Fine, smectitic, calcareous, frigid Cumulic Vertic Endoaquolls	local alluvium	marshes, till plains
C800B	Appam sandy loam, 2 to 6 percent slopes	Appam	100%	2	6	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, rises
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	Appam	20%	9	15	SL	SE	MR	Sandy, mixed, frigid Typic Haplustolls	sandy and gravelly glaciofluvial deposits	hills, outwash plains
		Lehr	22%	9	25	L	SE	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	loamy alluvium over sandy and gravelly glaciofluvial deposits	outwash plains, ridges
		Wabek	58%	9	25	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly glaciofluvial deposits	outwash plains, ridges
Flatlands Yard 1											
E3541C	Williams-Zahl loams, 6 to 9 percent slopes	Williams	52%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	knolls, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	knolls, till plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Williams	33%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	hills, till plains
		Zahl	67%	9	15	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	hills, till plains
E3567F	Zahl-Max loams, dissected, 15 to 45 percent slopes	Max	35%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	ridges, till plains
		Zahl	65%	15	45	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Dooley	86%	3	6	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains
		Zahl	14%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
Flatlands Yard 2											
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Parshall	32%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
		Tally	68%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E4561F	Manning-Schaller-Wabek complex, 6 to 35 percent slopes	Manning	40%	6	15	FSL	SE	MR	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	escarpments, stream terraces, uplands
		Schaller	33%	6	25	SL	E	MR	Sandy, mixed, frigid Entic Haplustolls	sandy alluvium derived from sedimentary rock	escarpments, stream terraces, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Wabek	27%	9	35	L	E	M	Sandy-skeletal, mixed, frigid Entic Haplustolls	sandy and gravelly alluvium	escarpments, terraces, uplands
E4585B	Manning fine sandy loam, 2 to 6 percent slopes	Manning	100%	2	6	FSL	SE	MR	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	river valleys, stream terraces, uplands
Lobell Yard											
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C825A	Divide loam, 0 to 2 percent slopes	Divide	100%	0	2	L	SP	M	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Aeric Calciaquolls	local alluvium	flats, outwash plains
C999F	Orthents-Aquents-Urban land, highway complex, 0 to 35 percent slopes	Aquents	20%	0	3	L	SP	M	Fine-loamy, mixed (calcareous), frigid Aeric Endoaquents	fine-loamy till	swales, till plains
		Orthents	19%	0	6	L	W	M	Orthents	fine-loamy till	cuts (road, railroad, etc.), scalped areas, till plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
			43%	6	35	L	W	M	Orthents	fine-loamy till	cuts (road, railroad, etc.), scalped areas, till plains
Schmidt Yard											
C132B	Williams-Zahl loams, 3 to 6 percent slopes	Williams	73%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahl	27%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
Weflen Staging Yard											
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	Williams	35%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	17%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Zahl	48%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
Franz Yard											
E1423F	Flasher-Vebar-Parshall complex, 9 to 35 percent slopes	Flasher	49%	9	35	LFS	SE	R	Mixed, frigid, shallow Typic Ustipsamments	residuum weathered from sandstone	hillslopes, plains
		Parshall	21%	9	15	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	slope alluvium derived from sandstone	hillslopes, plains
		Vebar	30%	9	25	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	residuum weathered from sandstone	hillslopes, plains
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Parshall	32%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
		Tally	68%	2	6	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	alluvial fans, uplands
E1865C	Tally-Parshall fine sandy loams, 6 to 9 percent slopes	Parshall	25%	6	9	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	hills, uplands
		Tally	75%	6	9	FSL	W	MR	Coarse-loamy, mixed, superactive, frigid Typic Haplustolls	coarse-loamy alluvium derived from sedimentary rock	hills, uplands

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North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope		Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
				Low	High						
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Dooley	86%	3	6	FSL	W	MR	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	coarse-loamy eolian deposits over fine-loamy till	rises, till plains
		Zahl	14%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	rises, till plains
Aux Sable Staging											
C132C	Williams-Zahl-Zahill complex, 6 to 9 percent slopes	Williams	59%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	ground moraines, till plains
		Zahill	18%	6	9	CL	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustepts	fine-loamy till	ground moraines, till plains
		Zahl	24%	6	9	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ground moraines, till plains
C155F	Zahl-Max-Arnegard loams, 15 to 60 percent slopes	Arnegard	21%	15	25	L	W	M	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	fine-loamy till	swales, till plains
		Max	34%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Haplustolls	fine-loamy till	hills, ridges, till plains
		Zahl	45%	25	60	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	fine-loamy till	ridges, till plains
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	Bowbells	26%	0	3	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	flats, till plains
		Williams	74%	0	3	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	Bowbells	44%	3	6	L	MW	M	Fine-loamy, mixed, superactive, frigid Pachic Argiustolls	fine-loamy till	rises, till plains

APPENDIX 7B

North Bakken Expansion Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area [a]

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Percent Slope Low	Percent Slope High	Surface Texture [b]	Drainage Class [c]	Permeability [d]	Taxonomic Classification	Parent Material	Landforms
		Williams	56%	3	6	L	W	M	Fine-loamy, mixed, superactive, frigid Typic Argiustolls	fine-loamy till	rises, till plains

[a] Map units crossed by pipeline facilities include access roads.

[b] Surface textures include: loam (L), gravely loam (GR-L), extremely gravelly sand (GRX-S), channery loam (CN-L), gravely sandy loam (GR-SL), loamy fine sand (LFS), sandy loam (SL), fine sandy loam (FSL), silt loam (SIL), silty clay loam (SICL), clay loam (CL), and silty clay (SIC), slightly decomposed plant material (SPM).

[c] Drainage classes include: Very Poor (VP), Poor (P), Somewhat Poor (SP), Moderately Well (MW), Well (W), Somewhat Excessively (SE), and Exessively (E) drained .

[d] Permeability rates include: Very Rapid (VR), Rapid (R), Moderately Rapid (MR), Moderate (M), Moderately Slow (MS), Slow (S) and Very Slow (VS) permeablility.