
3-1

Data Request:

Identify 5 communities in South Dakota most prevalently used for temporary living arrangements in the first Keystone hydrocarbon pipeline project.

Response:

Aberdeen, Huron, Groton, Mitchell, and Yankton

Response prepared by: Alan Lietz, Keystone

3-2

Data Request:

Provide temporary housing use patterns experienced thus far in the first Keystone hydrocarbon pipeline project in South Dakota for both contract and company employees. Specifically, provide numeric breakdowns of employees residing in (i) rental apartments or houses, (ii) commercial hotels and motels, or (iii) recreational vehicle parks/campgrounds

Response:

Construction in South Dakota on the Keystone project is currently underway. Temporary housing patterns are estimated based on approximately 1,000 pipeline construction workers in South Dakota at the peak of pipeline construction:

(i) Rental apartments or houses	25%	250 workers
(ii) Commercial hotels and motels	50%	500 workers
(iii)Recreational vehicle parks/campgrounds	25%	250 workers

Response prepared by: Alan Lietz, Keystone

3-3

Data Request:

Describe the use of local emergency response and medical services required in connection with work activity associated with the first Keystone hydrocarbon pipeline project in South Dakota

Response:

To date, the contractor for Spreads 2 and 3 have not used local emergency response and medical services. The contractor for Spread 4 has used local emergency response services once when the local fire department responded to a fuel spill in the contractor's yard. The contractor for Spread 4 has not used local emergency medical services.

The contractors estimate an average of 5 to 10 visits per month to local clinics or doctors' offices to manage job-related first aid cases and/or non-work related personal illnesses of construction workers.

Response prepared by: Alan Lietz, Keystone

3-4

Data Request:

Describe and identify any state or local government sales/use tax rebates or refunds that the XL pipeline project is eligible to receive. Cite the appropriate title, chapter and paragraph of SDCL.

Response:

Keystone does not determine eligibility for South Dakota tax programs. Only the South Dakota Department of Revenue can determine eligibility. Therefore such determination would come in the form of a License on a project by project basis. Keystone Pipeline, LP may file for South Dakota's "New or Expanded Business Facility Refund" program under SDCL 10-45B. Listed in more detail: It is Title 10, Chapter 45B of the South Dakota Codified Laws. All paragraphs under 45B are applicable, however, Keystone specifically would cite the following to be of particular interest: 1.1, 2, 4.1, 5.1, and 6 thru 12. This program would provide for a refund of contractors' excise tax and sales or use taxes.

Response prepared by: David Thompson, Keystone

3-5

Data Request:

Identify by mile post all South Dakota state parks, recreation areas, game production areas, wildlife refuges, state owned hunting areas or state-contracted hunting areas existing in 2008 that lie within 2 miles of the Keystone XL project centerline.

Response:

Table 3-5 Special Areas Within 2 Miles of the Project Centerline [1, 2]

MP		CLOSEST POINT [mi]	TYPE	NAME	COUNTY
FROM	TO				
310.6	312.4	1.6	Game production area	Gardner Lake	Harding
547.2	547.9	0.2	Game production area	Shirley Brown	Tripp
549.6	550.6	0.5	Game production area	Ideal Wetland	Tripp
570.2	570.7	1.4	Game production area	Beaulieu Lake	Tripp

[1] Totals rounded to tenth of a mile.

[2] Data for state owned hunting areas or state-contracted hunting areas not available.

Response prepared by: Richard Gale, Trow

3-6

Data Request:

Murdo, among all communities potentially affected by the pipeline project, represents the South Dakota community most dependent on tourism. Provide an estimate timetable illustrating activities likely to impact Jones County (Specifically the town of Murdo and highways I90 and US83) June through August of both 2011 and 2012. Specifically, describe the construction activity, other type of project efforts and the extent to which such activities may interact (or proceed independently) with the tourism businesses during the specified months.

Response:

Construction activities in Jones County will occur as follows:

- Spread 7, which begins 10 miles north of Murdo, will be constructed from mid-May, 2011 until early November 2011. The pipeline route is located east of the town of Murdo and crosses Interstate 90 just west of the town of Draper. Construction personnel will stay in a construction camp located near Winner. There are no construction activities that should impact tourism.

Response prepared by: John Phillips, UEI

3-7

Data Request:

Provide an update to Table 1 of the application that identifies the anticipated filing dates of the permit applications and agency notifications or consultations required for the project.

Response:

Table 1 in the revised PUC application included in this filing has been updated.

Response prepared by: Jon Schmidt, Trow

3-8

Data Request:

Provide a description (e.g., height, configuration, and lighting requirements) of the antenna mast that may be constructed at remotely operated valve sites and pump stations to enable radio communication. Identify the valve sites and pump stations that would include construction of an antenna mast.

Response:

Subject to detailed design, the majority of telecommunication radio towers at pump stations and remote mainline valve sites are expected to be approximately 33 feet in height. However, antenna height at select pump stations and mainline valve sites may be taller, but are not expected to exceed a maximum height of 190 feet. All towers up to 120 feet will be lattice type and self supporting (no guy/supporting wires). Very few, if any, towers are expected over 120 feet; however, if taller towers are required, the feasibility of both guyed and non-guyed structures will be evaluated. In the case of the initial Keystone project, all towers were free standing, 100 feet or less. Structures will not be tall enough to require aviation warning lights unless in close proximity to an airfield. A lighting analysis will be conducted as part of the detailed engineering design. In the case of the Keystone project, installation of lighting was not required.

Response prepared by: Neil Lewis, Keystone

3-9

Data Request:

Identify the electricity requirements of the proposed pump stations. Identify the pump station sites where new electrical transmission lines would be required, and the anticipated lengths and voltages of the new transmission lines.

Response:

Table 3-9 details the proposed lengths and voltages for the new electrical power lines associated with the Project pump stations in South Dakota.

Table 3-9 Estimated Requirements for the Proposed Electrical Power Lines in South Dakota

Power Line to Pump Station No.	Milepost (0 at US border)	County	Transformer Size (MVa)[1]	Utility Supply (kV)	Approximate Length (miles)
PS-15A-2	285.6	Harding	20/27/33	115	23.0
PS-16	333.3	Harding/Butte	20/27/33	115	45.7
PS-17A-2	386.9	Meade	20/27/33	115	11.0
PS-18	440.0	Haakon	20/27/33	115	25.9
PS-19A-3	495.8	Jones/Haakon	20/27/33	115	20.2
PS-20A-2	546.4	Tripp	20/27/33	115	15.9
PS-21A-1	591.7	Tripp/Gregory	20/27/33	115	20.1

Response prepared by: Richard Gale, Trow

3-10a-b

Data Request:

With respect to land requirements:

Provide the anticipated dimensions of the proposed pump stations.

Regarding the 36 acres shown in table 3, provide additional detail as to how much of the land required for construction of each pump station would extend beyond the pipeline construction right-of-way and how much of the land required for operation of each pump station would extend beyond the permanent pipeline right-of-way (in other words, identify the incremental land requirements associated with the pump stations).

Response:

a)

Pump Station	Milepost (0 at US border)	County	Approx. Dimensions	Approx. Acreage
PS-15	285.6	Harding	400' x 800'	7.4
PS-16	333.3	Harding/Butte	467' x 467'	5.0
PS-17	386.9	Meade	467' x 467'	5.0
PS-18	440.0	Haakon	467' x 467'	5.0
PS-19	495.8	Jones/Haakon	467' x 607'	6.5
PS-20	546.4	Tripp	860' x 400'	7.9
PS-21	591.7	Tripp/Gregory	467' x 467'	5.0

b) The amount of land required during construction and operation of the pump stations in South Dakota, based on the Feb. 15, 2009 centerline, is 41.8 acres. Depending on the routing of the pipeline and the layout of the pump station, approximately 1 acre per site would be within the typical pipeline construction right-of-way, and approximately ½ acre per site would be within the typical pipeline permanent right-of-way. This acreage will vary as pump station layouts are reviewed and revised

Response prepared by: Richard Gale, Trow

3-10c

Data Request:

With respect to land requirements:

Clarify whether any pig launchers or receivers would be located outside of pump station fence lines. If so, provide the temporary and permanent land requirements for these facilities if they would extend beyond the pipeline right-of-way.

Response:

Pig launchers and receivers would be located within the fence line of all pump stations.

Response prepared by: Jon Schmidt, Trow

3-11

Data Request:

If available, provide an update to section 2.2.4 regarding the locations and dimensions of the pipe and contractor yards required for the project. Describe how these sites would be prepared, used, and restored by the construction contractor

Response:

See revised SD PUC Application.

Response prepared by: Jon Schmidt, Trow

3-12

Data Request:

Identify access roads, including new roads to be constructed and existing roads to be improved or modified, that would be used during construction and/or operation of the project. For each road, identify length, width, and surface condition (for existing roads), and whether the road would be temporary (for construction access only) or permanent (e.g., to access pump station or valve sites during operation).

Response:

Access Road ID	Milepost (2009-02-15 CL)	Length (ft)	Length (mi)	Width (ft)	County	Existing Condition	Temporary or Permanent Use
CAR-069	285.437	12,239	2.32	30	Harding	Field Road	Temporary
CAR-090	285.671	13,126	2.49	30	Harding	New road Along Project ROW	Permanent (to PS-15)
CAR-041	292.291	14,067	2.66	30	Harding	Field Road	Temporary
CAR-043B	328.683	9,488	1.80	30	Harding	Field Road	Temporary
CAR-044	338.981	1,708	0.32	30	Harding	Field Road	Temporary
CAR-045	340.833	6,599	1.25	30	Harding	Field Road	Temporary
CAR-046A	361.783	2,060	0.39	30	Perkins	Private Drive	Temporary
CAR-047	364.796	17,006	3.22	30	Perkins	Field Road	Temporary
CAR-048	365.905	14,467	2.74	30	Perkins	Field Road	Temporary
CAR-049A	370.813	2,454	0.46	30	Perkins	Private Drive	Temporary
CAR-078	422.635	14,223	2.69	30	Meade	Gravel / Dirt Road	Temporary
CAR-077	424.985	7,255	1.37	30	Meade	Gravel Road	Temporary
CAR-079	426.206	4,303	0.82	30	Haakon	Field Road	Temporary
CAR-052A	473.333	4,656	0.88	30	Haakon	Field Road	Temporary
CAR-080	536.800	8,755	1.66	30	Lyman	Private Drive	Temporary
CAR-081	538.835	11,306	2.14	30	Tripp	Field Road	Temporary
CAR-082	541.033	1,233	0.23	30	Tripp	Field Road	Temporary
CAR-091	545.159	4,871	0.92	30	Tripp	Field Road	Temporary

Response prepared by: Jon Schmidt, Trow

3-13

Data Request:

If available, provide an update to section 2.2.4 regarding locations where recreational vehicle parks may be expanded or built. Describe how these facilities would be permitted and constructed. Provide an assessment of environmental impacts associated with expanding or building these facilities. If expanded or new facilities are intended to be temporary, identify and describe methods for site restoration

Response:

See revised SD PUC application.

Response prepared by: Jon Schmidt, Trow

3-14

Data Request:

Identify any construction wastes (e.g., stumps, rocks) that may be disposed of within the right-of-way. Clarify if any wastes would be burned or buried within the right-of-way.

Response:

Unless otherwise required for erosion and/or access control measures or otherwise prohibited, all treetops, limbs and brush cleared from the ROW shall be burned or chipped. Stumps, roots, and other un-chippable debris shall be broken with a backhoe or burned on the ROW. All remaining logs and slash not salvaged as merchantable timber, or saved as corduroy or rollback, will be disposed of by burning.

Disposal of un-chippable material in locations that preclude burning or burial, may be performed by hauling to approved dumpsites. Disposal of stumps shall be by burning, chipping, or removal from the ROW.

Rock from construction shall be disposed of using one or more of the following methods:

a) Windrow neatly along the edge of the ROW within the ROW limits
b) Remove from the ROW and haul to an approved dump site.
c) Use as rip-rap to stabilize the banks of watercourses.

Rock removal may be carried out with a mechanical rock picker or by manual means, provided that preservation of topsoil is assured. Rock removal will result in a quantity, size, and distribution of rocks on the ROW equivalent to that found on adjacent lands.

3-15

Data Request:

Provide a status update on the supplemental Environmental Report that, according to section 5.1, Keystone anticipated filing with the Department of State (DOS) in June 2009. To the extent that the supplemental Environmental Report provides new or revised information regarding the proposed facility locations, other affected areas, the type and/or extent of environmental impacts, or proposed mitigation measures applicable to the South Dakota portion of the project, provide corresponding information to supplement or update Keystone's application to the South Dakota Public Utilities Commission.

Response:

An updated PUC application is included with this filing. This updated application corresponds with the new information related to South Dakota found in the supplemental filing that was made at the DOS in July 2009.

Response prepared by: Jon Schmidt, Trow

3-16

Data Request:

Provide the basis for Keystone's estimate (as stated in section 5.3.4) that the probability of a spill from the pipeline is "no more than one spill in 8,400 years for any given mile of pipe."

Response:

An analysis of historical pipeline spill data generated baseline incident frequencies for all threats to the pipeline. These incident frequencies were adjusted to account for specifics of this pipeline's route, design, construction, operation, and maintenance. The weighted-average incident frequency for the entire route is estimated to be 1.35E-04 per mile per year; yielding an incident recurrence interval of approximately 7,400 years.*

Note: The SD PUC Application has been updated. There was a typographical error in the March 2009 filing.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-17

Data Request:

Provide a more detailed description of the process used to identify, screen, and rank alternative routes and pump station sites for the project. Provide a list of the environmental constraints or criteria considered in this process. Provide a comparative analysis of environmental impacts for each alternative.

Response:

Keystone did use an iterative, multidisciplinary route selection process as described in Section 4.0 of the Application. We note that SDCL 49-41B-36 withholds the delegation of authority to route or site a facility under the Energy Conversion and Transmission Facilities Siting Act. Accordingly, Keystone believes that the information sought in this DR goes beyond that necessary for the Commission to consider the application and grant a permit to construct.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-18

Data Request:

Provide a citation or basis for the conclusion in section 5.3.3 of the application that the potential for the development of coal mines in South Dakota is low.

Response:

The application has been updated to modify this conclusion. The intent of the conclusion is twofold. First, it is intended to indicate that the pipeline route does not cross, to any great extent, the Ludlow Member of the Fort Union Formation, one of the most prospective of coal bearing units in the area, and the pipeline therefore would not preclude access to the resource. Secondly, the author wanted to convey that although most of the route crosses the Hell Creek Formation in this area, the coals of the Hell Creek Formation may have limited mining potential or, in the words of Erikson (1956), "No attempt was made to estimate the reserves [sic] of the area because the lignite seams are highly lenticular."

The U.S. Geological Survey (Ellis and Nichols 2002) in its assessment of selected coal resources in the Northern Rocky Mountains – Great Plains Region, did not assess the lignite resource of the Fort Union Formation in northwestern South Dakota. It could be inferred that the resource did not justify assessment in comparison to the Fort Union Formation coal resources of adjacent states. Also, perhaps other concerns, such as mining of the uraniferous coals in the Ludlow Member (Stone et al. 2006) would preclude their inclusion in the assessment as a commercially viable coal resource because of the inherent environmental liabilities that stem from historic mining of radioactive coal.

Response prepared by: Scott Patti, AECOM

3-18 (Continued)

References:

Ellis, M.S. and D.J. Nichols. 2002. A Summary of the U.S, Geological Survey 1999 Resource Assessment of Selected Coal Zones in the Northern Rocky Mountain and Great Plains Region, Wyoming, Montana, and North Dakota. U.S, Geological Survey Bulletin 2189, 10 p.

Erickson, H.D. 1956. Areal Geology of the Willett and Midland No. 1 Quadrangles. South Dakota Geological Survey, scale 1:62,500.

Stone, J., L. Stetler, A. Schwalm, R. Wintergerst, L. Walters-Clark. 2006. Study of abandoned uranium mining impacts on private lands surroundingthe North Cave Hills, Custer National Forest, South Dakota. http://www.deq.state.mt.us/AbandonedMines/NAAMLP/AML/NAAMLP%20Papers/2006%2028th%20Annual%20NAAMLP%20Papers/Paper%205%20--%20Stone-South%20Dakota.pdf. Site accessed August 14, 2008.

Response prepared by: Scott Patti, AECOM

3-19a

Data Request:

a. Provide a more detailed description of the paleontological potential of the surficial geologic formations crossed by the pipeline route, including but not necessarily limited to, identification of any known fossil sites within 1 mile of the route.

Response:

This is typically conducted only for paleontologically sensitive federal and state lands crossed by the project. Identification of fossil sites within one mile of the route will occur during the museum records search and will be conducted prior to construction for those federal and state lands crossed by the project.

Response prepared by: Scott Slessman, SWCA

3-19b

Data Request:

b. Describe how paleontological resources would be recognized during construction and provide a plan for minimizing or mitigating impacts on these resources if they are encountered

Response:

A detailed paleontological resources construction mitigation plan will be prepared following the conclusion of field surveys of sensitive state and federal lands in South Dakota, because data collected during the field surveys are needed in order to prepare the mitigation plan. The paleontological field surveys are expected to be completed prior to construction.

Response prepared by: Scott Slessman, SWCA

3-19c

Data Request:

c. If applicable, clarify any differences in treatment of fossil remains recovered from public (state or school) and private lands.

Response:

Any fossils discovered by construction personnel on private lands will be returned to the land owners. All scientifically significant fossil remains discovered on public (state or school) or federal lands by either paleontological monitors or construction personnel in areas where monitors are not present during construction will be salvaged along with associated data, prepared to the point of identification, and curated at the Museum of Geology, South Dakota School of Mines and Technology.

Response prepared by: Scott Slessman, SWCA

3-20

Data Request:

Clarify whether the proposed route crosses any areas containing uranium-contaminated sediments including but not limited to Spring Creek and any other area where mining activity may have occurred. If uranium-contaminated sediments are present, identify and describe any special construction or restoration methods that would be implemented to prevent redistribution of the contaminated sediments.

Response:

The Spring Creek drainage was the *only* drainage crossed by the proposed route that presented potential concerns for radioactive contaminants or associated heavy metals to have been transported from mined areas. As presented in the application, sampling by Dr. Stone of the South Dakota School of Mines in the Slim Buttes area demonstrated that no contaminated sediments are present in the Spring Creek drainage. Based on the foregoing, no special construction or restoration methods are recommended to be implemented at this location.

Response prepared by: Scott Patti, AECOM

3-21

Data Request:

Describe the process for identifying geological conditions along the route that could pose a potential risk of slope instability. Confirm the entire route would be assessed for slope instability and identify the personnel responsible for conducting the site assessments (e.g., a geological engineer).

Response:

Keystone is conducting desktop research of geological maps and reports of the areas traversed by the proposed route. Review of aerial alignment sheets will be undertaken to detect any areas that may lie close to identified unstable areas, edges of escarpments, sections with skewed alignment on slopes, or hillside cuts. Subsequently, field visits will be performed to assess those selected sites. Minor realignments may be implemented, if appropriate.

This assessment, in the office and in the field, will be undertaken by design and construction engineers and geotechnical specialists.

Response prepared by: John Phillips, UEI

3-22

Data Request:

In section 5.3.6, the application states that "the risk from swelling soils can be mitigated by excavating the susceptible soil and back filling with select non-swelling material." Clarify if Keystone intends to implement this mitigation during construction of the pipeline. If so, identify methods of disposal for the excavated "susceptible soil" and the anticipated source of the "non-swelling material."

Response:

The referenced section in the application deals with structures built on soils with high shrink-swell potential that can be damaged as soils expand and shrink. The necessary excavation of the swelling soils will be accomplished only at affected facilities, i.e., Pump Station Sites. The excavated, susceptible soils will be "stock-piled" on site or removed to an approved area as appropriate.

Pipelines are not susceptible to damage by swelling soil. It is not anticipated that the pipeline ditch line will be mitigated by this method.

Response prepared by: John Phillips, UEI

3-23

Data Request:

Provide a table identifying the information on soil limitations available in the SSURGO2 database for the pipeline route, pump station and valve sites, and other work areas (e.g., depth to bedrock, drought-prone, steeply-sloping, saline, sodic, saline-sodic, compaction-prone, and highly wind and highly water erodible). The table should identify crossing lengths for each limitation category in miles and percentages by county. Provide a similar table identifying other sensitive soils along the pipeline route or within other work areas (e.g., prime farmland or hydric soils or soils with low reclamation potential) by county.

Response:

See attached Table.

Response prepared by: Jon Schmidt, Trow

Keystone XL Steele City Segment
South Dakota Soils Summary
Prepared: 2009-08-14

Centerline Summary

County	Length (mi)	Shallow Bedrock (mi)	Percent of County	All Shallow Restictive Layers (mi)	Percent of County	Drought Prone (mi)	Percent of County	Steeply Sloping (mi)	Percent of County	Saline (mi)	Percent of County	Sodic (mi)	Percent of County	Saline-Sodic (mi)	Percent of County	Low or High pH (mi)	Percent of County	Low Revegetation Potential (mi)	Percent of County	Compaction Prone (mi)	Percent of County	Severe Wind Erodible (mi)	Percent of County	Severe Water Erodible (mi)	Percent of County	Stony or Rocky (mi)	Percent of County	Prime Farmland (mi)	Percent of County	Hydric (mi)	Percent of County
Harding	71.39	0.96	1.3%	58.19	81.5%	31.15	43.6%	9.44	13.2%	2.73	3.8%	2.77	3.9%	31.27	43.8%		0.0%	36.56	51.2%	44.87	62.8%	3.94	5.5%	20.81	29.1%	1.88	2.6%	4.26	6.0%	0.52	0.7%
Butte	3.73		0.0%	1.04	28.0%	1.71	45.8%	0.74	19.7%	0.22	6.0%	0.06	1.6%	1.48	39.6%		0.0%	1.54	41.3%	1.65	44.2%	1.18	31.7%	1.04	27.9%	0.38	10.1%		0.0%	0.00	0.1%
Perkins	15.24		0.0%	13.61	89.3%	4.10	26.9%	1.27	8.3%	1.54	10.1%	0.52	3.4%	8.68	57.0%		0.0%	10.46	68.6%	11.99	78.6%	0.15	1.0%	2.99	19.6%	0.39	2.5%	1.61	10.5%	0.06	0.4%
Meade	52.72		0.0%	31.82	60.4%	4.00	7.6%	6.83	13.0%	20.33	38.6%	1.12	2.1%	12.52	23.8%		0.0%	32.93	62.5%	48.56	92.1%	0.21	0.4%	19.62	37.2%	0.83	1.6%	20.74	39.3%	0.14	0.3%
Pennington	0.38		0.0%		0.0%	0.28	72.7%		0.0%	0.06	14.8%	0.00	0.8%	0.01	1.4%	0.00	0.8%	0.06	15.5%	0.06	15.5%	0.28	72.7%		0.0%	0.03	7.0%	0.06	15.5%	0.25	66.6%
Haakon	58.94		0.0%	22.28	37.8%	4.06	6.9%	5.49	9.3%	4.30	7.3%	0.08	0.1%	4.23	7.2%	0.08	0.1%	6.77	11.5%	57.54	97.6%		0.0%	19.93	33.8%	1.95	3.3%	31.36	53.2%	1.59	2.7%
Jones	40.09		0.0%	23.41	58.4%		0.0%	1.90	4.7%	19.74	49.2%		0.0%	3.33	8.3%		0.0%	20.40	50.9%	39.17	97.7%		0.0%	20.87	52.1%	0.89	2.2%	14.47	36.1%	1.29	3.2%
Lyman	11.90		0.0%	2.46	20.7%	0.05	0.4%	1.42	11.9%	8.95	75.2%		0.0%	0.93	7.8%		0.0%	9.48	79.7%	11.77	98.9%	0.00	0.0%	3.25	27.3%	0.05	0.4%	7.83	65.8%	0.35	2.9%
Tripp	59.73	0.21	0.4%	14.53	24.3%	20.03	33.5%	7.72	12.9%	16.32	27.3%	0.83	1.4%	3.52	5.9%	0.98	1.6%	17.55	29.4%	36.53	61.2%	9.85	16.5%	19.27	32.3%	2.86	4.8%	25.81	43.2%	0.96	1.6%
Grand Total	314.13	1.17	0.4%	167.35	53.3%	65.38	20.8%	34.81	11.1%	74.18	23.6%	5.37	1.7%	65.97	21.0%	1.06	0.3%	135.75	43.2%	252.14	80.3%	15.60	5.0%	107.79	34.3%	9.24	2.9%	106.12	33.8%	5.17	1.6%

Access Road Summary

County	Length (mi)	Shallow Bedrock (mi)	Percent of County	All Shallow Restictive Layers (mi)	Percent of County	Drought Prone (mi)	Percent of County	Steeply Sloping (mi)	Percent of County	Saline (mi)	Percent of County	Sodic (mi)	Percent of County	Saline-Sodic (mi)	Percent of County	Low or High pH (mi)	Percent of County	Low Revegetation Potential (mi)	Percent of County	Compaction Prone (mi)	Percent of County	Severe Wind Erodible (mi)	Percent of County	Severe Water Erodible (mi)	Percent of County	Stony or Rocky (mi)	Percent of County	Prime Farmland (mi)	Percent of County	Hydric (mi)	Percent of County
Harding	10.84	0.26	2.4%	8.90	82.2%	4.19	38.7%	1.54	14.2%	0.44	4.0%	0.41	3.8%	5.73	52.9%		0.0%	6.58	60.7%	8.10	74.7%	0.22	2.1%	2.96	27.3%	0.54	5.0%	0.58	5.4%	0.08	0.7%
Perkins	6.82		0.0%	6.44	94.5%	1.73	25.4%	0.92	13.5%	0.16	2.3%	0.46	6.7%	4.45	65.3%		0.0%	5.07	74.4%	5.62	82.4%	0.01	0.2%	1.34	19.7%	0.01	0.1%	0.34	4.9%	0.01	0.2%
Meade	3.89		0.0%	0.17	4.5%	0.09	2.3%	0.08	2.1%	2.05	52.6%		0.0%	0.91	23.3%		0.0%	2.95	75.9%	3.02	77.7%	0.09	2.3%	0.10	2.6%	0.00	0.1%	1.43	36.8%	0.03	0.7%
Haakon	1.70		0.0%	0.85	50.0%	0.18	10.7%	0.73	43.0%	0.36	21.4%	0.00	0.2%	0.05	3.0%	0.00	0.2%	0.37	21.6%	1.39	81.7%		0.0%	1.04	61.5%	0.32	18.7%	0.64	38.0%	0.02	1.5%
Lyman	1.66		0.0%	0.83	50.3%	0.09	5.2%	0.60	36.5%	0.99	59.9%		0.0%	0.32	19.2%		0.0%	1.02	61.2%	1.55	93.7%	0.00	0.1%	0.88	52.9%	0.08	4.6%	0.43	25.9%	0.02	1.2%
Tripp	3.30		0.0%	1.68	51.0%	0.31	9.5%	1.58	47.8%	0.36	10.8%		0.0%	0.25	7.7%		0.0%	0.36	10.8%	3.00	91.0%		0.0%	2.28	69.3%	0.31	9.5%	0.95	28.9%	0.07	2.0%
Grand Total	28.20	0.26	0.9%	18.88	67.0%	6.59	23.4%	5.45	19.3%	4.35	15.4%	0.87	3.1%	11.71	41.5%	0.00	0.0%	16.33	57.9%	22.68	80.4%	0.33	1.2%	8.61	30.5%	1.26	4.5%	4.38	15.5%	0.23	0.8%

Facilities Summary

Type	County	Mapunit Acres	Shallow Bedrock (ac)	Percent of County	All Shallow Restictive Layers (ac)	Percent of County	Drought Prone (ac)	Percent of County	Steeply Sloping (ac)	Percent of County	Saline (ac)	Percent of County	Sodic (ac)	Percent of County	Saline-Sodic (ac)	Percent of County	Low or High pH (ac)	Percent of County	Low Revegetation Potential (ac)	Percent of County	Compaction Prone (ac)	Percent of County	Severe Wind Erodible (ac)	Percent of County	Severe Water Erodible (ac)	Percent of County	Stony or Rocky (ac)	Percent of County	Prime Farmland (ac)	Percent of County	Hydric (ac)	Percent of County
CC	Tripp	80.04		0.0%	2.70	3.4%	0.55	0.7%		0.0%	69.31	86.6%		0.0%	5.54	6.9%		0.0%	70.95	88.6%	79.49	99.3%		0.0%	7.64	9.5%	0.55	0.7%	80.04	100.0%	1.05	1.3%
	Total	80.04		0.0%	2.70	3.4%	0.55	0.7%		0.0%	69.31	86.6%		0.0%	5.54	6.9%		0.0%	70.95	88.6%	79.49	99.3%		0.0%	7.64	9.5%	0.55	0.7%	80.04	100.0%	1.05	1.3%
CY	Harding	30.10		0.0%	28.57	94.9%	8.94	29.7%	0.41	1.3%	6.41	21.3%	0.41	1.3%	24.80	82.4%		0.0%	25.21	83.8%	27.59	91.7%	0.51	1.7%	12.40	41.2%		0.0%		0.0%		0.0%
	Meade	30.35		0.0%	27.41	90.3%	5.47	18.0%	1.87	6.2%	0.13	0.4%	2.06	6.8%	19.73	65.0%	2.81	9.3%	21.93	72.3%	23.28	76.7%		0.0%	4.40	14.5%	0.47	1.5%		0.0%	0.13	0.4%
	Haakon	30.12		0.0%	17.20	57.1%	0.04	0.1%	2.69	8.9%	0.60	2.0%	0.03	0.1%	0.32	1.1%	0.03	0.1%	0.90	3.0%	23.48	78.0%		0.0%	23.01	76.4%	6.64	22.0%		0.0%	0.22	0.7%
	Total	90.57		0.0%	73.18	80.8%	14.45	16.0%	4.97	5.5%	7.14	7.9%	2.50	2.8%	44.86	49.5%	2.84	3.1%	48.03	53.0%	74.35	82.1%	0.51	0.6%	39.81	44.0%	7.11	7.8%		0.0%	0.35	0.4%
MLV	Harding	0.06		0.0%	0.06	100.0%	0.03	53.0%	0.00	4.0%		0.0%	0.00	4.0%	0.05	82.0%		0.0%	0.05	86.0%	0.05	93.0%		0.0%	0.01	15.0%		0.0%		0.0%		0.0%
	Perkins	0.03		0.0%	0.03	100.0%	0.01	30.0%		0.0%		0.0%		0.0%	0.03	95.0%		0.0%	0.03	95.0%	0.03	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Meade	0.03		0.0%	0.02	90.0%		0.0%		0.0%	0.02	70.0%		0.0%		0.0%		0.0%	0.02	70.0%	0.03	100.0%		0.0%	0.00	5.0%		0.0%	0.03	100.0%		0.0%
	Haakon	0.06		0.0%	0.03	46.0%	0.03	47.5%	0.00	1.0%	0.00	2.0%		0.0%	0.00	3.0%		0.0%	0.00	4.0%	0.06	100.0%		0.0%	0.03	47.5%		0.0%	0.03	50.0%	0.00	1.5%
	Lyman	0.03		0.0%	0.00	4.0%		0.0%		0.0%	0.03	93.0%		0.0%	0.00	4.0%		0.0%	0.03	97.0%	0.03	100.0%		0.0%		0.0%		0.0%	0.03	100.0%	0.00	3.0%
	Tripp	0.03		0.0%	0.00	3.0%	0.00	3.0%		0.0%	0.00	3.0%		0.0%	0.00	3.0%		0.0%	0.00	3.0%	0.03	100.0%		0.0%	0.02	90.0%	0.00	3.0%	0.03	100.0%	0.00	4.0%
	Total	0.22		0.0%	0.13	61.1%	0.06	29.3%	0.00	1.3%	0.05	21.2%	0.00	1.0%	0.07	34.0%		0.0%	0.12	55.6%	0.22	98.2%		0.0%	0.06	27.5%	0.00	0.4%	0.11	50.0%	0.00	1.3%
PS	Harding	12.43		0.0%	12.14	97.7%	6.13	49.4%	0.37	3.0%		0.0%	0.37	3.0%	10.12	81.5%		0.0%	10.49	84.4%	11.39	91.7%		0.0%	1.48	11.9%		0.0%		0.0%		0.0%
	Meade	5.01		0.0%	1.26	25.1%		0.0%		0.0%	3.25	64.9%		0.0%	1.34	26.8%		0.0%	3.67	73.4%	5.01	100.0%		0.0%	0.28	5.6%		0.0%	3.48	69.6%		0.0%
	Haakon	4.99		0.0%	1.50	30.0%		0.0%		0.0%	0.10	2.0%		0.0%	0.20	4.0%		0.0%	0.20	4.0%	4.99	100.0%		0.0%		0.0%		0.0%	4.99	100.0%	0.05	1.0%
	Tripp	12.90		0.0%	3.65	28.3%	4.69	36.3%	0.88	6.9%	3.67	28.4%		0.0%	0.07	0.6%		0.0%	3.74	29.0%	8.04	62.3%		0.0%	7.08	54.8%	0.28	2.2%	5.05	39.1%	0.26	2.0%
	Total	35.33		0.0%	18.54	52.5%	10.82	30.6%	1.25	3.5%	7.02	19.9%	0.37	1.0%	11.74	33.2%		0.0%	18.11	51.3%	29.44	83.3%		0.0%	8.83	25.0%	0.28	0.8%	13.53	38.3%	0.31	0.9%
PY	Harding	89.98		0.0%	73.55	81.7%	28.21	31.3%	10.57	11.8%	1.70	1.9%	2.20	2.4%	24.56	27.3%		0.0%	28.46	31.6%	40.97	45.5%	3.49	3.9%	23.93	26.6%	0.31	0.3%	28.99	32.2%	0.36	0.4%
	Meade	57.79		0.0%	7.05	12.2%	0.88	1.5%		0.0%	48.82	84.5%	0.07	0.1%	5.76	10.0%		0.0%	54.51	94.3%	57.50	99.5%		0.0%	0.00	0.0%		0.0%	51.37	88.9%	0.27	0.5%
	Haakon	60.49		0.0%	2.27	3.7%		0.0%		0.0%	0.72	1.2%		0.0%	7.54	12.5%		0.0%	7.57	12.5%	60.49	100.0%		0.0%		0.0%		0.0%	48.40	80.0%	2.86	4.7%
	Tripp	50.01	0.29	0.5%	2.14	3.6%	29.33	48.9%		0.0%	26.90	44.8%		0.0%	2.87	4.8%		0.0%	27.65	46.1%	29.77	49.6%	27.71	46.2%	0.97	1.6%	0.67	1.1%	29.22	48.7%	0.66	1.1%
	Total	268.27	0.29	0.1%	85.01	31.7%	58.42	21.8%	10.57	3.9%	78.14	29.1%	2.28	0.8%	40.73	15.2%		0.0%	118.19	44.1%	188.73	70.3%	31.20	11.6%	24.90	9.3%	0.99	0.4%	157.97	58.9%	4.15	1.5%
SA	Harding	5.02		0.0%	4.88	97.2%	2.44	48.7%	0.14	2.8%		0.0%	0.14	2.8%	4.08	81.4%		0.0%	4.22	84.1%	4.59	91.5%		0.0%	0.57	11.3%		0.0%		0.0%		0.0%
	Meade	5.01		0.0%	1.49	29.7%	0.00	0.0%		0.0%	1.14	22.7%		0.0%	3.53	70.3%		0.0%	4.55	90.7%	4.90	97.7%		0.0%	1.14	22.7%		0.0%	1.14	22.6%		0.0%
	Tripp	5.03		0.0%	4.19	83.4%	1.38	27.5%		0.0%	0.04	0.7%		0.0%	0.04	0.7%	0.04	0.7%	0.04	0.7%	3.42	68.0%		0.0%		0.0%	0.09	1.8%		0.0%	0.05	1.0%
	Total	15.06		0.0%	10.56	70.1%	3.82	25.4%	0.14	0.9%	1.18	7.8%	0.14	0.9%	7.65	50.8%	0.04	0.2%	8.81	58.5%	12.90	85.7%		0.0%	1.71	11.3%	0.09	0.6%	1.14	7.5%	0.05	0.3%
	Grand Total	489.49	0.29	0.1%	190.12	38.8%	88.13	18.0%	16.94	3.5%	162.82	33.3%	5.28	1.1%	110.59	22.6%	2.87	0.6%	264.21	54.0%	385.13	78.7%	31.71	6.5%	82.95	16.9%	9.01	1.8%	252.78	51.6%	5.91	1.2%

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	282.518	282.546	0.028	148	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.03	0.02	0.00		0.00	0.01		0.01	0.01		0.01			
Harding	282.546	282.719	0.173	913	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.16	0.07				0.14		0.14	0.15		0.01			
Harding	282.719	282.809	0.090	476	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.09	0.05	0.00		0.00	0.07		0.08	0.08		0.01			
Harding	282.809	282.967	0.158	835	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.16	0.04	0.02		0.02	0.06		0.07	0.06		0.02			
Harding	282.967	283.036	0.068	362	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.06		0.06	0.06		0.01			
Harding	283.036	283.112	0.076	404	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.01		0.01	0.03		0.03	0.03		0.01			
Harding	283.112	283.603	0.491	2,592	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.47	0.42	0.02		0.02	0.15		0.17	0.20		0.20			
Harding	283.603	283.812	0.209	1,102	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.05	0.20		0.16			0.02		0.02	0.13		0.20	0.06		
Harding	283.812	284.039	0.228	1,201	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.22	0.19	0.01		0.01	0.07		0.08	0.09		0.09			
Harding	284.039	284.198	0.159	839	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.14	0.06				0.13		0.13	0.14		0.00			
Harding	284.198	284.589	0.390	2,061	SD063	355718	Ba	Badlands		0.36		0.36	0.02	0.01	0.03		0.05	0.04		0.37	0.35		
Harding	284.589	284.944	0.356	1,878	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.32	0.14				0.28		0.28	0.31		0.01			
Harding	284.944	284.965	0.021	110	SD063	355728	CdE	Cabbart-Delridge loams, 15 to 40 percent slopes		0.02	0.00	0.02			0.00		0.00	0.02		0.02	0.00		
Harding	284.965	285.059	0.094	495	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.09	0.04				0.08		0.08	0.08		0.00			
Harding	285.059	285.108	0.049	258	SD063	355728	CdE	Cabbart-Delridge loams, 15 to 40 percent slopes		0.05	0.00	0.04			0.00		0.00	0.04		0.04	0.00		
Harding	285.108	285.194	0.086	454	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.08	0.03				0.07		0.07	0.08		0.00			
Harding	285.194	285.220	0.027	141	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.01	0.00		0.00	0.02		0.02	0.02		0.00			
Harding	285.220	285.575	0.355	1,873	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.32	0.14				0.28		0.28	0.31		0.01			
Harding	285.575	285.681	0.105	557	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	285.681	285.742	0.061	323	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.06	0.05	0.00		0.00	0.02		0.02	0.02		0.02			
Harding	285.742	285.763	0.022	115	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.02	0.01				0.02		0.02	0.02		0.00			
Harding	285.763	285.829	0.066	349	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.06	0.06	0.00		0.00	0.02		0.02	0.03		0.03			
Harding	285.829	286.215	0.385	2,035	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.35	0.15				0.31		0.31	0.34		0.01			
Harding	286.215	286.276	0.061	322	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.06		0.01			
Harding	286.276	286.323	0.048	251	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.04	0.02				0.04		0.04	0.04		0.00			
Harding	286.323	286.346	0.022	117	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.02	0.01	0.00		0.00	0.02		0.02	0.02		0.00			
Harding	286.346	286.464	0.118	623	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.11	0.05				0.09		0.09	0.10		0.00			
Harding	286.464	286.544	0.080	422	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.07		0.01			
Harding	286.544	286.718	0.175	922	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.16	0.07				0.14		0.14	0.15		0.01			
Harding	286.718	286.876	0.158	834	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.03	0.11	0.02	0.12			0.02		0.02	0.06		0.14	0.08		
Harding	286.876	286.994	0.118	624	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.12	0.06	0.00		0.00	0.10		0.10	0.11		0.02			
Harding	286.994	287.083	0.089	467	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.06	0.01	0.07			0.01		0.01	0.04		0.08	0.04		
Harding	287.083	287.184	0.101	535	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.10	0.09	0.01		0.01	0.03		0.04	0.04		0.04			
Harding	287.184	287.279	0.095	500	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.07	0.01	0.07			0.01		0.01	0.04		0.09	0.05		
Harding	287.279	287.641	0.363	1,915	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.34	0.24	0.09		0.09	0.04		0.13	0.07		0.15			
Harding	287.641	287.711	0.070	367	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.01	0.05	0.01	0.05			0.01		0.01	0.03		0.06	0.03		
Harding	287.711	287.754	0.043	229	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.04	0.03	0.01		0.01	0.00		0.02	0.01		0.02			
Harding	287.754	287.923	0.168	888	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.17	0.09	0.01		0.01	0.14		0.14	0.16		0.03			
Harding	287.923	287.942	0.019	103	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.02		0.01	0.00		0.01		0.01	0.02		0.02			
Harding	287.942	287.991	0.049	258	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.03	0.00		0.00	0.04		0.04	0.05		0.01			
Harding	287.991	288.038	0.047	248	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.04		0.02	0.00		0.02		0.03	0.05		0.04			
Harding	288.038	288.226	0.188	992	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.19	0.10	0.01		0.01	0.15		0.16	0.17		0.03			
Harding	288.226	288.263	0.037	197	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.03	0.01				0.03		0.03	0.03		0.00			
Harding	288.263	288.375	0.112	592	SD063	355734	DcC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.11	0.01				0.01		0.01	0.11		0.11			
Harding	288.375	288.443	0.068	358	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.06		0.02	0.00		0.03		0.04	0.07		0.06			
Harding	288.443	288.663	0.220	1,161	SD063	355734	DcC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.22	0.02				0.02		0.02	0.21		0.21			
Harding	288.663	288.748	0.085	449	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.08		0.03	0.00		0.04		0.05	0.08		0.08			
Harding	288.748	288.953	0.205	1,083	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.01			0.02		0.18		0.21	0.21					
Harding	288.953	288.983	0.030	157	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.03		0.01	0.00		0.02		0.02	0.03		0.03			
Harding	288.983	289.057	0.075	393	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.00			0.01		0.07		0.07	0.07					
Harding	289.057	289.167	0.110	582	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.10		0.04	0.01		0.06		0.06	0.11		0.10			
Harding	289.167	289.282	0.114	603	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.01			0.01		0.10		0.11	0.11					
Harding	289.282	289.441	0.160	844	SD063	355738	EcA	Eapa-Archin complex, 0 to 3 percent slopes		0.01	0.01		0.08		0.07		0.15	0.15					
Harding	289.441	289.498	0.056	298	SD063	355787	SaA	Sage loam					0.05		0.00		0.06	0.06					0.05
Harding	289.498	289.672	0.174	918	SD063	355757	Kg	Korchea loam, channeled					0.02		0.01		0.03	0.17					0.01
Harding	289.672	289.923	0.252	1,329	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.06	0.24		0.20			0.02		0.02	0.16		0.24	0.07		
Harding	289.923	289.955	0.032	168	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.03		0.03	0.03		0.00			
Harding	289.955	289.973	0.018	97	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.02	0.00	0.00		0.00	0.01		0.01	0.01		0.00			
Harding	289.973	290.024	0.051	268	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.03	0.00		0.00	0.04		0.04	0.05		0.01			
Harding	290.024	290.206	0.181	958	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.18	0.05	0.02		0.02	0.06		0.08	0.06		0.02			
Harding	290.206	290.675	0.470	2,480	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.47	0.25	0.02		0.02	0.39		0.40	0.44		0.07			
Harding	290.675	290.755	0.079	419	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	290.755	290.907	0.153	806	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.15	0.08	0.01		0.01	0.13		0.13	0.14		0.02			
Harding	290.907	290.931	0.024	125	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.02	0.02	0.00		0.00	0.01		0.01	0.01		0.01			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	290.931	291.031	0.100	529	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.10	0.05	0.00		0.00	0.08		0.09	0.09		0.02			
Harding	291.031	291.187	0.156	823	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.14	0.06				0.12		0.12	0.14		0.00			
Harding	291.187	291.271	0.084	446	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.08	0.07	0.00		0.00	0.03		0.03	0.03		0.03			
Harding	291.271	291.414	0.143	754	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.13	0.02		0.00		0.12		0.13	0.14					
Harding	291.414	291.722	0.308	1,627	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.02			0.03		0.28		0.31	0.31					
Harding	291.722	291.883	0.161	850	SD063	355751	Hg	Havre loam					0.15		0.01		0.16	0.16				0.16	0.00
Harding	291.883	292.058	0.174	921	SD063	355742	Ge	Glendive fine sandy loam					0.16		0.02		0.17	0.17				0.17	0.01
Harding	292.058	292.093	0.035	184	SD063	1013843	W	Water															
Harding	292.093	292.122	0.029	156	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.03		0.02			0.00		0.00	0.02		0.03	0.01		
Harding	292.122	292.438	0.316	1,670	SD063	355752	Hh	Havre-Harlake complex					0.27		0.03		0.30	0.30				0.32	0.03
Harding	292.438	292.460	0.022	115	SD063	355742	Ge	Glendive fine sandy loam					0.02		0.00		0.02	0.02				0.02	0.00
Harding	292.460	292.584	0.123	651	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.03	0.12		0.10			0.01		0.01	0.08		0.12	0.03		
Harding	292.584	292.822	0.238	1,258	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.24	0.13	0.01		0.01	0.20		0.20	0.22		0.04			
Harding	292.822	293.265	0.443	2,340	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.42	0.29	0.11		0.11	0.04		0.16	0.09		0.18			
Harding	293.265	293.320	0.055	291	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.05	0.05	0.00		0.00	0.00		0.00	0.01		0.01			
Harding	293.320	293.947	0.627	3,312	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.60	0.53	0.03		0.03	0.19		0.22	0.25		0.25			
Harding	293.947	293.964	0.016	86	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.00	0.02		0.01			0.00		0.00	0.01		0.02	0.00		
Harding	293.964	294.010	0.046	244	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.04	0.04	0.00		0.00	0.01		0.02	0.02		0.02			
Harding	294.010	294.113	0.103	543	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.03	0.10		0.08			0.01		0.01	0.07		0.10	0.03		
Harding	294.113	294.119	0.006	33	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.01	0.00	0.00		0.00	0.01		0.01	0.01		0.00			
Harding	294.119	294.204	0.085	450	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.08		0.03	0.00		0.04		0.05	0.08		0.08			
Harding	294.204	294.257	0.053	280	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.03	0.00		0.00	0.04		0.05	0.05		0.01			
Harding	294.257	294.288	0.031	164	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.03		0.01	0.00		0.02		0.02	0.03		0.03			
Harding	294.288	294.351	0.063	333	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.06		0.01			
Harding	294.351	294.403	0.051	272	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.05		0.02	0.00		0.03		0.03	0.05		0.05			
Harding	294.403	294.519	0.116	611	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.12	0.06	0.00		0.00	0.09		0.10	0.11		0.02			
Harding	294.519	294.614	0.096	506	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.09		0.03	0.00		0.05		0.05	0.09		0.09			
Harding	294.614	294.680	0.066	349	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.05		0.06	0.06		0.01			
Harding	294.680	294.997	0.316	1,670	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.30		0.10	0.02		0.18		0.18	0.31		0.30			
Harding	294.997	295.077	0.081	426	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.07		0.01			
Harding	295.077	295.216	0.139	735	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.13		0.05	0.01		0.07		0.08	0.14		0.13			
Harding	295.216	295.346	0.129	681	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.13	0.07	0.01		0.01	0.11		0.11	0.12		0.02			
Harding	295.346	295.423	0.078	411	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.07		0.03	0.00		0.04		0.04	0.08		0.07			
Harding	295.423	295.545	0.121	641	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.11	0.05				0.10		0.10	0.11		0.00			
Harding	295.545	295.602	0.057	300	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.05		0.01			
Harding	295.602	295.757	0.156	823	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.14	0.06				0.12		0.12	0.14		0.00			
Harding	295.757	296.084	0.326	1,724	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.33	0.09	0.02		0.02	0.09		0.11	0.28		0.04			
Harding	296.084	296.384	0.300	1,587	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.30	0.16	0.01		0.01	0.25		0.26	0.28		0.05			
Harding	296.384	296.734	0.350	1,848	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.33	0.30	0.02		0.02	0.11		0.12	0.14		0.14			
Harding	296.734	297.013	0.279	1,473	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.26		0.09	0.01		0.14		0.16	0.27		0.26			
Harding	297.013	297.255	0.242	1,277	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.24	0.13	0.01		0.01	0.20		0.21	0.23		0.04			
Harding	297.255	297.605	0.349	1,844	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.33		0.12	0.02		0.18		0.20	0.34		0.33			
Harding	297.605	297.834	0.229	1,209	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.03		0.03		0.17		0.20	0.22					
Harding	297.834	297.962	0.129	680	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.12	0.11	0.01		0.01	0.04		0.05	0.05		0.05			
Harding	297.962	298.037	0.075	397	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.07	0.05	0.02		0.02	0.01		0.03	0.02		0.03			
Harding	298.037	298.200	0.163	859	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.15	0.14	0.01		0.01	0.05		0.06	0.07		0.07			
Harding	298.200	298.274	0.074	389	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.07	0.02	0.00		0.00	0.02		0.03	0.06		0.01			
Harding	298.274	298.488	0.214	1,132	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.20	0.18	0.01		0.01	0.06		0.08	0.09		0.09			
Harding	298.488	299.094	0.605	3,197	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.61	0.32	0.02		0.02	0.50		0.52	0.56		0.09			
Harding	299.094	299.175	0.082	431	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	299.175	299.605	0.429	2,268	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.43	0.23	0.02		0.02	0.35		0.37	0.40		0.06			
Harding	299.605	299.736	0.132	696	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.13	0.11	0.01		0.01	0.04		0.05	0.05		0.05			
Harding	299.736	299.782	0.046	241	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.04	0.03	0.01		0.01	0.00		0.02	0.01		0.02			
Harding	299.782	299.829	0.047	246	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.04	0.04	0.00		0.00	0.01		0.02	0.02		0.02			
Harding	299.829	299.926	0.098	517	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.10	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	299.926	299.979	0.052	275	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.03	0.00		0.00	0.04		0.04	0.05		0.01			
Harding	299.979	300.010	0.031	166	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.03	0.01	0.00		0.00	0.01		0.01	0.01		0.00			
Harding	300.010	300.053	0.043	227	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.04	0.02	0.00		0.00	0.04		0.04	0.04		0.01			
Harding	300.053	300.174	0.121	638	SD063	355787	SaA	Sage loam					0.11		0.01		0.12	0.12					0.10
Harding	300.174	300.235	0.061	322	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.06	0.05	0.00		0.00	0.02		0.02	0.02		0.02			
Harding	300.235	300.359	0.125	658	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.11	0.05				0.10		0.10	0.11		0.00			
Harding	300.359	300.441	0.082	431	SD063	355787	SaA	Sage loam					0.08		0.00		0.08	0.08					0.07
Harding	300.441	300.744	0.303	1,602	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.29	0.26	0.02		0.02	0.09		0.11	0.12		0.12			
Harding	300.744	300.826	0.082	432	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.08		0.01			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	300.826	300.993	0.167	881	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.16	0.11	0.04		0.04	0.02		0.06	0.03		0.07			
Harding	300.993	301.214	0.221	1,165	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.21	0.19	0.01		0.01	0.07		0.08	0.09		0.09			
Harding	301.214	301.276	0.062	328	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.06		0.02	0.00		0.03		0.03	0.06		0.06			
Harding	301.276	301.450	0.175	922	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.17	0.09	0.01		0.01	0.14		0.15	0.16		0.03			
Harding	301.450	301.538	0.088	464	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.08		0.03	0.00		0.04		0.05	0.09		0.08			
Harding	301.538	301.797	0.258	1,363	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.23	0.10				0.21		0.21	0.23		0.01			
Harding	301.797	302.019	0.222	1,173	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.22	0.06	0.02		0.02	0.08		0.10	0.08		0.02			
Harding	302.019	302.214	0.195	1,031	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.19	0.13	0.05		0.05	0.02		0.07	0.04		0.08			
Harding	302.214	302.696	0.482	2,546	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.12	0.47		0.38			0.04		0.04	0.31		0.46	0.14		
Harding	302.696	302.726	0.029	155	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.02		0.03	0.03		0.00			
Harding	302.726	303.245	0.520	2,744	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.49	0.44	0.03		0.03	0.16		0.18	0.21		0.21			
Harding	303.245	303.396	0.151	798	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.14		0.05	0.01		0.08		0.08	0.15		0.14			
Harding	303.396	303.805	0.409	2,157	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.39	0.27	0.10		0.10	0.04		0.14	0.08		0.16			
Harding	303.805	303.893	0.088	466	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.08	0.07	0.00		0.00	0.03		0.03	0.04		0.04			
Harding	303.893	304.121	0.228	1,205	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.06	0.22		0.18			0.02		0.02	0.15		0.22	0.06		
Harding	304.121	304.251	0.130	686	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.12		0.04	0.01		0.07		0.07	0.13		0.12			
Harding	304.251	304.431	0.179	948	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.18	0.10	0.01		0.01	0.15		0.15	0.17		0.03			
Harding	304.431	304.601	0.170	898	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.01	0.10				0.06		0.06	0.17			0.01		
Harding	304.601	304.668	0.067	356	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.06	0.03				0.05		0.05	0.06		0.00			
Harding	304.668	304.869	0.201	1,060	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.19		0.07	0.01		0.10		0.11	0.19		0.19			
Harding	304.869	305.174	0.305	1,610	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.28	0.12				0.24		0.24	0.27		0.01			
Harding	305.174	305.283	0.109	575	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.10	0.09	0.01		0.01	0.03		0.04	0.04		0.04			
Harding	305.283	305.360	0.078	410	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.08	0.07	0.00		0.00	0.00		0.01	0.01		0.01			
Harding	305.360	305.474	0.114	601	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.11	0.03	0.01		0.01	0.04		0.05	0.04		0.01			
Harding	305.474	305.729	0.255	1,344	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.25	0.23	0.01		0.01	0.02		0.02	0.03		0.03			
Harding	305.729	306.062	0.333	1,757	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.33	0.08	0.03		0.03	0.12		0.15	0.12		0.03			
Harding	306.062	306.512	0.451	2,380	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.06		0.05		0.34		0.39	0.42					
Harding	306.512	306.541	0.028	150	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.00	0.02				0.01		0.01	0.03			0.00		
Harding	306.541	306.717	0.176	932	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.17		0.06	0.01		0.09		0.10	0.17		0.17			
Harding	306.717	307.079	0.361	1,908	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.36	0.09	0.04		0.04	0.13		0.16	0.13		0.04			
Harding	307.079	307.185	0.106	562	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.10	0.09	0.01		0.01	0.03		0.04	0.04		0.04			
Harding	307.185	307.379	0.194	1,023	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.19	0.10	0.01		0.01	0.16		0.17	0.18		0.03			
Harding	307.379	307.494	0.116	610	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.11		0.04	0.01		0.06		0.06	0.11		0.11			
Harding	307.494	307.601	0.106	561	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	307.601	307.830	0.229	1,208	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.21	0.09				0.18		0.18	0.20		0.01			
Harding	307.830	307.947	0.118	623	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.11	0.10	0.01		0.01	0.04		0.04	0.05		0.05			
Harding	307.947	308.031	0.084	443	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.08		0.01			
Harding	308.031	308.108	0.076	403	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.07	0.05	0.02		0.02	0.01		0.03	0.02		0.03			
Harding	308.108	308.620	0.512	2,703	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.47	0.20				0.41		0.41	0.45		0.02			
Harding	308.620	308.670	0.051	267	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.05		0.04			0.00		0.00	0.03		0.05	0.01		
Harding	308.670	308.772	0.102	536	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.10		0.03	0.01		0.05		0.06	0.10		0.10			
Harding	308.772	308.963	0.191	1,010	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.19	0.06	0.01		0.01	0.06		0.07	0.17		0.02			
Harding	308.963	309.210	0.247	1,304	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.23		0.08	0.01		0.13		0.14	0.24		0.23			
Harding	309.210	309.420	0.210	1,109	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.19	0.08				0.17		0.17	0.18		0.01			
Harding	309.420	309.575	0.155	818	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.04	0.15		0.12			0.01		0.01	0.10		0.15	0.04		
Harding	309.575	310.006	0.431	2,274	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.41	0.28	0.11		0.11	0.04		0.15	0.09		0.17			
Harding	310.006	310.105	0.100	526	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.02	0.10		0.08			0.01		0.01	0.06		0.09	0.03		
Harding	310.105	310.305	0.199	1,053	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.19	0.13	0.05		0.05	0.02		0.07	0.04		0.08			
Harding	310.305	310.564	0.260	1,371	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.26	0.14	0.01		0.01	0.21		0.22	0.24		0.04			
Harding	310.564	310.601	0.037	194	SD063	355718	Ba	Badlands		0.03		0.03	0.00	0.00	0.00		0.00	0.00		0.03	0.03		
Harding	310.601	310.648	0.047	247	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.04	0.02				0.04		0.04	0.04		0.00			
Harding	310.648	310.838	0.191	1,007	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.18	0.16	0.01		0.01	0.06		0.07	0.08		0.08			
Harding	310.838	311.140	0.301	1,591	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.08	0.29		0.24			0.02		0.02	0.19		0.29	0.08		
Harding	311.140	311.419	0.279	1,475	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.27	0.24	0.01		0.01	0.08		0.10	0.11		0.11			
Harding	311.419	311.600	0.181	955	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.18	0.10	0.01		0.01	0.15		0.16	0.17		0.03			
Harding	311.600	311.884	0.284	1,500	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.27	0.24	0.01		0.01	0.09		0.10	0.11		0.11			
Harding	311.884	312.030	0.145	767	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.15	0.08	0.01		0.01	0.12		0.12	0.14		0.02			
Harding	312.030	312.666	0.636	3,359	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.60	0.54	0.03		0.03	0.19		0.22	0.25		0.25			
Harding	312.666	312.866	0.200	1,058	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.20	0.11	0.01		0.01	0.16		0.17	0.19		0.03			
Harding	312.866	313.152	0.286	1,511	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.26	0.11				0.23		0.23	0.25		0.01			
Harding	313.152	313.314	0.161	851	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.16	0.01	0.01		0.01	0.02		0.02	0.02		0.01		0.16	
Harding	313.314	313.372	0.059	310	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.05	0.02				0.05		0.05	0.05		0.00			
Harding	313.372	313.514	0.142	749	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.13	0.12	0.01		0.01	0.04		0.05	0.06		0.06			
Harding	313.514	313.673	0.159	839	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.15	0.10	0.04		0.04	0.02		0.06	0.03		0.06			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	313.673	313.773	0.100	529	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.10	0.03	0.01		0.01	0.04		0.05	0.04		0.01			
Harding	313.773	313.869	0.096	504	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.09	0.09	0.00		0.00	0.01		0.01	0.01		0.01			
Harding	313.869	313.970	0.101	532	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.10	0.03	0.01		0.01	0.04		0.05	0.04		0.01			
Harding	313.970	314.278	0.308	1,628	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.29	0.26	0.02		0.02	0.09		0.11	0.12		0.12			
Harding	314.278	314.406	0.128	674	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.12	0.12	0.00		0.00	0.01		0.01	0.02		0.02			
Harding	314.406	314.696	0.291	1,535	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.29	0.26				0.05		0.05	0.05	0.22	0.05			
Harding	314.696	314.781	0.085	446	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.08	0.07	0.00		0.00	0.03		0.03	0.03		0.03			
Harding	314.781	314.879	0.098	519	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.09	0.06	0.02		0.02	0.01		0.03	0.02		0.04			
Harding	314.879	314.912	0.033	174	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.03	0.03	0.00		0.00	0.00		0.00	0.00		0.00			
Harding	314.912	315.098	0.186	983	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.19	0.01	0.01		0.01	0.02		0.03	0.03		0.01		0.19	
Harding	315.098	315.284	0.186	980	SD063	355766	MaB	Marmarth fine sandy loam, 2 to 6 percent slopes		0.19	0.01	0.01		0.01	0.01		0.02	0.17		0.01		0.19	
Harding	315.284	315.342	0.058	307	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.06	0.01	0.01		0.01	0.02		0.03	0.02		0.01			
Harding	315.342	315.462	0.121	636	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.12	0.01	0.01		0.01	0.01		0.02	0.02		0.01		0.12	
Harding	315.462	315.579	0.117	616	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.12	0.03	0.01		0.01	0.04		0.05	0.04		0.01			
Harding	315.579	315.866	0.287	1,514	SD063	355715	AsB	Assiniboine fine sandy loam, 3 to 6 percent slopes			0.24				0.03		0.03	0.29				0.29	
Harding	315.866	315.950	0.084	442	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.08		0.01			
Harding	315.950	316.353	0.404	2,132	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.39	0.37	0.01		0.01	0.02		0.04	0.05		0.05			
Harding	316.353	316.591	0.238	1,256	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.24	0.06	0.02		0.02	0.08		0.11	0.08		0.02			
Harding	316.591	316.739	0.148	782	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.14		0.05	0.01		0.08		0.08	0.14		0.14			
Harding	316.739	317.243	0.504	2,659	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.50	0.13	0.05		0.05	0.18		0.23	0.18		0.05			
Harding	317.243	317.503	0.260	1,375	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.25		0.09	0.01		0.13		0.15	0.25		0.25			
Harding	317.503	317.780	0.276	1,459	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.25	0.11				0.22		0.22	0.24		0.01			
Harding	317.780	318.027	0.247	1,306	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.23	0.21	0.01		0.01	0.07		0.09	0.10		0.10			
Harding	318.027	318.040	0.014	72	SD063	355746	Ha	Hanly fine sandy loam					0.00		0.00		0.00	0.00					0.00
Harding	318.040	318.143	0.103	543	SD063	355748	Hd	Hanly-Dogiecreek fine sandy loams		0.00			0.04		0.01		0.05	0.02					0.04
Harding	318.143	318.359	0.216	1,142	SD063	355802	TvB	Trey-Parchin-Bullock complex, 2 to 9 percent slopes		0.21	0.16	0.01		0.01	0.09		0.10	0.10	0.10	0.01			
Harding	318.359	318.420	0.060	318	SD063	355819	ZbC	Zeona-Blownout land complex, 2 to 15 percent slopes		0.03	0.04				0.00		0.00	0.00	0.04	0.00			
Harding	318.420	318.544	0.124	656	SD063	355802	TvB	Trey-Parchin-Bullock complex, 2 to 9 percent slopes		0.12	0.09	0.00		0.00	0.05		0.06	0.06	0.05	0.00			
Harding	318.544	318.602	0.058	309	SD063	355819	ZbC	Zeona-Blownout land complex, 2 to 15 percent slopes		0.03	0.04				0.00		0.00	0.00	0.04	0.00			
Harding	318.602	318.820	0.217	1,147	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.03	0.21				0.02		0.02	0.02	0.19	0.02			
Harding	318.820	319.486	0.666	3,518	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.67	0.61				0.11		0.11	0.11	0.50	0.11			
Harding	319.486	319.855	0.369	1,949	SD063	355818	ZaD	Zeona loamy fine sand, 9 to 25 percent slopes		0.07	0.35	0.33			0.04		0.04	0.04	0.31	0.37			
Harding	319.855	319.928	0.072	382	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.07	0.07				0.01		0.01	0.01	0.05	0.01			
Harding	319.928	320.009	0.081	428	SD063	355818	ZaD	Zeona loamy fine sand, 9 to 25 percent slopes		0.02	0.08	0.07			0.01		0.01	0.01	0.07	0.08			
Harding	320.009	320.064	0.055	293	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.06	0.05				0.01		0.01	0.01	0.04	0.01			
Harding	320.064	320.607	0.543	2,868	SD063	355818	ZaD	Zeona loamy fine sand, 9 to 25 percent slopes		0.11	0.52	0.49			0.05		0.05	0.05	0.46	0.54			
Harding	320.607	320.725	0.118	624	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.02	0.11				0.01		0.01	0.01	0.11	0.01			
Harding	320.725	321.763	1.037	5,476	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		1.01	0.94	0.03		0.03	0.06		0.09	0.12		0.12			
Harding	321.763	321.809	0.047	248	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.01	0.05				0.00		0.00	0.00	0.04	0.00			
Harding	321.809	321.875	0.066	347	SD063	355730	ChA	Chinook fine sandy loam, 0 to 3 percent slopes			0.06		0.00		0.01		0.01	0.01			0.00	0.07	
Harding	321.875	321.946	0.070	371	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.01	0.07				0.01		0.01	0.01	0.06	0.01			
Harding	321.946	322.051	0.106	559	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.11	0.01	0.01		0.01	0.01		0.02	0.02		0.01		0.11	
Harding	322.051	322.143	0.092	485	SD063	355730	ChA	Chinook fine sandy loam, 0 to 3 percent slopes			0.08		0.00		0.01		0.01	0.01			0.00	0.09	
Harding	322.143	322.637	0.494	2,608	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.49	0.02	0.02		0.02	0.05		0.07	0.07		0.02		0.49	
Harding	322.637	322.797	0.160	844	SD063	355731	CnA	Chinook-Archin fine sandy loams, 0 to 3 percent slopes			0.10		0.02		0.05		0.06	0.07			0.01		
Harding	322.797	323.017	0.219	1,158	SD063	355730	ChA	Chinook fine sandy loam, 0 to 3 percent slopes			0.20		0.01		0.02		0.02	0.03			0.01	0.22	
Harding	323.017	323.108	0.092	486	SD063	355748	Hd	Hanly-Dogiecreek fine sandy loams		0.00			0.04		0.01		0.05	0.02					0.03
Harding	323.108	323.209	0.100	529	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.02	0.10				0.01		0.01	0.01	0.09	0.01			
Harding	323.209	323.250	0.042	220	SD063	355819	ZbC	Zeona-Blownout land complex, 2 to 15 percent slopes		0.02	0.03				0.00		0.00	0.00	0.02	0.00			
Harding	323.250	323.315	0.065	343	SD063	355802	TvB	Trey-Parchin-Bullock complex, 2 to 9 percent slopes		0.06	0.05	0.00		0.00	0.03		0.03	0.03	0.03	0.00			
Harding	323.315	323.478	0.162	857	SD063	355749	He	Hanly-Slickspots complex		0.03	0.10		0.02		0.05		0.06	0.06	0.10				0.00
Harding	323.478	323.547	0.069	364	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.01	0.07				0.01		0.01	0.01	0.06	0.01			
Harding	323.547	323.740	0.193	1,019	SD063	355740	FtE	Fleak-Trey-Rock outcrop complex, 15 to 50 percent slopes	0.04	0.19	0.14	0.15			0.02		0.02	0.02	0.12	0.17	0.04		
Harding	323.740	324.028	0.288	1,522	SD063	355800	TrB	Trey loamy fine sand, 2 to 9 percent slopes		0.28	0.28				0.02		0.02	0.02	0.27	0.02			
Harding	324.028	324.561	0.534	2,817	SD063	355740	FtE	Fleak-Trey-Rock outcrop complex, 15 to 50 percent slopes	0.11	0.53	0.37	0.43			0.05		0.05	0.05	0.32	0.48	0.11		
Harding	324.561	324.956	0.395	2,085	SD063	355819	ZbC	Zeona-Blownout land complex, 2 to 15 percent slopes		0.18	0.28				0.02		0.02	0.02	0.24	0.02			
Harding	324.956	325.176	0.220	1,160	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.22	0.20				0.04		0.04	0.04	0.16	0.04			
Harding	325.176	325.481	0.305	1,609	SD063	355740	FtE	Fleak-Trey-Rock outcrop complex, 15 to 50 percent slopes	0.06	0.30	0.21	0.24			0.03		0.03	0.03	0.18	0.27	0.06		
Harding	325.481	325.567	0.086	454	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.08	0.08	0.00		0.00	0.01		0.01	0.01		0.01			
Harding	325.567	325.619	0.052	273	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.05	0.01	0.01		0.01	0.02		0.02	0.02		0.01			
Harding	325.619	325.663	0.044	232	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.04	0.04	0.00		0.00	0.00		0.00	0.01		0.01			
Harding	325.663	326.001	0.339	1,787	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.34	0.08	0.03		0.03	0.12		0.15	0.12		0.03			
Harding	326.001	326.301	0.300	1,586	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.30	0.02	0.02		0.02	0.03		0.05	0.05		0.02		0.30	
Harding	326.301	326.416	0.114	603	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.11	0.10	0.00		0.00	0.01		0.01	0.01		0.01			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	326.416	326.663	0.248	1,309	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.01	0.14				0.09		0.09	0.25			0.02		
Harding	326.663	326.702	0.039	205	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.04	0.01	0.00		0.00	0.01		0.02	0.01		0.00			
Harding	326.702	326.875	0.172	911	SD063	355715	AsB	Assinniboine fine sandy loam, 3 to 6 percent slopes			0.15				0.02		0.02	0.17				0.17	
Harding	326.875	326.908	0.033	174	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.00	0.02				0.01		0.01	0.03			0.00		
Harding	326.908	327.167	0.259	1,368	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.26	0.14	0.01		0.01	0.21		0.22	0.24		0.04			
Harding	327.167	327.366	0.199	1,050	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.20	0.05	0.02		0.02	0.07		0.09	0.07		0.02			
Harding	327.366	327.625	0.259	1,367	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.26	0.01	0.01		0.01	0.03		0.04	0.04		0.01		0.26	
Harding	327.625	327.724	0.099	525	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.10	0.05	0.00		0.00	0.08		0.09	0.09		0.01			
Harding	327.724	328.152	0.428	2,261	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		0.43	0.02	0.02		0.02	0.04		0.06	0.06		0.02		0.43	
Harding	328.152	328.202	0.050	265	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.01		0.01		0.04		0.04	0.05					
Harding	328.202	328.373	0.170	898	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.01			0.02		0.15		0.17	0.17					
Harding	328.373	328.390	0.018	94	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.00		0.00		0.01		0.02	0.02					
Harding	328.390	328.397	0.007	38	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.00			0.00		0.01		0.01	0.01					
Harding	328.397	328.514	0.117	617	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.11		0.04	0.01		0.06		0.07	0.11		0.11			
Harding	328.514	328.581	0.067	355	SD063	355756	Ke	Korchea loam					0.00		0.01		0.01	0.07				0.07	0.00
Harding	328.581	328.945	0.363	1,918	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.35		0.12	0.02		0.19		0.20	0.35		0.35			
Harding	328.945	329.068	0.123	651	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.03	0.12		0.10			0.01		0.01	0.08		0.12	0.03		
Harding	329.068	329.131	0.063	331	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.06		0.01			
Harding	329.131	329.207	0.076	401	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.02	0.07		0.06			0.01		0.01	0.05		0.07	0.02		
Harding	329.207	329.335	0.128	677	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.12	0.05				0.10		0.10	0.11		0.00			
Harding	329.335	329.483	0.148	782	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.15	0.08	0.01		0.01	0.12		0.13	0.14		0.02			
Harding	329.483	329.646	0.164	863	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.15	0.06				0.13		0.13	0.14		0.00			
Harding	329.646	329.693	0.047	247	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.02	0.00		0.00	0.04		0.04	0.04		0.01			
Harding	329.693	329.761	0.068	360	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.06	0.03				0.05		0.05	0.06		0.00			
Harding	329.761	329.839	0.078	411	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.06		0.07	0.07		0.01			
Harding	329.839	330.339	0.500	2,638	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.45	0.19				0.40		0.40	0.44		0.01			
Harding	330.339	330.405	0.067	352	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.06	0.06	0.00		0.00	0.02		0.02	0.03		0.03			
Harding	330.405	330.429	0.023	122	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.00		0.00		0.02		0.02	0.02					
Harding	330.429	330.457	0.029	152	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.03	0.01				0.02		0.02	0.03		0.00			
Harding	330.457	330.628	0.171	904	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.02		0.13		0.15	0.16					
Harding	330.628	330.731	0.103	543	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.10		0.03	0.01		0.05		0.06	0.10		0.10			
Harding	330.731	330.854	0.123	650	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.01		0.09		0.11	0.12					
Harding	330.854	330.948	0.093	492	SD063	355727	CcE	Cabbart loam, 6 to 60 percent slopes, extremely stony		0.09	0.00	0.07	0.07		0.01		0.08	0.09		0.09	0.07		
Harding	330.948	331.053	0.105	554	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.10	0.03	0.01		0.01	0.03		0.04	0.09		0.01			
Harding	331.053	331.539	0.486	2,567	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.44	0.19				0.39		0.39	0.43		0.01			
Harding	331.539	331.846	0.308	1,624	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.29		0.10	0.02		0.16		0.17	0.30		0.29			
Harding	331.846	332.259	0.412	2,177	SD063	355799	ToC	Tanna-Rhoades complex, 2 to 9 percent slopes		0.41			0.33		0.14		0.37	0.41		0.41			
Harding	332.259	332.524	0.265	1,399	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.26	0.14	0.01		0.01	0.22		0.23	0.25		0.04			
Harding	332.524	332.577	0.053	280	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.05		0.02	0.00		0.03		0.03	0.05		0.05			
Harding	332.577	333.068	0.491	2,593	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.45	0.19				0.39		0.39	0.43		0.01			
Harding	333.068	333.101	0.033	174	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.03		0.03	0.03		0.00			
Harding	333.101	333.131	0.031	161	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.03	0.01				0.02		0.02	0.03		0.00			
Harding	333.131	333.339	0.208	1,098	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.21	0.11	0.01		0.01	0.17		0.18	0.19		0.03			
Harding	333.339	333.589	0.249	1,316	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.25	0.07	0.01		0.01	0.07		0.08	0.22		0.03			
Harding	333.589	333.659	0.071	374	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.06	0.03				0.06		0.06	0.06		0.00			
Harding	333.659	333.745	0.086	453	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.09	0.02	0.00		0.00	0.02		0.03	0.07		0.01			
Harding	333.745	333.901	0.155	821	SD063	355770	MtD	Marmarth-Twilight fine sandy loams, 9 to 15 percent slopes		0.16	0.06	0.01		0.01	0.02		0.03	0.10		0.11			
Harding	333.901	334.072	0.172	906	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.16	0.15	0.01		0.01	0.05		0.06	0.07		0.07			
Harding	334.072	334.170	0.098	516	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.02	0.09		0.08			0.01		0.01	0.06		0.09	0.03		
Harding	334.170	334.235	0.065	341	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.06	0.02	0.01		0.01	0.02		0.03	0.02		0.01			
Harding	334.235	334.389	0.154	813	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.14	0.06				0.12		0.12	0.14		0.00			
Harding	334.389	334.489	0.101	532	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.10	0.09	0.01		0.01	0.03		0.04	0.04		0.04			
Harding	334.489	334.537	0.048	252	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.05	0.03	0.00		0.00	0.04		0.04	0.04		0.01			
Harding	334.537	335.651	1.114	5,881	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		1.06	0.95	0.06		0.06	0.33		0.39	0.45		0.45			
Harding	335.651	335.747	0.096	508	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.09	0.06	0.02		0.02	0.01		0.03	0.02		0.04			
Harding	335.747	335.884	0.137	724	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.13	0.12	0.01		0.01	0.04		0.05	0.05		0.05			
Harding	335.884	336.030	0.146	770	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.14	0.09	0.04		0.04	0.01		0.05	0.03		0.06			
Harding	336.030	336.193	0.162	857	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.15	0.14	0.01		0.01	0.05		0.06	0.06		0.06			
Harding	336.193	336.348	0.156	821	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.16	0.08	0.01		0.01	0.13		0.13	0.14		0.02			
Harding	336.348	336.526	0.178	938	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.16	0.07				0.14		0.14	0.16		0.01			
Harding	336.526	336.626	0.100	530	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.10	0.07	0.03		0.03	0.01		0.04	0.02		0.04			
Harding	336.626	336.792	0.165	873	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.16	0.14	0.01		0.01	0.05		0.06	0.07		0.07			
Harding	336.792	336.958	0.167	880	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.17	0.09	0.01		0.01	0.14		0.14	0.16		0.03			
Harding	336.958	337.122	0.164	865	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.16	0.11	0.04		0.04	0.02		0.06	0.03		0.07			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	337.122	337.207	0.084	446	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.00		0.00	0.02		0.03	0.07		0.01			
Harding	337.207	337.346	0.140	737	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.14	0.07	0.01		0.01	0.11		0.12	0.13		0.02			
Harding	337.346	337.425	0.079	418	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.00		0.00	0.02		0.03	0.07		0.01			
Harding	337.425	337.546	0.120	635	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.12	0.06	0.00		0.00	0.10		0.10	0.11		0.02			
Harding	337.546	337.973	0.427	2,256	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.02			0.04		0.38		0.43	0.43					
Harding	337.973	338.069	0.096	508	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.09	0.08	0.00		0.00	0.03		0.03	0.04		0.04			
Harding	338.069	338.237	0.168	887	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.01			0.02		0.15		0.17	0.17					
Harding	338.237	338.405	0.168	885	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.17	0.09	0.01		0.01	0.14		0.14	0.16		0.03			
Harding	338.405	338.544	0.139	735	SD063	355728	CdE	Cabbart-Delridge loams, 15 to 40 percent slopes		0.14	0.00	0.11			0.01		0.01	0.12		0.13	0.00		
Harding	338.544	338.714	0.171	901	SD063	355757	Kg	Korchea loam, channeled					0.02		0.01		0.03	0.16					0.01
Harding	338.714	338.814	0.099	523	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.10	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	338.814	338.952	0.139	731	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.13	0.05				0.11		0.11	0.12		0.00			
Harding	338.952	339.045	0.093	492	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.09	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	339.045	339.251	0.205	1,084	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.01	0.12				0.08		0.08	0.21			0.01		
Harding	339.251	339.440	0.189	1,000	SD063	355741	GdA	Gerdrum silt loam, 0 to 4 percent slopes		0.01			0.02		0.17		0.19	0.19					
Harding	339.440	339.527	0.087	459	SD063	355714	AsA	Assinniboine fine sandy loam, 0 to 3 percent slopes			0.07		0.00		0.01		0.01	0.09				0.09	
Harding	339.527	339.630	0.103	546	SD063	355752	Hh	Havre-Harlake complex					0.09		0.01		0.10	0.10				0.10	0.01
Harding	339.630	339.710	0.080	421	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	339.710	340.008	0.298	1,573	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.02	0.17				0.11		0.11	0.30			0.02		
Harding	340.008	340.190	0.182	962	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.02		0.14		0.16	0.17					
Harding	340.190	340.440	0.250	1,320	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.24		0.08	0.01		0.13		0.14	0.24		0.24			
Harding	340.440	340.577	0.137	722	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.13	0.12	0.01		0.01	0.04		0.05	0.05		0.05			
Harding	340.577	340.610	0.033	174	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.03		0.03	0.03		0.00			
Harding	340.610	340.658	0.048	253	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.05	0.04	0.00		0.00	0.01		0.02	0.02		0.02			
Harding	340.658	340.718	0.061	319	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.06		0.01			
Harding	340.718	340.773	0.055	291	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.01		0.01		0.04		0.05	0.05					
Harding	340.773	340.881	0.108	568	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	340.881	341.605	0.724	3,822	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.09		0.09		0.54		0.63	0.68					
Harding	341.605	341.664	0.059	310	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.00	0.03				0.02		0.02	0.06			0.00		
Harding	341.664	341.727	0.063	333	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.01		0.01		0.05		0.05	0.06					
Harding	341.727	341.830	0.103	545	SD063	355714	AsA	Assinniboine fine sandy loam, 0 to 3 percent slopes			0.09		0.01		0.01		0.02	0.10				0.10	
Harding	341.830	341.993	0.163	861	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.02		0.12		0.14	0.15					
Harding	341.993	342.073	0.080	421	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.07	0.03				0.06		0.06	0.07		0.00			
Harding	342.073	342.156	0.083	440	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.01		0.01		0.06		0.07	0.08					
Harding	342.156	342.271	0.116	610	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.11		0.04	0.01		0.06		0.06	0.11		0.11			
Harding	342.271	342.380	0.108	572	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.10	0.01		0.00		0.09		0.10	0.10					
Harding	342.380	342.570	0.190	1,003	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.19	0.06	0.01		0.01	0.06		0.06	0.17		0.02			
Harding	342.570	342.819	0.250	1,318	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.25	0.13	0.01		0.01	0.20		0.21	0.23		0.04			
Harding	342.819	342.938	0.118	625	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.11	0.05				0.09		0.09	0.10		0.00			
Harding	342.938	343.150	0.213	1,123	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.21	0.11	0.01		0.01	0.17		0.18	0.20		0.03			
Harding	343.150	343.277	0.126	668	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.12	0.11	0.01		0.01	0.04		0.04	0.05		0.05			
Harding	343.277	343.690	0.413	2,182	SD063	355716	AtA	Assinniboine-Archin fine sandy loams, 0 to 3 percent slopes		0.02	0.24				0.15		0.15	0.41			0.03		
Harding	343.690	343.749	0.059	313	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.06	0.03	0.00		0.00	0.05		0.05	0.06		0.01			
Harding	343.749	343.836	0.087	458	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.09	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	343.836	344.091	0.255	1,346	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.23	0.10				0.20		0.20	0.22		0.01			
Harding	344.091	344.149	0.058	306	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.06	0.05	0.00		0.00	0.00		0.01	0.01		0.01			
Harding	344.149	344.414	0.265	1,398	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.26	0.14	0.01		0.01	0.22		0.23	0.25		0.04			
Harding	344.414	344.423	0.010	51	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.01	0.00				0.01		0.01	0.01		0.00			
Harding	344.423	344.625	0.202	1,067	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.20	0.11	0.01		0.01	0.17		0.17	0.19		0.03			
Harding	344.625	344.684	0.059	310	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		0.06	0.05	0.00		0.00	0.00		0.01	0.01		0.01			
Harding	344.684	344.917	0.233	1,232	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.23	0.12	0.01		0.01	0.19		0.20	0.22		0.03			
Harding	344.917	344.999	0.082	432	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.08	0.02	0.01		0.01	0.03		0.04	0.03		0.01			
Harding	344.999	345.192	0.193	1,021	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.18	0.16	0.01		0.01	0.06		0.07	0.08		0.08			
Harding	345.192	345.338	0.146	771	SD063	355730	ChA	Chinook fine sandy loam, 0 to 3 percent slopes			0.13		0.00		0.01		0.02	0.02			0.01	0.15	
Harding	345.338	345.468	0.129	682	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.12	0.11	0.01		0.01	0.04		0.05	0.05		0.05			
Harding	345.468	346.286	0.818	4,321	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.82	0.20	0.08		0.08	0.29		0.37	0.29		0.08			
Harding	346.286	346.338	0.052	273	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.05	0.02				0.04		0.04	0.05		0.00			
Harding	346.338	346.362	0.024	126	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.02	0.00		0.00		0.02		0.02	0.02					
Harding	346.362	346.514	0.153	806	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.14	0.06				0.12		0.12	0.13		0.00			
Harding	346.514	346.649	0.135	714	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.13	0.01		0.00		0.11		0.12	0.13					
Harding	346.649	346.747	0.098	516	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.09	0.04				0.08		0.08	0.09		0.00			
Harding	346.747	346.791	0.044	230	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.04	0.04	0.00		0.00	0.01		0.02	0.02		0.02			
Harding	346.791	346.863	0.072	379	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.07	0.02	0.01		0.01	0.03		0.03	0.03		0.01			
Harding	346.863	346.884	0.021	111	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.02	0.02	0.00		0.00	0.01		0.01	0.01		0.01			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	346.884	347.000	0.117	616	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.11		0.04	0.01		0.06		0.07	0.11		0.11			
Harding	347.000	347.062	0.062	325	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.06	0.04	0.02		0.02	0.01		0.02	0.01		0.02			
Harding	347.062	347.140	0.078	413	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.07	0.07	0.00		0.00	0.02		0.03	0.03		0.03			
Harding	347.140	347.158	0.018	94	SD063	355747	Hb	Hanly loamy fine sand			0.02		0.00				0.00	0.00	0.02				0.00
Harding	347.158	347.352	0.195	1,027	SD063	355787	SaA	Sage loam					0.18		0.01		0.19	0.19					0.17
Harding	347.352	347.456	0.103	546	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.10	0.07	0.03		0.03	0.01		0.04	0.02		0.04			
Harding	347.456	347.780	0.324	1,710	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.31		0.11	0.02		0.17		0.18	0.31		0.31			
Harding	347.780	347.899	0.120	632	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.11	0.08	0.03		0.03	0.01		0.04	0.02		0.05			
Harding	347.899	347.969	0.069	367	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.07		0.02	0.00		0.04		0.04	0.07		0.07			
Harding	347.969	348.051	0.082	431	SD063	355728	CdE	Cabbart-Delridge loams, 15 to 40 percent slopes		0.08	0.00	0.06			0.01		0.01	0.07		0.08	0.00		
Harding	348.051	348.225	0.175	923	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.04	0.17		0.14			0.01		0.01	0.11		0.17	0.05		
Harding	348.225	348.371	0.146	768	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.02		0.11		0.13	0.14					
Harding	348.371	348.383	0.012	65	SD063	355731	CnA	Chinook-Archin fine sandy loams, 0 to 3 percent slopes			0.01		0.00		0.00		0.00	0.01			0.00		
Harding	348.383	348.406	0.023	121	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.02		0.01	0.00		0.01		0.01	0.02		0.02			
Harding	348.406	348.459	0.053	282	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.05		0.04			0.00		0.00	0.03		0.05	0.01		
Harding	348.459	348.540	0.081	428	SD063	355731	CnA	Chinook-Archin fine sandy loams, 0 to 3 percent slopes			0.05		0.01		0.02		0.03	0.04			0.00		
Harding	348.540	348.828	0.288	1,519	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.04		0.03		0.22		0.25	0.27					
Harding	348.828	349.028	0.200	1,055	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.20	0.11	0.01		0.01	0.16		0.17	0.19		0.03			
Harding	349.028	349.099	0.071	375	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.07	0.05	0.02		0.02	0.01		0.02	0.01		0.03			
Harding	349.099	349.446	0.347	1,835	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.35	0.18	0.01		0.01	0.28		0.30	0.32		0.05			
Harding	349.446	349.469	0.023	122	SD063	355802	TvB	Trey-Parchin-Bullock complex, 2 to 9 percent slopes		0.02	0.02	0.00		0.00	0.01		0.01	0.01	0.01	0.00			
Harding	349.469	349.769	0.300	1,584	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.30	0.16	0.01		0.01	0.25		0.26	0.28		0.05			
Harding	349.769	349.868	0.098	519	SD063	355720	BkF	Bullock fine sandy loam, 6 to 20 percent slopes, extremely stony		0.09	0.00	0.00		0.00	0.09		0.09	0.09		0.09	0.08		
Harding	349.868	349.906	0.038	203	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.04	0.03	0.00		0.00	0.01		0.01	0.02		0.02			
Harding	349.906	349.954	0.048	252	SD063	355727	CcE	Cabbart loam, 6 to 60 percent slopes, extremely stony		0.05	0.00	0.04	0.04		0.00		0.04	0.04		0.04	0.04		
Harding	349.954	350.429	0.476	2,512	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.45	0.40	0.02		0.02	0.14		0.17	0.19		0.19			
Harding	350.429	350.538	0.109	574	SD063	355758	Km	Korchea-Archin complex		0.00			0.00		0.04		0.04	0.11					
Harding	350.538	350.569	0.031	165	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.03		0.02			0.00		0.00	0.02		0.03	0.01		
Harding	350.569	350.586	0.016	85	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.02	0.01	0.00		0.00	0.00		0.01	0.00		0.01			
Harding	350.586	350.760	0.175	922	SD063	355783	RnB	Rhoades-Daglum loams, 2 to 9 percent slopes		0.17			0.10		0.15		0.15	0.17		0.16			
Harding	350.760	351.132	0.371	1,961	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.34	0.14				0.30		0.30	0.33		0.01			
Harding	351.132	351.303	0.171	905	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.17	0.04	0.02		0.02	0.06		0.08	0.06		0.02			
Harding	351.303	351.485	0.182	960	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.17	0.02		0.01		0.15		0.16	0.17					
Harding	351.485	351.517	0.033	172	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.03		0.03	0.03		0.00			
Harding	351.517	351.645	0.128	675	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.13	0.03	0.01		0.01	0.04		0.06	0.04		0.01			
Harding	351.645	351.807	0.162	857	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.15	0.06				0.13		0.13	0.14		0.00			
Harding	351.807	351.835	0.027	144	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.01	0.00		0.00	0.02		0.02	0.03		0.00			
Harding	351.835	351.912	0.077	407	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.07	0.03				0.06		0.06	0.07		0.00			
Harding	351.912	352.351	0.439	2,319	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.44	0.11	0.04		0.04	0.15		0.20	0.15		0.04			
Harding	352.351	352.392	0.041	217	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.04	0.02	0.00		0.00	0.03		0.04	0.04		0.01			
Harding	352.392	352.459	0.067	353	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.07	0.02	0.01		0.01	0.02		0.03	0.02		0.01			
Harding	352.459	352.533	0.074	391	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.07	0.05	0.02		0.02	0.01		0.03	0.01		0.03			
Harding	352.533	352.599	0.066	350	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.02	0.06		0.05			0.01		0.01	0.04		0.06	0.02		
Harding	352.599	352.751	0.152	805	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.15	0.04	0.02		0.02	0.05		0.07	0.05		0.02			
Harding	352.751	352.787	0.036	189	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.03	0.01				0.03		0.03	0.03		0.00			
Harding	352.787	352.937	0.150	790	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.15	0.04	0.01		0.01	0.05		0.07	0.05		0.01			
Harding	352.937	352.961	0.024	126	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.02	0.01				0.02		0.02	0.02		0.00			
Harding	352.961	353.254	0.293	1,549	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.29	0.07	0.03		0.03	0.10		0.13	0.10		0.03			
Harding	353.254	353.409	0.155	816	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.15		0.05	0.01		0.08		0.09	0.15		0.15			
Harding	353.409	353.466	0.057	300	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.06	0.05				0.01		0.01	0.01	0.04	0.01			
Harding	353.466	353.540	0.074	390	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.07		0.02	0.00		0.04		0.04	0.07		0.07			
Harding	353.540	353.575	0.035	185	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.03	0.02	0.01		0.01	0.00		0.01	0.01		0.01			
Harding	353.575	353.612	0.038	199	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.04		0.01	0.00		0.02		0.02	0.04		0.04			
Harding	353.612	353.858	0.246	1,297	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.25	0.06	0.02		0.02	0.09		0.11	0.09		0.02			
Harding	353.858	353.883	0.025	132	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.00		0.00		0.02		0.02	0.02					
Harding	353.883	353.905	0.022	116	SD063	355724	BsA	Bullock-Slickspots complex, 0 to 4 percent slopes		0.02	0.00		0.00		0.02		0.02	0.02					
Butte	353.905	353.975	0.070	367	SD019	353136	AeB	Absher-Slickspots complex, 0 to 9 percent slopes		0.03	0.01		0.04		0.06		0.06	0.07		0.04			
Butte	353.975	354.096	0.121	641	SD019	353257	ZeB	Zeona loamy fine sand, 0 to 6 percent slopes		0.01	0.10				0.02		0.02	0.02	0.10				
Butte	354.096	354.294	0.198	1,047	SD019	353136	AeB	Absher-Slickspots complex, 0 to 9 percent slopes		0.08	0.02		0.11		0.17		0.17	0.19		0.11			
Butte	354.294	354.321	0.027	142	SD019	353257	ZeB	Zeona loamy fine sand, 0 to 6 percent slopes		0.00	0.02				0.01		0.01	0.01	0.02				
Butte	354.321	354.370	0.049	259	SD019	353136	AeB	Absher-Slickspots complex, 0 to 9 percent slopes		0.02	0.00		0.03		0.04		0.04	0.05		0.03			
Butte	354.370	354.616	0.246	1,298	SD019	353257	ZeB	Zeona loamy fine sand, 0 to 6 percent slopes		0.01	0.20				0.05		0.05	0.05	0.20				
Butte	354.616	354.759	0.143	756	SD019	353147	Bd	Badland		0.13	0.01	0.12		0.01	0.01		0.01	0.02		0.13	0.11		
Butte	354.759	354.948	0.189	998	SD019	353249	TfD	Twilight fine sandy loam, 3 to 25 percent slopes		0.14	0.15	0.13	0.02	0.01	0.03		0.04	0.04		0.16			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Butte	354.948	355.240	0.292	1,541	SD019	353147	Bd	Badland		0.27	0.03	0.24		0.01	0.01		0.02	0.05		0.27	0.22		
Butte	355.240	355.653	0.412	2,178	SD019	353242	SnB	Sorum fine sandy loam, 0 to 6 percent slopes			0.04				0.35		0.35	0.37					
Butte	355.653	355.716	0.063	332	SD019	353141	AnA	Archin-Slickspots complex, 0 to 3 percent slopes		0.02	0.00				0.06		0.06	0.06					
Butte	355.716	355.913	0.197	1,042	SD019	353249	TfD	Twilight fine sandy loam, 3 to 25 percent slopes		0.15	0.16	0.14	0.02	0.01	0.03		0.04	0.04		0.17			
Butte	355.913	356.233	0.320	1,690	SD019	353242	SnB	Sorum fine sandy loam, 0 to 6 percent slopes			0.03				0.27		0.27	0.29					
Butte	356.233	356.292	0.059	313	SD019	353251	ThD	Twilight-Blackhall fine sandy loams, 6 to 18 percent slopes		0.05	0.03	0.03	0.00	0.02	0.00		0.02	0.01		0.05			
Butte	356.292	356.408	0.116	610	SD019	353242	SnB	Sorum fine sandy loam, 0 to 6 percent slopes			0.01				0.10		0.10	0.10					
Butte	356.408	356.505	0.097	513	SD019	353178	Ha	Hanly loamy fine sand,			0.09		0.00				0.00	0.01	0.09				0.00
Butte	356.505	357.481	0.976	5,152	SD019	353257	ZeB	Zeona loamy fine sand, 0 to 6 percent slopes		0.05	0.78				0.20		0.20	0.20	0.78				
Butte	357.481	357.542	0.061	324	SD019	353141	AnA	Archin-Slickspots complex, 0 to 3 percent slopes		0.02	0.00				0.06		0.06	0.06					
Butte	357.542	357.607	0.065	344	SD019	353147	Bd	Badland		0.06	0.01	0.05		0.00	0.00		0.01	0.01		0.06	0.05		
Butte	357.607	357.638	0.030	160	SD019	353249	TfD	Twilight fine sandy loam, 3 to 25 percent slopes		0.02	0.02	0.02	0.00	0.00	0.00		0.01	0.01		0.03			
Perkins	357.638	357.669	0.032	167	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.03	0.02	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	357.669	357.762	0.093	491	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.09	0.00	0.01		0.00	0.08		0.08	0.09		0.01			
Perkins	357.762	358.199	0.436	2,304	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.43	0.28	0.02	0.01	0.01	0.12		0.14	0.25		0.14			0.00
Perkins	358.199	358.378	0.180	949	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.18	0.01	0.01		0.01	0.15		0.16	0.17		0.02			
Perkins	358.378	358.416	0.037	197	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.04	0.02	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	358.416	358.454	0.038	202	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.04	0.00	0.00		0.00	0.03		0.03	0.04		0.00			
Perkins	358.454	358.570	0.116	614	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.12	0.08	0.00	0.00	0.00	0.03		0.04	0.07		0.04			0.00
Perkins	358.570	359.498	0.928	4,897	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.93	0.03	0.07		0.04	0.79		0.83	0.86		0.11			
Perkins	359.498	359.763	0.266	1,403	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.26	0.17	0.01	0.01	0.01	0.07		0.09	0.15		0.08			0.00
Perkins	359.763	359.836	0.073	383	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.07	0.00	0.01		0.00	0.06		0.06	0.07		0.01			
Perkins	359.836	360.034	0.198	1,046	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.20	0.06				0.19		0.19	0.20					
Perkins	360.034	360.063	0.029	153	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.03	0.02	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	360.063	360.154	0.091	479	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.09		0.09	0.09					
Perkins	360.154	360.563	0.409	2,161	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.41	0.27	0.02	0.01	0.01	0.11		0.14	0.24		0.13			0.00
Perkins	360.563	360.647	0.083	441	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.08	0.03				0.08		0.08	0.08					
Perkins	360.647	360.656	0.009	49	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.01	0.01	0.00	0.00	0.00	0.00		0.00	0.01		0.00			0.00
Perkins	360.656	360.695	0.039	208	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.04	0.01				0.04		0.04	0.04					
Perkins	360.695	360.930	0.235	1,240	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.23	0.15	0.01	0.01	0.00	0.07		0.08	0.14		0.07			0.00
Perkins	360.930	360.958	0.028	146	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.03	0.01				0.03		0.03	0.03					
Perkins	360.958	361.115	0.157	828	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.16	0.10	0.01	0.00	0.00	0.04		0.05	0.09		0.05			0.00
Perkins	361.115	361.370	0.256	1,351	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.26	0.08				0.24		0.24	0.26					
Perkins	361.370	361.398	0.028	146	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.03	0.02	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	361.398	361.510	0.112	593	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.11	0.03				0.11		0.11	0.11					
Perkins	361.510	361.532	0.021	112	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.02	0.00	0.00		0.00	0.02		0.02	0.02		0.00			
Perkins	361.532	361.577	0.045	240	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.05	0.01				0.04		0.04	0.05					
Perkins	361.577	361.685	0.108	569	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.11	0.00	0.01		0.00	0.09		0.10	0.10		0.01			
Perkins	361.685	361.834	0.149	785	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.15	0.04				0.14		0.14	0.15					
Perkins	361.834	361.974	0.140	742	SD105	354661	Sd	Shambo loam, channeled		0.00	0.01		0.01		0.01		0.01	0.01			0.01		0.00
Perkins	361.974	362.248	0.274	1,448	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.27	0.08				0.26		0.26	0.27					
Perkins	362.248	362.433	0.185	977	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.18	0.12	0.01	0.01	0.00	0.05		0.06	0.11		0.06			0.00
Perkins	362.433	362.660	0.227	1,196	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.23	0.07				0.22		0.22	0.23					
Perkins	362.660	362.759	0.099	523	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.10	0.00	0.01		0.00	0.08		0.09	0.09		0.01			
Perkins	362.759	362.849	0.089	472	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.09		0.09	0.09					
Perkins	362.849	362.889	0.041	215	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.04	0.00	0.00		0.00	0.03		0.04	0.04		0.00			
Perkins	362.889	363.097	0.208	1,097	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.21	0.06				0.20		0.20	0.21					
Perkins	363.097	363.340	0.243	1,282	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.24	0.01	0.02		0.01	0.21		0.22	0.23		0.03			
Perkins	363.340	363.836	0.497	2,622	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.50	0.15				0.47		0.47	0.50					
Perkins	363.836	364.060	0.224	1,180	SD105	354670	WaD	Wabek sandy loam, 9 to 35 percent slopes		0.01	0.21	0.20								0.20	0.21		
Perkins	364.060	364.295	0.235	1,240	SD105	354663	Sh	Lohler-Trembles complex			0.01		0.17				0.17	0.16	0.01		0.01	0.23	0.00
Perkins	364.295	364.352	0.057	302	SD105	354664	Ta	Trembles fine sandy loam			0.00		0.00				0.00		0.00			0.06	0.00
Perkins	364.352	364.484	0.132	695	SD105	354613	Bb	Banks loamy fine sand			0.13		0.13				0.13		0.13				0.00
Perkins	364.484	364.519	0.035	187	SD105	354664	Ta	Trembles fine sandy loam			0.00		0.00				0.00		0.00			0.04	0.00
Perkins	364.519	364.677	0.159	837	SD105	354663	Sh	Lohler-Trembles complex			0.01		0.11				0.11	0.11	0.01		0.01	0.16	0.00
Perkins	364.677	365.087	0.410	2,164	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.39	0.02	0.33		0.16	0.04		0.20	0.23		0.35			
Perkins	365.087	365.175	0.088	463	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.08		0.08	0.09					
Perkins	365.175	365.254	0.079	418	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.08	0.00	0.01		0.00	0.07		0.07	0.07		0.01			
Perkins	365.254	365.340	0.086	454	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.08		0.08	0.09					
Perkins	365.340	365.397	0.057	299	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.06	0.00	0.00		0.00	0.05		0.05	0.05		0.01			
Perkins	365.397	365.600	0.203	1,073	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.20	0.06				0.19		0.19	0.20					
Perkins	365.600	365.612	0.012	61	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.01	0.00	0.00		0.00	0.01		0.01	0.01		0.00			
Perkins	365.612	365.633	0.021	112	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.02	0.01				0.02		0.02	0.02					
Perkins	365.633	365.929	0.297	1,566	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.30	0.01	0.02		0.01	0.25		0.26	0.28		0.04			

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Perkins	365.929	365.930	0.001	3	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.00	0.00				0.00		0.00	0.00					
Perkins	365.930	366.072	0.142	752	SD105	354665	Tb	Trembles soils, channeled					0.01				0.01	0.01					0.01
Perkins	366.072	366.237	0.165	871	SD105	354660	Sc	Shambo loam			0.00							0.16			0.15	0.16	
Perkins	366.237	366.469	0.231	1,222	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.23	0.01	0.02		0.01	0.20		0.21	0.22		0.03			
Perkins	366.469	366.542	0.074	389	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.07	0.05	0.00	0.00	0.00	0.02		0.02	0.04		0.02			0.00
Perkins	366.542	366.602	0.059	313	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.06	0.00	0.00		0.00	0.05		0.05	0.06		0.01			
Perkins	366.602	366.665	0.064	337	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.06	0.04	0.00	0.00	0.00	0.02		0.02	0.04		0.02			0.00
Perkins	366.665	366.700	0.035	183	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.03	0.00	0.00		0.00	0.03		0.03	0.03		0.00			
Perkins	366.700	366.720	0.019	103	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.02	0.01	0.00	0.00	0.00	0.01		0.01	0.01		0.01			0.00
Perkins	366.720	367.155	0.436	2,301	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.44	0.01	0.03		0.02	0.37		0.39	0.41		0.05			
Perkins	367.155	367.273	0.118	621	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.12	0.08	0.00	0.00	0.00	0.03		0.04	0.07		0.04			0.00
Perkins	367.273	367.586	0.313	1,650	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.31	0.01	0.03		0.01	0.27		0.28	0.29		0.04			
Perkins	367.586	367.856	0.270	1,425	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.27	0.18	0.01	0.01	0.01	0.08		0.09	0.16		0.08			0.00
Perkins	367.856	367.893	0.038	199	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.04	0.00	0.00		0.00	0.03		0.03	0.04		0.00			
Perkins	367.893	368.101	0.208	1,097	SD105	354656	RnD	Rhoades-Rock outcrop complex, 6 to 20 percent slopes		0.20		0.01	0.10		0.12		0.12	0.12		0.20			
Perkins	368.101	368.135	0.034	177	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.03	0.01				0.03		0.03	0.03					
Perkins	368.135	368.178	0.044	231	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.04	0.00	0.00		0.00	0.04		0.04	0.04		0.01			
Perkins	368.178	368.268	0.090	473	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.09		0.09	0.09					
Perkins	368.268	368.463	0.195	1,030	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.20	0.01	0.02		0.01	0.17		0.17	0.18		0.02			
Perkins	368.463	368.545	0.082	432	SD105	354656	RnD	Rhoades-Rock outcrop complex, 6 to 20 percent slopes		0.08		0.00	0.04		0.05		0.05	0.05		0.08			
Perkins	368.545	369.044	0.499	2,634	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.50	0.01	0.04		0.02	0.42		0.44	0.46		0.06			
Perkins	369.044	369.161	0.118	621	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.12	0.08	0.00	0.00	0.00	0.03		0.04	0.07		0.04			0.00
Perkins	369.161	369.240	0.079	416	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.08	0.02				0.07		0.07	0.08					
Perkins	369.240	369.368	0.128	675	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.13	0.00	0.01		0.01	0.11		0.11	0.12		0.02			
Perkins	369.368	369.809	0.441	2,328	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.44	0.13				0.42		0.42	0.44					
Perkins	369.809	369.953	0.144	758	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.14	0.01	0.11		0.06	0.01		0.07	0.08		0.12			
Perkins	369.953	370.050	0.098	516	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.10	0.00	0.01		0.00	0.08		0.09	0.09		0.01			
Perkins	370.050	370.237	0.187	986	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.18	0.12	0.01	0.01	0.00	0.05		0.06	0.11		0.06			0.00
Perkins	370.237	370.509	0.272	1,436	SD105	354656	RnD	Rhoades-Rock outcrop complex, 6 to 20 percent slopes		0.26		0.02	0.14		0.16		0.16	0.16		0.26			
Perkins	370.509	370.566	0.057	298	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.06	0.02				0.05		0.05	0.06					
Perkins	370.566	370.744	0.179	944	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.18	0.12	0.01	0.01	0.00	0.05		0.06	0.10		0.06			0.00
Perkins	370.744	370.960	0.215	1,137	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.22	0.06				0.20		0.20	0.22					
Perkins	370.960	370.970	0.010	54	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.01	0.00	0.01		0.00	0.00		0.01	0.01		0.01			
Perkins	370.970	371.185	0.215	1,136	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.21	0.14	0.01	0.01	0.00	0.06		0.07	0.12		0.07			0.00
Perkins	371.185	371.272	0.087	459	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.08	0.00	0.07		0.03	0.01		0.04	0.05		0.07			
Perkins	371.272	371.285	0.013	70	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.01	0.00				0.01		0.01	0.01					
Perkins	371.285	371.337	0.052	273	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.05	0.03	0.00	0.00	0.00	0.01		0.02	0.03		0.02			0.00
Perkins	371.337	371.413	0.076	404	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.08	0.02				0.07		0.07	0.08					
Perkins	371.413	371.804	0.390	2,061	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.39	0.25	0.02	0.01	0.01	0.11		0.13	0.23		0.12			0.00
Perkins	371.804	372.137	0.333	1,760	SD105	354652	RfB	Regent-Savage silty clay loams, 2 to 6 percent slopes		0.22			0.31		0.01		0.32	0.33		0.01		0.33	0.00
Perkins	372.137	372.261	0.123	652	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.12	0.08	0.00	0.00	0.00	0.03		0.04	0.07		0.04			0.00
Perkins	372.261	372.572	0.312	1,646	SD105	354652	RfB	Regent-Savage silty clay loams, 2 to 6 percent slopes		0.21			0.29		0.01		0.30	0.31		0.01		0.31	0.00
Perkins	372.572	372.636	0.064	336	SD105	354637	MbB	Marmarth loam, 2 to 6 percent slopes		0.06	0.00	0.01		0.00	0.00		0.01	0.06		0.01		0.06	
Perkins	372.636	372.740	0.104	551	SD105	354652	RfB	Regent-Savage silty clay loams, 2 to 6 percent slopes		0.07			0.10		0.00		0.10	0.10		0.00		0.10	0.00
Perkins	372.740	372.857	0.117	616	SD105	354637	MbB	Marmarth loam, 2 to 6 percent slopes		0.12	0.01	0.01		0.00	0.00		0.01	0.11		0.01		0.12	
Perkins	372.857	372.883	0.026	136	SD105	354652	RfB	Regent-Savage silty clay loams, 2 to 6 percent slopes		0.02			0.02		0.00		0.02	0.03		0.00		0.03	0.00
Meade	372.883	372.910	0.028	147	SD601	355471	TsB	Tanna-Savo complex, 2 to 6 percent slopes		0.02			0.02				0.02	0.03		0.00		0.03	
Meade	372.910	373.043	0.132	699	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.03			0.12				0.12	0.13				0.13	
Meade	373.043	373.233	0.190	1,003	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.19	0.06		0.00		0.16		0.17	0.18					0.00
Meade	373.233	373.524	0.291	1,535	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.29	0.06			0.02	0.08		0.10	0.15		0.07			
Meade	373.524	373.762	0.238	1,258	SD601	355434	EdB	Eapa-Delridge loams, 2 to 6 percent slopes		0.08			0.16				0.16	0.24		0.02		0.24	
Meade	373.762	373.865	0.103	544	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.02			0.09				0.09	0.10				0.10	
Meade	373.865	373.994	0.129	682	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.01			0.00		0.12		0.12	0.13					
Meade	373.994	374.293	0.299	1,577	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.06			0.27				0.27	0.30				0.30	
Meade	374.293	374.347	0.055	289	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.05		0.05	0.05					
Meade	374.347	374.558	0.211	1,112	SD601	355434	EdB	Eapa-Delridge loams, 2 to 6 percent slopes		0.07			0.14				0.14	0.21		0.02		0.21	
Meade	374.558	374.765	0.207	1,093	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.21	0.12			0.01	0.18		0.19	0.19					
Meade	374.765	374.856	0.091	480	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.02			0.08				0.08	0.09				0.09	
Meade	374.856	374.905	0.049	258	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.05	0.03			0.00	0.04		0.04	0.04					
Meade	374.905	375.027	0.122	645	SD601	355472	TsC	Tanna-Savo complex, 6 to 9 percent slopes		0.08			0.07				0.07	0.12		0.12			
Meade	375.027	375.248	0.221	1,169	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.04			0.20				0.20	0.22				0.22	
Meade	375.248	375.551	0.303	1,599	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.30	0.18			0.02	0.26		0.27	0.27					

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Meade	375.551	375.579	0.028	147	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.03	0.01			0.00	0.01		0.01	0.01		0.01			
Meade	375.579	375.610	0.031	166	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.03	0.01		0.00		0.03		0.03	0.03					0.00
Meade	375.610	376.150	0.540	2,850	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.54	0.11			0.04	0.15		0.19	0.28		0.13			
Meade	376.150	376.397	0.247	1,303	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.24	0.07		0.00		0.21		0.21	0.23					0.00
Meade	376.397	376.422	0.025	132	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.03	0.02			0.00	0.02		0.02	0.02					
Meade	376.422	376.469	0.048	251	SD601	355427	BsB	Bullock-Slickspots complex, 0 to 4 percent slopes		0.05	0.00		0.00		0.04		0.04	0.05					0.00
Meade	376.469	376.986	0.516	2,725	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.52	0.31			0.03	0.44		0.46	0.46					
Meade	376.986	377.048	0.063	332	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.06	0.02		0.00		0.05		0.05	0.06					0.00
Meade	377.048	377.141	0.093	491	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.09	0.06			0.00	0.08		0.08	0.08					
Meade	377.141	377.217	0.076	399	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.07	0.02		0.00		0.06		0.07	0.07					0.00
Meade	377.217	377.376	0.159	838	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.16	0.10			0.01	0.13		0.14	0.14					
Meade	377.376	377.479	0.103	544	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.10	0.03		0.00		0.09		0.09	0.10					0.00
Meade	377.479	377.715	0.236	1,246	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.24	0.14			0.01	0.20		0.21	0.21					
Meade	377.715	377.794	0.079	419	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.08	0.02		0.00		0.07		0.07	0.07					0.00
Meade	377.794	377.930	0.136	717	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.14	0.03			0.01	0.04		0.05	0.07		0.03			
Meade	377.930	377.983	0.053	280	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.05	0.02		0.00		0.05		0.05	0.05					0.00
Meade	377.983	378.060	0.077	406	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.08	0.02			0.01	0.02		0.03	0.04		0.02			
Meade	378.060	378.216	0.156	826	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.15	0.05		0.00		0.13		0.14	0.15					0.00
Meade	378.216	378.371	0.155	817	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.15	0.09			0.01	0.13		0.14	0.14					
Meade	378.371	378.716	0.345	1,823	SD601	355427	BsB	Bullock-Slickspots complex, 0 to 4 percent slopes		0.33	0.01		0.01		0.30		0.32	0.34					0.00
Meade	378.716	378.907	0.191	1,010	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.19	0.04			0.02	0.05		0.07	0.10		0.05			
Meade	378.907	379.033	0.125	662	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.13	0.08			0.01	0.11		0.11	0.11					
Meade	379.033	379.059	0.026	139	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.03	0.01			0.00	0.01		0.01	0.01		0.01			
Meade	379.059	379.163	0.104	548	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.10	0.03		0.00		0.09		0.09	0.10					0.00
Meade	379.163	379.316	0.153	806	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.15	0.09			0.01	0.13		0.14	0.14					
Meade	379.316	379.570	0.254	1,342	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.25	0.08		0.00		0.22		0.22	0.24					0.00
Meade	379.570	379.796	0.226	1,196	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.23	0.14			0.01	0.19		0.20	0.20					
Meade	379.796	379.981	0.185	974	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.18	0.06		0.00		0.16		0.16	0.17					0.00
Meade	379.981	380.099	0.119	626	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.12	0.02			0.01	0.03		0.04	0.06		0.03			
Meade	380.099	380.137	0.037	198	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.04	0.01		0.00		0.03		0.03	0.04					0.00
Meade	380.137	380.175	0.038	201	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.04	0.02			0.00	0.03		0.03	0.03					
Meade	380.175	380.240	0.065	344	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.06	0.02		0.00		0.06		0.06	0.06					0.00
Meade	380.240	380.316	0.076	403	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.08	0.05			0.00	0.06		0.07	0.07					
Meade	380.316	380.514	0.197	1,041	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.20	0.06		0.00		0.17		0.17	0.19					0.00
Meade	380.514	380.526	0.013	66	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.01	0.01			0.00	0.01		0.01	0.01					
Meade	380.526	380.559	0.033	176	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.03	0.01		0.00		0.03		0.03	0.03					0.00
Meade	380.559	380.624	0.064	339	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.06	0.04			0.00	0.05		0.06	0.06					
Meade	380.624	380.764	0.140	741	SD601	355427	BsB	Bullock-Slickspots complex, 0 to 4 percent slopes		0.13	0.00		0.01		0.12		0.13	0.14					0.00
Meade	380.764	380.912	0.148	783	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.15	0.04		0.00		0.13		0.13	0.14					0.00
Meade	380.912	381.401	0.488	2,579	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.49	0.29			0.02	0.42		0.44	0.44					
Meade	381.401	382.182	0.781	4,122	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.77	0.23		0.01		0.67		0.68	0.73					0.01
Meade	382.182	382.264	0.082	434	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.08	0.05			0.00	0.07		0.07	0.07					
Meade	382.264	382.818	0.554	2,927	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.05			0.02		0.50		0.50	0.54					
Meade	382.818	383.023	0.205	1,084	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.08			0.01	0.02			0.03	0.13		0.13		0.21	
Meade	383.023	383.168	0.144	762	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.01			0.00		0.13		0.13	0.14					
Meade	383.168	383.290	0.123	648	SD601	355442	Hc	Havre loam, channeled					0.12				0.12	0.12					0.00
Meade	383.290	383.567	0.277	1,462	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.02			0.01		0.25		0.25	0.27					
Meade	383.567	383.848	0.281	1,485	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.02			0.17		0.25		0.25	0.28					
Meade	383.848	383.904	0.055	293	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.00			0.00				0.00	0.06				0.06	0.00
Meade	383.904	384.034	0.130	687	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.01			0.08		0.11		0.11	0.13					
Meade	384.034	384.532	0.498	2,630	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.49	0.15		0.00		0.43		0.43	0.47					0.00
Meade	384.532	384.664	0.132	700	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.01			0.08		0.12		0.12	0.13					
Meade	384.664	384.866	0.202	1,066	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.02			0.01		0.18		0.18	0.20					
Meade	384.866	384.995	0.128	678	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.13	0.03			0.01	0.03		0.04	0.07		0.03			
Meade	384.995	385.008	0.014	72	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.01		0.01	0.01					
Meade	385.008	385.209	0.200	1,057	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.20	0.06		0.00		0.17		0.17	0.19					0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Meade	385.209	385.350	0.142	748	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.14	0.03			0.01	0.04		0.05	0.07		0.04			
Meade	385.350	385.395	0.045	237	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.04	0.01		0.00		0.04		0.04	0.04					0.00
Meade	385.395	385.486	0.091	481	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.09	0.02			0.01	0.02		0.03	0.05		0.02			
Meade	385.486	385.560	0.074	390	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		0.07	0.04			0.00	0.06		0.07	0.07					
Meade	385.560	385.627	0.067	353	SD601	355427	BsB	Bullock-Slickspots complex, 0 to 4 percent slopes		0.06	0.00		0.00		0.06		0.06	0.07					0.00
Meade	385.627	385.728	0.101	534	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.10	0.02			0.01	0.03		0.04	0.05		0.03			
Meade	385.728	385.866	0.138	727	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.01			0.00		0.13		0.13	0.13					
Meade	385.866	385.949	0.083	438	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.01			0.05		0.07		0.07	0.08					
Meade	385.949	385.994	0.045	239	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.04		0.04	0.04					
Meade	385.994	386.053	0.059	312	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.06	0.02		0.00		0.05		0.05	0.06					0.00
Meade	386.053	386.134	0.081	428	SD601	355432	EaB	Eapa loam, 2 to 6 percent slopes		0.00			0.08				0.08	0.08				0.08	0.00
Meade	386.134	386.257	0.123	647	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.12	0.04		0.00		0.11		0.11	0.12					0.00
Meade	386.257	386.318	0.062	326	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.06	0.01			0.00	0.02		0.02	0.03		0.02			
Meade	386.318	386.525	0.206	1,090	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.01			0.12		0.18		0.18	0.21					
Meade	386.525	386.578	0.053	281	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.05	0.01			0.00	0.01		0.02	0.03		0.01			
Meade	386.578	386.661	0.083	439	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.01			0.05		0.07		0.07	0.08					
Meade	386.661	387.211	0.550	2,905	SD601	355434	EdB	Eapa-Delridge loams, 2 to 6 percent slopes		0.18			0.37				0.37	0.55		0.04		0.55	
Meade	387.211	387.223	0.012	64	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.01	0.00			0.00	0.00		0.00	0.01		0.00			
Meade	387.223	387.398	0.174	920	SD601	355440	Gr	Grail silt loam		0.01			0.17				0.17	0.17				0.17	
Meade	387.398	387.440	0.042	222	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.04	0.01			0.00	0.01		0.01	0.02		0.01			
Meade	387.440	387.476	0.036	191	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.00			0.02		0.03		0.03	0.04					
Meade	387.476	387.523	0.047	249	SD601	355440	Gr	Grail silt loam		0.00			0.05				0.05	0.05				0.05	
Meade	387.523	387.829	0.306	1,616	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.02			0.18		0.27		0.27	0.31					
Meade	387.829	388.547	0.718	3,789	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.05			0.06				0.06	0.72				0.72	0.01
Meade	388.547	388.743	0.197	1,038	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.20	0.04			0.02	0.05		0.07	0.10		0.05			
Meade	388.743	388.798	0.054	288	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.00			0.03		0.05		0.05	0.05					
Meade	388.798	388.853	0.055	292	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		0.06	0.01			0.00	0.01		0.02	0.03		0.01			
Meade	388.853	389.599	0.746	3,939	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.05			0.06				0.06	0.75				0.75	0.01
Meade	389.599	389.738	0.139	734	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.05			0.01	0.01			0.02	0.09		0.09		0.14	
Meade	389.738	389.993	0.255	1,348	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.02			0.02				0.02	0.26				0.26	0.00
Meade	389.993	390.200	0.207	1,092	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.19		0.12	0.02	0.10			0.12	0.02		0.13	0.01		
Meade	390.200	390.366	0.166	874	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.01			0.01				0.01	0.17				0.17	0.00
Meade	390.366	390.400	0.035	183	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.03		0.02	0.00	0.02			0.02	0.00		0.02	0.00		
Meade	390.400	390.510	0.109	578	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.01			0.01				0.01	0.11				0.11	0.00
Meade	390.510	390.552	0.042	224	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.02			0.00	0.00			0.01	0.03		0.03		0.04	
Meade	390.552	390.588	0.035	186	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.00			0.00				0.00	0.04				0.04	0.00
Meade	390.588	390.658	0.071	374	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.03			0.00	0.01			0.01	0.04		0.04		0.07	
Meade	390.658	390.880	0.221	1,168	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.02			0.02				0.02	0.22				0.22	0.00
Meade	390.880	391.240	0.360	1,903	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.14			0.03	0.03			0.05	0.22		0.22		0.36	
Meade	391.240	391.752	0.512	2,704	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.04			0.04				0.04	0.51				0.51	0.01
Meade	391.752	391.758	0.006	32	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.00			0.00	0.00			0.00	0.00		0.00		0.01	
Meade	391.758	391.821	0.062	329	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.00			0.00				0.00	0.06				0.06	0.00
Meade	391.821	391.970	0.149	788	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.06			0.01	0.01			0.02	0.09		0.09		0.15	
Meade	391.970	392.168	0.199	1,049	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.18		0.11	0.02	0.10			0.12	0.02		0.13	0.01		
Meade	392.168	392.441	0.272	1,438	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.02			0.02				0.02	0.27				0.27	0.00
Meade	392.441	392.533	0.092	484	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.08		0.05	0.01	0.05			0.05	0.01		0.06	0.01		
Meade	392.533	392.626	0.093	493	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.09		0.08						0.09		0.09			
Meade	392.626	392.664	0.038	200	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.03		0.02	0.00	0.02			0.02	0.00		0.02	0.00		
Meade	392.664	392.784	0.120	634	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.05			0.01	0.01			0.02	0.07		0.07		0.12	
Meade	392.784	392.915	0.132	695	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.12		0.07	0.01	0.07			0.08	0.01		0.09	0.01		
Meade	392.915	393.075	0.160	845	SD601	355419	AsC	Assinniboine fine sandy loam, 6 to 9 percent slopes		0.02			0.01	0.01			0.02	0.15		0.15		0.16	
Meade	393.075	393.268	0.193	1,018	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.18		0.11	0.02	0.10			0.11	0.02		0.13	0.01		
Meade	393.268	393.556	0.287	1,517	SD601	355419	AsC	Assinniboine fine sandy loam, 6 to 9 percent slopes		0.03			0.01	0.01			0.03	0.27		0.27		0.29	
Meade	393.556	393.785	0.229	1,210	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.23	0.01		0.01		0.02		0.03	0.23		0.22			
Meade	393.785	393.904	0.119	629	SD601	355419	AsC	Assinniboine fine sandy loam, 6 to 9 percent slopes		0.01			0.01	0.01			0.01	0.11		0.11		0.12	

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Meade	393.904	394.064	0.160	843	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.16		0.14						0.16		0.16			
Meade	394.064	394.201	0.137	724	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.12			0.10				0.10	0.14		0.01		0.14	
Meade	394.201	394.444	0.243	1,285	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.24		0.21						0.24		0.24			
Meade	394.444	394.532	0.088	463	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.09	0.00		0.00		0.01		0.01	0.09		0.08			
Meade	394.532	394.548	0.016	86	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.02		0.01						0.02		0.02			
Meade	394.548	394.643	0.095	502	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.10	0.00		0.00		0.01		0.01	0.10		0.09			
Meade	394.643	394.680	0.037	193	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.04		0.03						0.04		0.04			
Meade	394.680	394.818	0.138	730	SD601	355418	AsB	Assinniboine fine sandy loam, 2 to 6 percent slopes		0.01			0.01				0.01	0.14				0.14	0.00
Meade	394.818	394.879	0.061	323	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.06		0.05						0.06		0.06			
Meade	394.879	395.003	0.124	653	SD601	355420	AtC	Assinniboine-Twilight fine sandy loams, 6 to 9 percent slopes		0.05			0.01	0.01			0.02	0.08		0.08		0.12	
Meade	395.003	395.496	0.493	2,602	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.49		0.42						0.49		0.49			
Meade	395.496	395.661	0.166	876	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.15		0.09	0.01	0.08			0.10	0.01		0.11	0.01		
Meade	395.661	395.750	0.089	469	SD601	355423	BlE	Blackhall-Rock outcrop complex, 15 to 40 percent slopes		0.09		0.08		0.05			0.05			0.08			
Meade	395.750	395.888	0.137	726	SD601	355424	BmE	Blackhall-Twilight fine sandy loams, 9 to 40 percent slopes		0.13		0.08	0.01	0.07			0.08	0.01		0.09	0.01		
Meade	395.888	396.090	0.202	1,068	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.20	0.01		0.01		0.02		0.03	0.20		0.19			
Meade	396.090	396.244	0.154	814	SD601	355433	EaC	Eapa loam, 6 to 9 percent slopes		0.01			0.15				0.15	0.15		0.15		0.15	
Meade	396.244	396.709	0.465	2,457	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.47		0.40						0.47		0.47			
Meade	396.709	396.767	0.058	306	SD601	355435	EdC	Eapa-Delridge loams, 6 to 9 percent slopes		0.01			0.04				0.04	0.06		0.06			
Meade	396.767	397.368	0.600	3,171	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.60		0.51						0.60		0.60			
Meade	397.368	397.390	0.022	117	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.02		0.02	0.02					
Meade	397.390	397.419	0.029	151	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.03		0.02						0.03		0.03			
Meade	397.419	397.775	0.356	1,882	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.03			0.01		0.32		0.32	0.35					
Meade	397.775	397.907	0.132	695	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.13		0.11						0.13		0.13			
Meade	397.907	398.233	0.326	1,724	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.03			0.01		0.30		0.30	0.32					
Meade	398.233	398.258	0.025	130	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.02		0.00		0.02	0.02	0.00			0.02	0.00
Meade	398.258	398.287	0.029	156	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.03		0.03	0.03					
Meade	398.287	398.533	0.246	1,298	SD601	355451	Ld	Lohmiller silty clay loam			0.01		0.22		0.01		0.23	0.23	0.01			0.25	0.00
Meade	398.533	398.913	0.380	2,005	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.36			0.36		0.02		0.36	0.38		0.02		0.38	
Meade	398.913	399.072	0.159	841	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.14		0.00		0.15	0.15	0.00			0.16	0.00
Meade	399.072	399.429	0.357	1,883	SD601	355441	Hb	Havre loam					0.36				0.36	0.36				0.36	0.00
Meade	399.429	399.586	0.157	830	SD601	355442	Hc	Havre loam, channeled					0.16				0.16	0.16					0.00
Meade	399.586	400.054	0.468	2,469	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.03			0.43		0.04		0.43	0.47		0.03		0.47	
Meade	400.054	400.113	0.060	315	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.06	0.02		0.00		0.05		0.05	0.06					0.00
Meade	400.113	400.155	0.042	221	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.04	0.00		0.00		0.00		0.01	0.04		0.04			
Meade	400.155	400.182	0.027	142	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.03	0.01		0.00		0.02		0.02	0.03					0.00
Meade	400.182	400.409	0.227	1,198	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.23		0.19						0.23		0.23			
Meade	400.409	400.596	0.188	991	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.19	0.01		0.01		0.02		0.03	0.19		0.18			
Meade	400.596	400.658	0.062	326	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.06		0.05						0.06		0.06			
Meade	400.658	400.668	0.010	52	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.01	0.00		0.00		0.00		0.00	0.01		0.01			
Meade	400.668	401.150	0.482	2,543	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.48		0.41						0.48		0.48			
Meade	401.150	401.887	0.737	3,893	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.74	0.04		0.04		0.07		0.11	0.74		0.70			
Meade	401.887	401.895	0.008	40	SD601	355432	EaB	Eapa loam, 2 to 6 percent slopes		0.00			0.01				0.01	0.01				0.01	0.00
Meade	401.895	403.352	1.458	7,697	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		1.46	0.07		0.07		0.15		0.22	1.46		1.38			
Meade	403.352	403.611	0.259	1,366	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.05			0.23				0.23	0.26				0.26	
Meade	403.611	403.639	0.028	150	SD601	355437	EgC	Eapa-Grail complex, 6 to 9 percent slopes		0.01			0.03				0.03	0.03		0.03		0.03	
Meade	403.639	403.702	0.063	331	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.06	0.00		0.00		0.01		0.01	0.06		0.06			
Meade	403.702	403.993	0.291	1,539	SD601	355437	EgC	Eapa-Grail complex, 6 to 9 percent slopes		0.06			0.26				0.26	0.29		0.29		0.29	
Meade	403.993	404.732	0.739	3,900	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.15			0.66				0.66	0.74				0.74	
Meade	404.732	404.846	0.114	601	SD601	355437	EgC	Eapa-Grail complex, 6 to 9 percent slopes		0.02			0.10				0.10	0.11		0.11		0.11	
Meade	404.846	404.882	0.036	190	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.01			0.03				0.03	0.04				0.04	
Meade	404.882	404.982	0.100	526	SD601	355437	EgC	Eapa-Grail complex, 6 to 9 percent slopes		0.02			0.09				0.09	0.10		0.10		0.10	
Meade	404.982	405.046	0.064	340	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.01			0.06				0.06	0.06				0.06	
Meade	405.046	405.264	0.218	1,152	SD601	355437	EgC	Eapa-Grail complex, 6 to 9 percent slopes		0.04			0.20				0.20	0.22		0.22		0.22	
Meade	405.264	406.002	0.738	3,898	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.74	0.04		0.04		0.07		0.11	0.74		0.70			
Meade	406.002	406.010	0.008	43	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.01		0.01						0.01		0.01			
Meade	406.010	406.037	0.026	140	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.03	0.00		0.00		0.00		0.00	0.03		0.03			
Meade	406.037	406.099	0.062	328	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.06		0.05						0.06		0.06			
Meade	406.099	406.135	0.036	188	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.04	0.00		0.00		0.00		0.01	0.04		0.03			
Meade	406.135	406.336	0.202	1,064	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.04			0.18				0.18	0.20				0.20	
Meade	406.336	406.650	0.314	1,659	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.31	0.02		0.02		0.03		0.05	0.31		0.30			
Meade	406.650	406.840	0.190	1,001	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.04			0.17				0.17	0.19				0.19	
Meade	406.840	407.032	0.192	1,012	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.19	0.01		0.01		0.02		0.03	0.19		0.18			
Meade	407.032	407.055	0.024	124	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.00			0.02				0.02	0.02				0.02	
Meade	407.055	407.143	0.087	462	SD601	355432	EaB	Eapa loam, 2 to 6 percent slopes		0.00			0.08				0.08	0.09				0.09	0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Meade	407.143	407.840	0.697	3,682	SD601	355431	EaA	Eapa loam, 0 to 2 percent slopes					0.70				0.70	0.70				0.70	0.01
Meade	407.840	407.889	0.049	260	SD601	355453	NaD	Nihill-Attewan complex, 4 to 20 percent slopes		0.01	0.01	0.02	0.02	0.00			0.03	0.05		0.03	0.04		
Meade	407.889	407.954	0.064	340	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.01			0.00		0.06		0.06	0.06					
Meade	407.954	408.006	0.052	276	SD601	355442	Hc	Havre loam, channeled					0.05				0.05	0.05					0.00
Meade	408.006	408.313	0.307	1,623	SD601	355441	Hb	Havre loam					0.31				0.31	0.31				0.31	0.00
Meade	408.313	408.510	0.197	1,041	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.04			0.18				0.18	0.20				0.20	
Meade	408.510	408.571	0.060	318	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		0.06	0.02		0.00		0.05		0.05	0.06					0.00
Meade	408.571	408.612	0.041	219	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.04	0.00		0.00		0.00		0.01	0.04		0.04			
Meade	408.612	408.799	0.187	989	SD601	355471	TsB	Tanna-Savo complex, 2 to 6 percent slopes		0.13			0.11				0.11	0.19		0.01		0.19	
Meade	408.799	409.090	0.291	1,534	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.06			0.26				0.26	0.29				0.29	
Meade	409.090	409.189	0.099	525	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.10	0.00		0.00		0.01		0.01	0.10		0.09			
Meade	409.189	409.537	0.348	1,837	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.07			0.31				0.31	0.35				0.35	
Meade	409.537	409.709	0.172	908	SD601	355428	CaD	Cabbart loam, 9 to 40 percent slopes		0.17		0.15						0.17		0.17			
Meade	409.709	410.035	0.326	1,719	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.03			0.01		0.30		0.30	0.32					
Meade	410.035	410.267	0.232	1,227	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.23	0.01		0.01		0.02		0.03	0.23		0.22			
Meade	410.267	410.472	0.205	1,082	SD601	355471	TsB	Tanna-Savo complex, 2 to 6 percent slopes		0.14			0.13				0.13	0.20		0.01		0.20	
Meade	410.472	410.685	0.213	1,126	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		0.04			0.19				0.19	0.21				0.21	
Meade	410.685	410.732	0.047	246	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.05	0.00		0.00		0.00		0.01	0.05		0.04			
Meade	410.732	410.908	0.176	930	SD601	355471	TsB	Tanna-Savo complex, 2 to 6 percent slopes		0.12			0.11				0.11	0.18		0.01		0.18	
Meade	410.908	411.160	0.252	1,330	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.25	0.01		0.01		0.03		0.04	0.25		0.24			
Meade	411.160	411.273	0.113	598	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.11			0.10				0.10	0.11		0.11		0.11	
Meade	411.273	411.365	0.092	486	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.01			0.09		0.01		0.09	0.09		0.01		0.09	
Meade	411.365	411.568	0.203	1,073	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.20	0.01		0.01		0.02		0.03	0.20		0.19			
Meade	411.568	411.626	0.058	306	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.05			0.05		0.00		0.05	0.06		0.00		0.06	
Meade	411.626	411.744	0.118	622	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.01			0.11		0.01		0.11	0.12		0.01		0.12	
Meade	411.744	411.750	0.006	33	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.01			0.01		0.00		0.01	0.01		0.00		0.01	
Meade	411.750	411.816	0.066	346	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.00			0.06		0.01		0.06	0.07		0.00		0.07	
Meade	411.816	411.894	0.078	411	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.07			0.07		0.00		0.07	0.08		0.00		0.08	
Meade	411.894	411.922	0.028	148	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.00			0.03		0.00		0.03	0.03		0.00		0.03	
Meade	411.922	412.136	0.214	1,131	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.20			0.20		0.01		0.20	0.21		0.01		0.21	
Meade	412.136	412.178	0.042	223	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.00			0.04		0.00		0.04	0.04		0.00		0.04	
Meade	412.178	412.220	0.042	219	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.04			0.04		0.00		0.04	0.04		0.00		0.04	
Meade	412.220	412.346	0.126	668	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.01			0.12		0.01		0.12	0.13		0.01		0.13	
Meade	412.346	412.379	0.033	176	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.03			0.03		0.00		0.03	0.03		0.00		0.03	
Meade	412.379	413.151	0.771	4,073	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.77			0.69				0.69	0.77		0.77		0.77	
Meade	413.151	413.263	0.112	590	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.11	0.01		0.01		0.01		0.02	0.11		0.11			
Meade	413.263	413.461	0.198	1,048	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.20			0.18				0.18	0.20		0.20		0.20	
Meade	413.461	413.495	0.034	181	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.03	0.00		0.00		0.00		0.01	0.03		0.03			
Meade	413.495	413.736	0.241	1,272	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.24			0.22				0.22	0.24		0.24		0.24	
Meade	413.736	413.839	0.103	544	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.10			0.10		0.01		0.10	0.10		0.01		0.10	
Meade	413.839	414.759	0.919	4,854	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.92			0.83				0.83	0.92		0.92		0.92	
Meade	414.759	414.887	0.128	675	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.13	0.01		0.01		0.01		0.02	0.13		0.12			
Meade	414.887	415.020	0.133	703	SD601	355448	LaB	Lawther silty clay, 2 to 6 percent slopes		0.01			0.12		0.01		0.12	0.13		0.01		0.13	
Meade	415.020	415.177	0.157	829	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.16	0.01		0.01		0.02		0.02	0.16		0.15			
Meade	415.177	415.210	0.033	176	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.03			0.03				0.03	0.03		0.03		0.03	
Meade	415.210	415.392	0.182	961	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.02			0.01		0.17		0.17	0.18					
Meade	415.392	415.477	0.085	447	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.08			0.06				0.06	0.08		0.00		0.08	
Meade	415.477	415.512	0.036	189	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.03		0.03	0.03					
Meade	415.512	415.526	0.013	71	SD601	355472	TsC	Tanna-Savo complex, 6 to 9 percent slopes		0.01			0.01				0.01	0.01		0.01			
Meade	415.526	415.566	0.040	210	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.00			0.00		0.04		0.04	0.04					
Meade	415.566	415.897	0.332	1,752	SD601	355472	TsC	Tanna-Savo complex, 6 to 9 percent slopes		0.23			0.20				0.20	0.33		0.33			
Meade	415.897	416.086	0.188	994	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.17			0.13				0.13	0.19		0.01		0.19	
Meade	416.086	416.154	0.069	362	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.07	0.00		0.00		0.01		0.01	0.07		0.07			
Meade	416.154	416.189	0.035	184	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.03			0.02				0.02	0.03		0.00		0.03	
Meade	416.189	416.478	0.289	1,524	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.27			0.27		0.01		0.27	0.29		0.01		0.29	
Meade	416.478	416.487	0.009	49	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.01		0.01	0.01		0.00		0.01	0.01		0.01	0.00		
Meade	416.487	416.828	0.341	1,800	SD601	355415	AbB	Abor silty clay, 2 to 6 percent slopes		0.32			0.32		0.02		0.32	0.34		0.02		0.34	
Meade	416.828	416.975	0.147	774	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.13			0.10				0.10	0.15		0.01		0.15	
Meade	416.975	417.147	0.172	909	SD601	355455	NuB	Nunn clay loam, 2 to 6 percent slopes					0.00		0.01		0.01	0.17			0.15	0.17	0.00
Meade	417.147	417.386	0.240	1,266	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.22		0.21	0.21		0.01		0.22	0.23		0.22	0.01		
Meade	417.386	417.467	0.081	427	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.07			0.06				0.06	0.08		0.00		0.08	
Meade	417.467	417.650	0.182	963	SD601	355455	NuB	Nunn clay loam, 2 to 6 percent slopes					0.00		0.01		0.01	0.18			0.16	0.18	0.00
Meade	417.650	418.021	0.372	1,963	SD601	355460	PsC	Pierre-Samsil clays, 6 to 15 percent slopes		0.33			0.13		0.02		0.15	0.35		0.32	0.02		
Meade	418.021	418.123	0.102	537	SD601	355455	NuB	Nunn clay loam, 2 to 6 percent slopes					0.00		0.01		0.01	0.10			0.09	0.10	0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Meade	418.123	418.324	0.201	1,061	SD601	355471	TsB	Tanna-Savo complex, 2 to 6 percent slopes		0.14			0.12				0.12	0.20		0.01		0.20	
Meade	418.324	419.074	0.750	3,959	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.69		0.66	0.67		0.03		0.70	0.73		0.69	0.02		
Meade	419.074	419.117	0.043	229	SD601	355466	St	Stetter clay					0.04		0.00		0.04	0.04				0.04	0.00
Meade	419.117	419.466	0.349	1,840	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.32		0.31	0.31		0.01		0.32	0.34		0.32	0.01		
Meade	419.466	419.573	0.107	564	SD601	355463	SbE	Samsil-Rock outcrop complex, 15 to 40 percent slopes		0.10		0.10	0.06		0.00		0.06	0.06		0.10	0.04		
Meade	419.573	419.904	0.331	1,749	SD601	355466	St	Stetter clay					0.31		0.02		0.33	0.33				0.33	0.00
Meade	419.904	420.223	0.320	1,688	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.29		0.28	0.28		0.01		0.30	0.31		0.29	0.01		
Meade	420.223	420.314	0.091	479	SD601	355466	St	Stetter clay					0.09		0.00		0.09	0.09				0.09	0.00
Meade	420.314	420.494	0.179	948	SD601	355463	SbE	Samsil-Rock outcrop complex, 15 to 40 percent slopes		0.17		0.17	0.10		0.01		0.10	0.11		0.17	0.07		
Meade	420.494	420.739	0.245	1,295	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.23		0.22	0.22		0.01		0.23	0.24		0.23	0.01		
Meade	420.739	420.780	0.041	217	SD601	355463	SbE	Samsil-Rock outcrop complex, 15 to 40 percent slopes		0.04		0.04	0.02		0.00		0.02	0.02		0.04	0.02		
Meade	420.780	420.901	0.121	637	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.11		0.11	0.11		0.00		0.11	0.12		0.11	0.00		
Meade	420.901	420.942	0.042	219	SD601	355460	PsC	Pierre-Samsil clays, 6 to 15 percent slopes		0.04			0.01		0.00		0.02	0.04		0.04	0.00		
Meade	420.942	421.677	0.734	3,878	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.68		0.65	0.65		0.03		0.68	0.71		0.68	0.02		
Meade	421.677	421.760	0.083	440	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.08				0.08	0.08					0.00
Meade	421.760	421.852	0.093	489	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.09		0.08	0.08		0.00		0.09	0.09		0.09	0.00		
Meade	421.852	422.104	0.251	1,328	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.25				0.25	0.25					0.00
Meade	422.104	422.267	0.163	859	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.15		0.00		0.15	0.15	0.00			0.16	0.00
Meade	422.267	422.658	0.392	2,068	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.36		0.34	0.35		0.02		0.36	0.38		0.36	0.01		
Meade	422.658	422.750	0.092	485	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.09				0.09	0.09					0.00
Meade	422.750	422.952	0.202	1,067	SD601	355451	Ld	Lohmiller silty clay loam			0.01		0.18		0.01		0.19	0.19	0.01			0.20	0.00
Meade	422.952	423.283	0.331	1,746	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.33				0.33	0.33					0.00
Meade	423.283	423.329	0.046	245	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.04		0.04	0.04		0.00		0.04	0.05		0.04	0.00		
Meade	423.329	423.607	0.278	1,468	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.28				0.28	0.28					0.00
Meade	423.607	423.667	0.059	313	SD601	355460	PsC	Pierre-Samsil clays, 6 to 15 percent slopes		0.05			0.02		0.00		0.02	0.06		0.05	0.00		
Meade	423.667	423.878	0.211	1,116	SD601	355445	KyA	Kyle clay, 0 to 2 percent slopes					0.02		0.19		0.21	0.21					0.00
Meade	423.878	424.155	0.277	1,460	SD601	355446	KyB	Kyle clay, 2 to 6 percent slopes		0.01			0.03		0.25		0.28	0.28		0.01			0.00
Meade	424.155	424.431	0.277	1,461	SD601	355460	PsC	Pierre-Samsil clays, 6 to 15 percent slopes		0.25			0.10		0.01		0.11	0.26		0.24	0.01		
Meade	424.431	424.496	0.064	339	SD601	355457	PeB	Pierre clay, 2 to 6 percent slopes		0.06			0.00		0.00		0.01	0.06		0.00			
Meade	424.496	424.655	0.160	844	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.16				0.16	0.16					0.00
Meade	424.655	424.670	0.015	78	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.01		0.00		0.01	0.01	0.00			0.01	0.00
Meade	424.670	424.695	0.025	134	SD601	355467	SwA	Swanboy clay		0.00			0.02		0.00		0.03	0.03					0.00
Meade	424.695	424.769	0.074	390	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.07		0.00		0.07	0.07	0.00			0.07	0.00
Meade	424.769	424.852	0.083	436	SD601	355467	SwA	Swanboy clay		0.00			0.08		0.01		0.08	0.08					0.00
Meade	424.852	424.912	0.060	319	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.05		0.00		0.06	0.06	0.00			0.06	0.00
Meade	424.912	425.058	0.146	769	SD601	355446	KyB	Kyle clay, 2 to 6 percent slopes		0.01			0.01		0.13		0.15	0.15		0.01			0.00
Meade	425.058	425.177	0.119	630	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.11		0.00		0.11	0.11	0.00			0.12	0.00
Meade	425.177	425.422	0.244	1,291	SD601	355439	Gc	Glenberg fine sandy loam			0.02		0.02				0.02	0.02	0.02			0.24	
Meade	425.422	425.544	0.122	645	SD601	355421	Ba	Bankard loamy fine sand			0.11		0.01				0.01	0.01	0.11				
Meade	425.544	425.597	0.053	279	SD601	355422	Bb	Bankard gravelly loamy sand			0.05								0.05		0.05		
Meade	425.597	425.605	0.008	43	SD601	355477	W	Water															
Pennington	425.605	425.629	0.024	128	SD605	356130	W	Water															
Pennington	425.629	425.927	0.299	1,577	SD605	356101	Rv	Riverwash			0.28								0.28		0.02		0.25
Pennington	425.927	425.987	0.059	312	SD605	356062	Lo	Lohmiller silty clay					0.06	0.00	0.01	0.00	0.06	0.06			0.00	0.06	0.00
Haakon	425.987	426.048	0.061	324	SD055	354111	Lo	Lohmiller silty clay					0.06	0.00	0.00	0.00	0.06	0.06			0.00	0.06	
Haakon	426.048	426.056	0.008	42	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01		0.01	0.00		
Haakon	426.056	426.340	0.285	1,503	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.26	0.01	0.28	0.12	0.01	0.01	0.01	0.12	0.26		0.28	0.02		
Haakon	426.340	426.443	0.102	541	SD055	354155	SbF	Samsil clay, 25 to 60 percent slopes		0.10	0.00	0.10	0.10		0.00		0.10	0.10		0.10	0.01		
Haakon	426.443	426.500	0.057	303	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.05	0.00	0.06	0.02	0.00	0.00	0.00	0.02	0.05		0.06	0.00		
Haakon	426.500	426.746	0.246	1,296	SD055	354155	SbF	Samsil clay, 25 to 60 percent slopes		0.23	0.01	0.24	0.23		0.01		0.23	0.23		0.24	0.02		
Haakon	426.746	426.819	0.073	385	SD055	354162	StF	Schamber-Samsil complex, 6 to 60 percent slopes		0.03	0.04	0.07	0.03				0.03	0.03		0.07	0.04		
Haakon	426.819	427.701	0.882	4,657	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.04		0.04		0.04	0.88				0.88	0.04
Haakon	427.701	428.047	0.347	1,830	SD055	354153	RkD	Ree-Vivian complex, 6 to 15 percent slopes		0.12	0.21							0.24		0.24	0.12		
Haakon	428.047	428.092	0.045	237	SD055	354148	ReA	Ree loam, 0 to 2 percent slopes			0.04		0.00		0.00		0.00	0.04				0.04	0.00
Haakon	428.092	428.216	0.124	653	SD055	354162	StF	Schamber-Samsil complex, 6 to 60 percent slopes		0.06	0.07	0.12	0.05				0.05	0.06		0.12	0.07		
Haakon	428.216	428.466	0.251	1,324	SD055	354155	SbF	Samsil clay, 25 to 60 percent slopes		0.23	0.01	0.24	0.23		0.01		0.23	0.23		0.24	0.02		
Haakon	428.466	428.684	0.218	1,149	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.20	0.01	0.21	0.09	0.01	0.01	0.01	0.09	0.20		0.21	0.02		
Haakon	428.684	428.730	0.046	241	SD055	354106	KyB	Kyle clay, 3 to 6 percent slopes					0.00	0.00	0.05	0.00	0.05	0.05				0.05	0.00
Haakon	428.730	428.735	0.005	26	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Haakon	428.735	428.864	0.129	683	SD055	354106	KyB	Kyle clay, 3 to 6 percent slopes					0.01	0.01	0.13	0.01	0.13	0.13				0.13	0.00
Haakon	428.864	428.949	0.085	449	SD055	354112	Lp	Lohmiller silty clay, channeled		0.00			0.08	0.00	0.00	0.00	0.08	0.09		0.00			0.00
Haakon	428.949	429.076	0.127	672	SD055	354106	KyB	Kyle clay, 3 to 6 percent slopes					0.01	0.01	0.13	0.01	0.13	0.13				0.13	0.00
Haakon	429.076	429.101	0.025	130	SD055	354112	Lp	Lohmiller silty clay, channeled		0.00			0.02	0.00	0.00	0.00	0.02	0.02		0.00			0.00
Haakon	429.101	429.141	0.040	210	SD055	354106	KyB	Kyle clay, 3 to 6 percent slopes					0.00	0.00	0.04	0.00	0.04	0.04				0.04	0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Haakon	429.141	429.562	0.421	2,225	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.39	0.02	0.41	0.18	0.01	0.01	0.01	0.18	0.39		0.41	0.03		
Haakon	429.562	429.707	0.145	767	SD055	354157	SdF	Samsil-Rock outcrop complex, 15 to 60 percent slopes		0.13	0.01	0.15	0.08				0.08	0.09		0.15	0.06		
Haakon	429.707	429.863	0.155	819	SD055	354162	StF	Schamber-Samsil complex, 6 to 60 percent slopes		0.07	0.08	0.15	0.06				0.06	0.07		0.16	0.09		
Haakon	429.863	430.008	0.145	766	SD055	354152	Rh	Ree-Hoven complex			0.12		0.00		0.03		0.03	0.15				0.15	0.02
Haakon	430.008	431.762	1.754	9,261	SD055	354148	ReA	Ree loam, 0 to 2 percent slopes			1.67		0.04		0.05		0.05	1.75				1.75	0.02
Haakon	431.762	431.951	0.189	1,000	SD055	354151	RfC	Ree-Canning loams, 6 to 9 percent slopes		0.02	0.17							0.17		0.17	0.09	0.19	
Haakon	431.951	432.158	0.207	1,093	SD055	354149	ReB	Ree loam, 2 to 6 percent slopes			0.19		0.01		0.01		0.01	0.21				0.21	0.01
Haakon	432.158	432.975	0.817	4,315	SD055	354148	ReA	Ree loam, 0 to 2 percent slopes			0.78		0.02		0.02		0.02	0.82				0.82	0.01
Haakon	432.975	435.130	2.155	11,377	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.22			0.19		0.19		0.19	2.15				2.15	0.02
Haakon	435.130	435.164	0.034	178	SD055	354155	SbF	Samsil clay, 25 to 60 percent slopes		0.03	0.00	0.03	0.03		0.00		0.03	0.03		0.03	0.00		
Haakon	435.164	435.574	0.411	2,169	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.04			0.04		0.04		0.04	0.41				0.41	0.00
Haakon	435.574	435.696	0.122	644	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.01			0.00		0.00		0.00	0.12				0.12	0.00
Haakon	435.696	435.815	0.118	625	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.04		0.04	0.12					0.00
Haakon	435.815	436.760	0.945	4,989	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.09			0.09		0.09		0.09	0.94				0.94	0.01
Haakon	436.760	436.934	0.174	920	SD055	354083	CbA	Capa silt loam, 0 to 6 percent slopes		0.01			0.01		0.16		0.17	0.17					
Haakon	436.934	437.152	0.218	1,151	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.02			0.02		0.02		0.02	0.22				0.22	0.00
Haakon	437.152	437.237	0.085	448	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.03		0.03	0.08					0.00
Haakon	437.237	437.329	0.092	486	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.09				0.09	0.00
Haakon	437.329	437.595	0.266	1,403	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.01					0.09		0.09	0.27					0.01
Haakon	437.595	437.821	0.227	1,197	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.23				0.23	0.01
Haakon	437.821	437.922	0.101	534	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.04		0.04	0.10					0.00
Haakon	437.922	438.008	0.085	450	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.03			0.00		0.01		0.01	0.09		0.08			
Haakon	438.008	438.368	0.360	1,902	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.36				0.36	0.02
Haakon	438.368	438.583	0.215	1,135	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.19		0.01	0.01		0.01		0.02	0.21		0.20			0.01
Haakon	438.583	438.952	0.369	1,950	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.37				0.37	0.02
Haakon	438.952	439.293	0.341	1,801	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.12			0.02		0.03		0.03	0.34		0.31			
Haakon	439.293	440.256	0.963	5,083	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.29			0.02		0.04		0.04	0.96				0.96	0.01
Haakon	440.256	440.611	0.355	1,875	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.12			0.02		0.04		0.04	0.36		0.32			
Haakon	440.611	440.876	0.266	1,402	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.02		0.02	0.27				0.27	0.02
Haakon	440.876	440.906	0.030	156	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.01			0.00		0.00		0.00	0.03				0.03	0.00
Haakon	440.906	441.016	0.110	580	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.01		0.01	0.11				0.11	0.01
Haakon	441.016	441.056	0.041	214	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.01		0.01	0.04					0.00
Haakon	441.056	441.149	0.092	488	SD055	354166	Wd	Wendte-Herdcamp silty clays, channeled					0.04		0.00		0.04	0.09					0.03
Haakon	441.149	441.181	0.032	167	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.01		0.01	0.03					0.00
Haakon	441.181	441.230	0.049	259	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.05				0.05	0.00
Haakon	441.230	442.739	1.510	7,972	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.45			0.03		0.06		0.06	1.51				1.51	0.02
Haakon	442.739	442.800	0.060	319	SD055	354104	Ko	Kolls clay							0.01		0.01	0.06					0.05
Haakon	442.800	443.255	0.455	2,404	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.14			0.01		0.02		0.02	0.46				0.46	0.00
Haakon	443.255	443.399	0.144	759	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.05			0.01		0.01		0.01	0.14		0.13			
Haakon	443.399	443.582	0.183	966	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.16		0.01	0.01		0.01		0.01	0.18		0.17			0.01
Haakon	443.582	443.694	0.112	593	SD055	354166	Wd	Wendte-Herdcamp silty clays, channeled					0.04		0.01		0.04	0.11					0.04
Haakon	443.694	443.805	0.111	586	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.10	0.00	0.11	0.05	0.00	0.00	0.00	0.05	0.10		0.11	0.01		
Haakon	443.805	443.999	0.194	1,025	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.18		0.00	0.00		0.01		0.01	0.19		0.18			0.00
Haakon	443.999	444.019	0.020	105	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.02				0.02	0.00
Haakon	444.019	444.039	0.020	105	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.02		0.00	0.00		0.00		0.00	0.02		0.02			0.00
Haakon	444.039	444.353	0.314	1,659	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.31				0.31	0.02
Haakon	444.353	444.781	0.428	2,258	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.39		0.01	0.01		0.01		0.02	0.43		0.41			0.01
Haakon	444.781	444.993	0.212	1,118	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.21				0.21	0.01
Haakon	444.993	445.091	0.098	518	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.09		0.00	0.00		0.00		0.00	0.10		0.09			0.00
Haakon	445.091	446.243	1.152	6,081	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.06					0.06		0.06	1.15				1.15	0.06
Haakon	446.243	446.282	0.040	210	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.00		0.00	0.04				0.04	0.00
Haakon	446.282	446.773	0.491	2,591	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.49				0.49	0.02
Haakon	446.773	447.229	0.456	2,405	SD055	354137	OyC	Ottumwa-Razor-Savo complex, 6 to 15 percent slopes		0.16			0.05		0.02		0.05	0.46		0.43			
Haakon	447.229	447.348	0.119	630	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.12				0.12	0.01
Haakon	447.348	447.417	0.069	365	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.07		0.06			
Haakon	447.417	447.628	0.211	1,112	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.06			0.00		0.01		0.01	0.21				0.21	0.00
Haakon	447.628	447.881	0.253	1,335	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.22		0.01	0.01		0.01		0.02	0.25		0.24			0.01
Haakon	447.881	448.154	0.274	1,446	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.25		0.01	0.01		0.01		0.01	0.27		0.26			0.01
Haakon	448.154	448.206	0.051	272	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00					0.02		0.02	0.05					0.00
Haakon	448.206	448.271	0.065	345	SD055	354085	Ct	Capa-Wendte, channeled, complex		0.00			0.00		0.04		0.04	0.07					0.00
Haakon	448.271	448.344	0.073	387	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.07		0.00	0.00		0.00		0.01	0.07		0.07			0.00
Haakon	448.344	448.622	0.278	1,467	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.08			0.01		0.01		0.01	0.28				0.28	0.00
Haakon	448.622	448.642	0.019	103	SD055	354128	OeC	Opal-Promise clays, 6 to 9 percent slopes		0.01			0.02		0.00		0.02	0.02		0.02			
Haakon	448.642	448.783	0.141	744	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.04			0.00		0.01		0.01	0.14				0.14	0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Haakon	448.783	448.861	0.078	412	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.07		0.00	0.00		0.00		0.01	0.08		0.07			0.00
Haakon	448.861	449.136	0.275	1,455	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.08			0.01		0.01		0.01	0.28				0.28	0.00
Haakon	449.136	449.247	0.110	583	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.10		0.00	0.00		0.00		0.01	0.11		0.10			0.00
Haakon	449.247	449.425	0.179	943	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.05			0.00		0.01		0.01	0.18				0.18	0.00
Haakon	449.425	449.529	0.104	550	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.09		0.00	0.00		0.00		0.01	0.10		0.10			0.00
Haakon	449.529	449.701	0.172	909	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.05			0.00		0.01		0.01	0.17				0.17	0.00
Haakon	449.701	449.906	0.204	1,078	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.18		0.01	0.01		0.01		0.01	0.20		0.19			0.01
Haakon	449.906	449.963	0.058	305	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.05		0.00	0.00		0.00		0.00	0.06		0.05			0.00
Haakon	449.963	450.451	0.487	2,573	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.49				0.49	0.02
Haakon	450.451	450.692	0.242	1,276	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.07			0.00		0.01		0.01	0.24				0.24	0.00
Haakon	450.692	450.752	0.060	317	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.06		0.05			
Haakon	450.752	451.187	0.434	2,294	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.13			0.01		0.02		0.02	0.43				0.43	0.00
Haakon	451.187	451.565	0.379	1,999	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.04			0.03		0.03		0.03	0.38				0.38	0.00
Haakon	451.565	451.619	0.053	280	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.05				0.05	0.00
Haakon	451.619	451.760	0.142	747	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.05			0.01		0.01		0.01	0.14		0.13			
Haakon	451.760	452.046	0.286	1,509	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.09			0.01		0.01		0.01	0.29				0.29	0.00
Haakon	452.046	452.499	0.453	2,393	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.02					0.02		0.02	0.45				0.45	0.02
Haakon	452.499	452.591	0.092	487	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.08		0.00	0.00		0.00		0.01	0.09		0.09			0.00
Haakon	452.591	453.578	0.987	5,210	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.10			0.09		0.09		0.09	0.99				0.99	0.01
Haakon	453.578	453.754	0.175	926	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.01		0.01	0.18				0.18	0.01
Haakon	453.754	453.857	0.103	546	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.01			0.01		0.01		0.01	0.10				0.10	0.00
Haakon	453.857	454.055	0.198	1,045	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.06			0.00		0.01		0.01	0.20				0.20	0.00
Haakon	454.055	454.520	0.465	2,455	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.16			0.02		0.05		0.05	0.46		0.42			
Haakon	454.520	454.690	0.170	899	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.15					0.01		0.01	0.17					
Haakon	454.690	454.957	0.267	1,411	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.09			0.01		0.03		0.03	0.27		0.24			
Haakon	454.957	455.131	0.173	916	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15		0.01	0.01		0.01		0.01	0.17		0.16			0.01
Haakon	455.131	455.247	0.116	612	SD055	354085	Ct	Capa-Wendte, channeled, complex		0.01			0.01		0.06		0.07	0.12					0.01
Haakon	455.247	455.285	0.039	204	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.03		0.00	0.00		0.00		0.00	0.04		0.04			0.00
Haakon	455.285	455.370	0.085	447	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.03			0.00		0.01		0.01	0.08		0.08			
Haakon	455.370	455.700	0.330	1,742	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.29		0.01	0.01		0.01		0.02	0.33		0.31			0.01
Haakon	455.700	455.803	0.103	542	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.10				0.10	0.00
Haakon	455.803	456.026	0.224	1,181	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.08			0.01		0.02		0.02	0.22		0.20			
Haakon	456.026	456.148	0.122	642	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.12				0.12	0.01
Haakon	456.148	456.248	0.100	526	SD055	354127	OeB	Opal-Promise clays, 3 to 6 percent slopes		0.05			0.09		0.01		0.09	0.10				0.10	0.00
Haakon	456.248	456.329	0.082	431	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.08				0.08	0.00
Haakon	456.329	456.515	0.186	982	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.17					0.01		0.01	0.19					
Haakon	456.515	456.566	0.051	267	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.05		0.05			
Haakon	456.566	456.626	0.060	319	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.05					0.00		0.00	0.06					
Haakon	456.626	456.850	0.223	1,180	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.08			0.01		0.02		0.02	0.22		0.20			
Haakon	456.850	457.073	0.223	1,177	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.20					0.01		0.01	0.22					
Haakon	457.073	457.387	0.314	1,659	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.28		0.01	0.01		0.01		0.02	0.31		0.29			0.01
Haakon	457.387	457.536	0.150	790	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.05			0.01		0.01		0.01	0.15		0.13			
Haakon	457.536	457.663	0.126	668	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.13				0.13	0.01
Haakon	457.663	457.718	0.055	292	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.06		0.05			
Haakon	457.718	457.946	0.228	1,204	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.07			0.00		0.01		0.01	0.23				0.23	0.00
Haakon	457.946	457.989	0.043	225	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.01			0.00		0.00		0.00	0.04		0.04			
Haakon	457.989	458.237	0.248	1,309	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.07			0.00		0.01		0.01	0.25				0.25	0.00
Haakon	458.237	458.380	0.144	759	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.05			0.01		0.01		0.01	0.14		0.13			
Haakon	458.380	458.462	0.082	433	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.02			0.00		0.00		0.00	0.08				0.08	0.00
Haakon	458.462	458.485	0.022	116	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.01			0.00		0.00		0.00	0.02		0.02			
Haakon	458.485	458.527	0.043	226	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.01			0.00		0.00		0.00	0.04				0.04	0.00
Haakon	458.527	458.580	0.053	278	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.05		0.05			
Haakon	458.580	459.000	0.420	2,219	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.37		0.02	0.01		0.02		0.03	0.42		0.39			0.01
Haakon	459.000	459.016	0.016	86	SD055	354170	W	Water															
Haakon	459.016	459.321	0.304	1,607	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.27		0.01	0.01		0.01		0.02	0.30		0.28			0.01
Haakon	459.321	459.425	0.104	551	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.10				0.10	0.00
Haakon	459.425	459.789	0.364	1,922	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.33		0.01	0.01		0.01		0.02	0.36		0.35			0.01
Haakon	459.789	460.285	0.496	2,620	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.15			0.01		0.02		0.02	0.50				0.50	0.00
Haakon	460.285	460.660	0.374	1,976	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.02		0.02		0.02	0.37				0.37	0.02
Haakon	460.660	460.708	0.049	256	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.02		0.00						0.03		0.03	0.01		
Haakon	460.708	460.766	0.058	304	SD055	354085	Ct	Capa-Wendte, channeled, complex		0.00			0.00		0.03		0.03	0.06					0.00
Haakon	460.766	461.005	0.239	1,264	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.08			0.01		0.02		0.02	0.24		0.22			
Haakon	461.005	461.034	0.029	152	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.01			0.00		0.00		0.00	0.03				0.03	0.00
Haakon	461.034	461.101	0.067	353	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.03		0.00						0.05		0.05	0.02		

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Haakon	461.101	461.208	0.107	563	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.11				0.11	0.00
Haakon	461.208	461.259	0.051	270	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.00		0.00		0.00	0.05				0.05	0.00
Haakon	461.259	461.375	0.116	612	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.12				0.12	0.00
Haakon	461.375	461.493	0.119	627	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11		0.00	0.00		0.00		0.01	0.12		0.11			0.00
Haakon	461.493	461.573	0.079	418	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.07					0.00		0.00	0.08					
Haakon	461.573	461.584	0.011	59	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.01		0.00	0.00		0.00		0.00	0.01		0.01			0.00
Haakon	461.584	461.958	0.374	1,976	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.34					0.02		0.02	0.37					
Haakon	461.958	462.120	0.162	854	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.01		0.01	0.16				0.16	0.01
Haakon	462.120	462.149	0.029	153	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.03				0.03	0.00
Haakon	462.149	462.199	0.050	264	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.00		0.00	0.05				0.05	0.00
Haakon	462.199	462.432	0.233	1,229	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.23				0.23	0.01
Haakon	462.432	462.655	0.224	1,181	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.20					0.01		0.01	0.22					
Haakon	462.655	462.694	0.038	201	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.04				0.04	0.00
Haakon	462.694	462.766	0.072	382	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.07					0.00		0.00	0.07					
Haakon	462.766	462.912	0.146	769	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.13		0.00	0.00		0.00		0.01	0.15		0.14			0.00
Haakon	462.912	462.943	0.031	166	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.03		0.00	0.00		0.00		0.00	0.03		0.03			0.00
Haakon	462.943	463.485	0.542	2,864	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.50		0.01	0.01		0.02		0.03	0.54		0.52			0.01
Haakon	463.485	463.747	0.261	1,380	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.08			0.01		0.01		0.01	0.26				0.26	0.00
Haakon	463.747	463.997	0.250	1,319	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.23		0.00	0.00		0.01		0.01	0.25		0.24			0.00
Haakon	463.997	464.418	0.421	2,225	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.13			0.01		0.02		0.02	0.42				0.42	0.00
Haakon	464.418	464.617	0.199	1,048	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.07			0.01		0.02		0.02	0.20		0.18			
Haakon	464.617	464.779	0.163	860	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.16				0.16	0.01
Haakon	464.779	464.916	0.136	719	SD055	354087	Eg	Egas silty clay loam					0.13	0.01	0.01	0.01	0.13	0.14					0.12
Haakon	464.916	465.086	0.171	903	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15		0.01	0.01		0.01		0.01	0.17		0.16			0.01
Haakon	465.086	465.211	0.125	659	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.04			0.01		0.01		0.01	0.12		0.11			
Haakon	465.211	465.372	0.160	847	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.16				0.16	0.01
Haakon	465.372	465.501	0.130	685	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.12					0.01		0.01	0.13					
Haakon	465.501	465.564	0.063	330	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.02			0.00		0.00		0.00	0.06				0.06	0.00
Haakon	465.564	465.787	0.223	1,177	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.20		0.01	0.01		0.01		0.02	0.22		0.21			0.01
Haakon	465.787	465.853	0.066	346	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.06					0.00		0.00	0.07					
Haakon	465.853	466.503	0.651	3,436	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.58		0.03	0.02		0.03		0.05	0.65		0.61			0.02
Haakon	466.503	466.567	0.064	337	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.06					0.00		0.00	0.06					
Haakon	466.567	466.644	0.077	404	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		0.02			0.00		0.00		0.00	0.08				0.08	0.00
Haakon	466.644	466.992	0.349	1,840	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.31					0.02		0.02	0.35					
Haakon	466.992	468.096	1.104	5,827	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.06					0.06		0.06	1.10				1.10	0.06
Haakon	468.096	468.110	0.014	76	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.01					0.00		0.00	0.01					
Haakon	468.110	468.233	0.123	650	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11		0.00	0.00		0.00		0.01	0.12		0.11			0.00
Haakon	468.233	468.272	0.039	204	SD055	354085	Ct	Capa-Wendte, channeled, complex		0.00			0.00		0.02		0.02	0.04					0.00
Haakon	468.272	468.461	0.189	1,000	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.17		0.01	0.01		0.01		0.01	0.19		0.18			0.01
Haakon	468.461	468.705	0.244	1,288	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.11		0.02						0.17		0.17	0.07		
Haakon	468.705	468.959	0.254	1,340	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.25				0.25	0.01
Haakon	468.959	469.013	0.054	287	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.05		0.00	0.00		0.00		0.00	0.05		0.05			0.00
Haakon	469.013	469.220	0.207	1,090	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.18		0.01	0.01		0.01		0.01	0.21		0.19			0.01
Haakon	469.220	469.289	0.069	366	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.06		0.00	0.00		0.00		0.00	0.07		0.07			0.00
Haakon	469.289	469.584	0.294	1,555	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.26		0.01	0.01		0.01		0.02	0.29		0.27			0.01
Haakon	469.584	469.915	0.331	1,750	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.30		0.01	0.01		0.01		0.02	0.33		0.31			0.01
Haakon	469.915	469.976	0.061	323	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.00		0.00	0.06				0.06	0.00
Haakon	469.976	470.216	0.240	1,266	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.24				0.24	0.01
Haakon	470.216	470.500	0.284	1,501	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.26		0.01	0.01		0.01		0.01	0.28		0.27			0.01
Haakon	470.500	470.613	0.113	594	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.10		0.00	0.00		0.00		0.01	0.11		0.10			0.00
Haakon	470.613	470.710	0.097	513	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.00					0.00		0.00	0.10				0.10	0.00
Haakon	470.710	470.870	0.160	843	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.14		0.01	0.00		0.01		0.01	0.16		0.15			0.00
Haakon	470.870	471.050	0.180	952	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.17		0.00	0.00		0.01		0.01	0.18		0.17			0.00
Haakon	471.050	471.325	0.275	1,451	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		0.01					0.01		0.01	0.27				0.27	0.01
Haakon	471.325	471.401	0.076	401	SD055	354102	KmC	Kirley-Ottumwa complex, 6 to 9 percent slopes		0.01			0.00		0.00		0.00	0.08		0.07			
Haakon	471.401	471.673	0.272	1,437	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.01			0.01		0.01		0.01	0.27				0.27	0.00
Haakon	471.673	471.851	0.178	940	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.17		0.17	0.01		0.01		0.01	0.17		0.17	0.01		
Haakon	471.851	471.874	0.023	122	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.02	0.00	0.01						0.02		0.02	0.01		
Haakon	471.874	472.128	0.254	1,341	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.01			0.01		0.01		0.01	0.25				0.25	0.00
Haakon	472.128	472.257	0.129	679	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.13				0.13	0.01
Haakon	472.257	472.333	0.076	401	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.07	0.00	0.03						0.05		0.08	0.02		
Haakon	472.333	472.514	0.181	954	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.16		0.01	0.01		0.01		0.01	0.18		0.17			0.01
Haakon	472.514	472.562	0.048	254	SD055	354085	Ct	Capa-Wendte, channeled, complex		0.00			0.00		0.03		0.03	0.05					0.00
Haakon	472.562	472.594	0.032	171	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.03		0.00	0.00		0.00		0.00	0.03		0.03			0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Haakon	472.594	472.649	0.055	291	SD055	354135	OwC	Ottumwa-Lakoma silty clays, 6 to 9 percent slopes		0.02			0.00		0.01		0.01	0.06		0.05			
Haakon	472.649	472.926	0.277	1,460	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.25		0.01	0.01		0.01		0.02	0.28		0.26			0.01
Haakon	472.926	473.050	0.124	654	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.11	0.01	0.05						0.09		0.12	0.04		
Haakon	473.050	473.137	0.087	459	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.00			0.00		0.00		0.00	0.09				0.09	0.00
Haakon	473.137	473.550	0.413	2,181	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.02		0.02		0.02	0.41				0.41	0.02
Haakon	473.550	473.774	0.224	1,183	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.19	0.01	0.08						0.16		0.22	0.07		
Haakon	473.774	473.928	0.154	814	SD055	354138	PeC	Pierre clay, 6 to 9 percent slopes		0.15		0.01	0.02				0.02	0.15		0.15			
Haakon	473.928	474.150	0.222	1,174	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.20		0.01	0.01		0.01		0.02	0.22		0.21			0.01
Haakon	474.150	474.207	0.057	302	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.05	0.00	0.02						0.04		0.06	0.02		
Haakon	474.207	474.414	0.207	1,091	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.01			0.01		0.01		0.01	0.21				0.21	0.00
Haakon	474.414	474.677	0.263	1,388	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.24		0.24	0.01		0.01		0.01	0.25		0.24	0.01		
Haakon	474.677	474.889	0.212	1,122	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.01	0.08							0.20			0.10	0.21	
Haakon	474.889	474.922	0.033	175	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.03		0.03	0.00		0.00		0.00	0.03		0.03	0.00		
Haakon	474.922	475.420	0.497	2,626	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.02	0.20							0.47			0.22	0.50	
Haakon	475.420	476.205	0.785	4,144	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.04		0.04		0.04	0.78				0.78	0.04
Haakon	476.205	476.279	0.074	391	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.00	0.03							0.07			0.03	0.07	
Haakon	476.279	476.421	0.143	753	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.14				0.14	0.01
Haakon	476.421	476.515	0.094	495	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.00	0.04							0.09			0.04	0.09	
Haakon	476.515	476.606	0.090	477	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.00		0.00		0.00	0.09				0.09	0.00
Haakon	476.606	476.885	0.280	1,477	SD055	354098	KhA	Kirley-Mosher complex, 0 to 2 percent slopes					0.08		0.11		0.11	0.28					0.01
Haakon	476.885	477.028	0.142	751	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.01	0.06							0.14			0.06	0.14	
Haakon	477.028	477.169	0.142	749	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.14				0.14	0.01
Haakon	477.169	477.347	0.178	939	SD055	354115	Mo	Mosher silt loam					0.15		0.16		0.16	0.18					
Haakon	477.347	477.478	0.131	690	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.13				0.13	0.01
Haakon	477.478	477.613	0.135	711	SD055	354093	Hv	Hoven silt loam							0.13		0.13	0.13					0.12
Haakon	477.613	478.012	0.400	2,111	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.02		0.02		0.02	0.40				0.40	0.02
Haakon	478.012	478.324	0.312	1,645	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.14		0.02						0.22		0.22	0.09		
Haakon	478.324	478.621	0.297	1,568	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.26	0.02	0.11						0.21		0.30	0.09		
Haakon	478.621	478.798	0.177	935	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.16		0.01	0.01		0.01		0.01	0.18		0.16			0.01
Haakon	478.798	478.908	0.110	579	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.00			0.04		0.04		0.04	0.11					0.00
Haakon	478.908	479.091	0.183	968	SD055	354117	Nc	Nimbro silty clay loam, channeled					0.01		0.01		0.01	0.18					0.00
Haakon	479.091	479.126	0.036	188	SD055	354116	Nb	Nimbro silty clay loam					0.00				0.00	0.04				0.04	0.00
Haakon	479.126	479.260	0.133	702	SD055	354143	PrB	Promise clay, 3 to 6 percent slopes					0.12		0.01		0.13	0.13				0.13	0.00
Haakon	479.260	479.554	0.294	1,554	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.27		0.27	0.01		0.01		0.01	0.29		0.27	0.01		
Haakon	479.554	479.690	0.137	721	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.12	0.01	0.05						0.10		0.14	0.04		
Haakon	479.690	480.065	0.375	1,980	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.17		0.03						0.26		0.26	0.11		
Haakon	480.065	480.275	0.209	1,105	SD055	354162	StF	Schamber-Samsil complex, 6 to 60 percent slopes		0.10	0.11	0.20	0.08				0.08	0.10		0.21	0.12		
Haakon	480.275	480.702	0.427	2,257	SD055	354158	SoE	Sansarc-Opal clays, 9 to 40 percent slopes		0.38		0.38	0.13		0.03		0.15	0.43		0.38			0.01
Haakon	480.702	480.756	0.054	287	SD055	354069	Ab	Albaton silty clay, depressional										0.05					0.05
Haakon	480.756	480.858	0.102	539	SD055	354117	Nc	Nimbro silty clay loam, channeled					0.01		0.00		0.01	0.10					0.00
Haakon	480.858	481.289	0.430	2,273	SD055	354116	Nb	Nimbro silty clay loam					0.03				0.03	0.43				0.43	0.00
Haakon	481.289	481.348	0.059	311	SD055	354117	Nc	Nimbro silty clay loam, channeled					0.00		0.00		0.00	0.06					0.00
Haakon	481.348	481.544	0.196	1,037	SD055	354077	Bu	Bullcreek clay, 0 to 6 percent slopes					0.19		0.17		0.20	0.20					0.01
Haakon	481.544	482.009	0.465	2,453	SD055	354158	SoE	Sansarc-Opal clays, 9 to 40 percent slopes		0.42		0.42	0.14		0.03		0.16	0.46		0.42			0.01
Haakon	482.009	482.386	0.377	1,993	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.35		0.35	0.02		0.02		0.02	0.37		0.35	0.01		
Haakon	482.386	482.486	0.100	526	SD055	354097	KfB	Kirley-Canning complex, 2 to 6 percent slopes		0.00	0.04							0.09			0.04	0.10	
Haakon	482.486	482.604	0.118	623	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.11		0.11	0.00		0.00		0.00	0.11		0.11	0.00		
Haakon	482.604	482.690	0.086	455	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.08		0.00	0.00		0.00		0.01	0.09		0.08			0.00
Haakon	482.690	482.701	0.011	60	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.01		0.01	0.00		0.00		0.00	0.01		0.01	0.00		
Haakon	482.701	482.797	0.096	507	SD055	354158	SoE	Sansarc-Opal clays, 9 to 40 percent slopes		0.09		0.09	0.03		0.01		0.03	0.10		0.09			0.00
Haakon	482.797	483.033	0.236	1,245	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.22		0.22	0.01		0.01		0.01	0.23		0.22	0.01		
Haakon	483.033	483.396	0.363	1,916	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.33					0.02		0.02	0.36					
Haakon	483.396	483.427	0.030	160	SD055	354122	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.03		0.03	0.00		0.00		0.00	0.03		0.03	0.00		
Haakon	483.427	484.135	0.709	3,743	SD055	354107	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.64					0.04		0.04	0.71					
Haakon	484.135	484.245	0.110	579	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.10	0.01	0.04						0.08		0.11	0.03		
Haakon	484.245	484.300	0.055	293	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.00			0.00		0.00		0.00	0.06				0.06	0.00
Haakon	484.300	484.353	0.052	276	SD055	354096	KeD	Kirley clay loam, 6 to 15 percent slopes		0.00			0.00		0.00		0.00	0.05		0.05			
Haakon	484.353	484.484	0.131	693	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.06		0.01						0.09		0.09	0.04		
Haakon	484.484	484.797	0.313	1,654	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.02			0.01		0.01		0.01	0.31				0.31	0.00
Haakon	484.797	484.874	0.076	403	SD055	354096	KeD	Kirley clay loam, 6 to 15 percent slopes		0.00			0.00		0.00		0.00	0.08		0.07			
Haakon	484.874	484.931	0.057	301	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		0.03		0.00						0.04		0.04	0.02		
Jones	484.931	484.953	0.023	119	SD075	353640	KnD	Kirley-Vivian complex, 9 to 25 percent slopes		0.01		0.01						0.02		0.02	0.01		
Jones	484.953	485.092	0.139	732	SD075	353637	KmB	Kirley-Mosher complex, 0 to 6 percent slopes					0.04		0.05		0.05	0.14					0.01
Jones	485.092	485.132	0.040	214	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.04		0.04	0.00		0.00		0.00	0.04		0.04	0.00		0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Jones	485.132	485.208	0.075	398	SD075	353637	KmB	Kirley-Mosher complex, 0 to 6 percent slopes					0.02		0.03		0.03	0.08					0.00
Jones	485.208	485.647	0.439	2,319	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.40			0.04		0.02		0.04	0.42		0.37	0.02		0.02
Jones	485.647	485.708	0.061	325	SD075	353640	KnD	Kirley-Vivian complex, 9 to 25 percent slopes		0.03		0.02						0.04		0.06	0.02		
Jones	485.708	485.848	0.140	738	SD075	353637	KmB	Kirley-Mosher complex, 0 to 6 percent slopes					0.04		0.05		0.05	0.14					0.01
Jones	485.848	485.957	0.109	576	SD075	353636	KeD	Kirley clay loam, 9 to 15 percent slopes		0.01			0.00		0.00		0.00	0.11		0.10	0.00		
Jones	485.957	486.066	0.109	576	SD075	353637	KmB	Kirley-Mosher complex, 0 to 6 percent slopes					0.03		0.04		0.04	0.11					0.01
Jones	486.066	486.238	0.172	908	SD075	353636	KeD	Kirley clay loam, 9 to 15 percent slopes		0.01			0.01		0.01		0.01	0.17		0.16	0.00		
Jones	486.238	486.684	0.445	2,352	SD075	353658	OkE	Okaton-Wendte-Bullcreek complex, 0 to 45 percent slopes		0.24		0.20	0.14		0.09		0.14	0.45		0.25			0.01
Jones	486.684	486.830	0.146	772	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.13			0.01		0.01		0.01	0.14		0.12	0.01		0.01
Jones	486.830	486.944	0.114	600	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.11			0.00		0.00		0.01	0.11				0.11	0.00
Jones	486.944	487.234	0.291	1,535	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.01		0.01		0.01	0.29				0.29	0.01
Jones	487.234	487.261	0.027	142	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.03			0.00		0.00		0.00	0.03				0.03	0.00
Jones	487.261	487.431	0.170	897	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.15			0.01		0.01		0.02	0.17		0.15			0.01
Jones	487.431	487.592	0.161	850	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.15		0.15	0.01		0.00		0.01	0.16		0.15	0.00		0.00
Jones	487.592	487.715	0.123	652	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11			0.01		0.01		0.01	0.12		0.10	0.01		0.01
Jones	487.715	488.243	0.527	2,784	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.49		0.49	0.03		0.02		0.03	0.51		0.49	0.02		0.01
Jones	488.243	489.163	0.921	4,862	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.83			0.09		0.05		0.09	0.87		0.78	0.05		0.05
Jones	489.163	489.293	0.130	685	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.12			0.01		0.01		0.01	0.13		0.12			0.00
Jones	489.293	489.463	0.170	895	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15			0.02		0.01		0.02	0.16		0.14	0.01		0.01
Jones	489.463	489.720	0.257	1,359	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.01		0.01		0.01	0.26				0.26	0.01
Jones	489.720	489.736	0.016	85	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.01		0.01	0.00		0.00		0.00	0.02		0.01	0.00		0.00
Jones	489.736	489.935	0.199	1,050	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.18			0.02		0.01		0.02	0.19		0.17	0.01		0.01
Jones	489.935	490.138	0.203	1,071	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.19		0.19	0.01		0.01		0.01	0.20		0.19	0.01		0.00
Jones	490.138	490.543	0.405	2,140	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.36			0.04		0.02		0.04	0.39		0.34	0.02		0.02
Jones	490.543	490.788	0.245	1,292	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.24				0.24	0.01
Jones	490.788	490.866	0.078	414	SD075	353675	ReB	Ree loam, 2 to 6 percent slopes					0.01		0.01		0.01	0.08				0.08	0.00
Jones	490.866	491.004	0.138	728	SD075	353674	ReA	Ree loam, 0 to 2 percent slopes					0.01		0.00		0.01	0.14				0.14	0.00
Jones	491.004	491.210	0.206	1,087	SD075	353675	ReB	Ree loam, 2 to 6 percent slopes					0.01		0.01		0.02	0.21				0.21	0.01
Jones	491.210	491.220	0.010	53	SD075	353640	KnD	Kirley-Vivian complex, 9 to 25 percent slopes		0.00		0.00						0.01		0.01	0.00		
Jones	491.220	491.263	0.043	228	SD075	353675	ReB	Ree loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.04				0.04	0.00
Jones	491.263	491.457	0.194	1,022	SD075	353640	KnD	Kirley-Vivian complex, 9 to 25 percent slopes		0.09		0.07						0.14		0.19	0.06		
Jones	491.457	491.847	0.390	2,058	SD075	353636	KeD	Kirley clay loam, 9 to 15 percent slopes		0.03			0.01		0.01		0.01	0.38		0.37	0.01		
Jones	491.847	492.153	0.306	1,615	SD075	353661	OlD	Opal clay loam, 6 to 15 percent slopes		0.28			0.29		0.02		0.29	0.31		0.28			0.02
Jones	492.153	492.271	0.119	626	SD075	353660	OlC	Opal clay loam, 6 to 9 percent slopes		0.11			0.12				0.12	0.12		0.11		0.12	0.01
Jones	492.271	492.364	0.093	489	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.08			0.01		0.00		0.01	0.09		0.08	0.00		0.00
Jones	492.364	492.454	0.091	479	SD075	353648	LvE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.08		0.03						0.06		0.09	0.03		
Jones	492.454	492.480	0.026	137	SD075	353660	OlC	Opal clay loam, 6 to 9 percent slopes		0.02			0.03				0.03	0.03		0.02		0.03	0.00
Jones	492.480	493.177	0.697	3,678	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.63			0.07		0.03		0.07	0.66		0.59	0.03		0.03
Jones	493.177	493.468	0.291	1,537	SD075	353633	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.29				0.29	0.01
Jones	493.468	493.589	0.120	636	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11			0.01		0.01		0.01	0.11		0.10	0.01		0.01
Jones	493.589	493.634	0.045	239	SD075	353673	Pu	Promise-Capa complex					0.03		0.02		0.04	0.05					0.00
Jones	493.634	493.850	0.216	1,143	SD075	353658	OkE	Okaton-Wendte-Bullcreek complex, 0 to 45 percent slopes		0.11		0.10	0.07		0.04		0.07	0.22		0.12			0.01
Jones	493.850	493.959	0.108	572	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.10			0.01		0.01		0.01	0.10		0.09	0.01		0.01
Jones	493.959	493.987	0.028	148	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.03		0.03	0.00		0.00		0.00	0.03		0.03	0.00		0.00
Jones	493.987	494.156	0.170	896	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15			0.02		0.01		0.02	0.16		0.14	0.01		0.01
Jones	494.156	494.262	0.106	561	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.10			0.00		0.00		0.01	0.11				0.11	0.00
Jones	494.262	494.347	0.084	446	SD075	353652	Mo	Mosher silt loam					0.08		0.08		0.08	0.08					0.00
Jones	494.347	494.420	0.073	385	SD075	353633	KeA	Kirley clay loam, 0 to 2 percent slopes					0.00		0.00		0.00	0.07				0.07	0.00
Jones	494.420	494.555	0.135	713	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.12			0.01		0.01		0.01	0.13		0.11	0.01		0.01
Jones	494.555	494.935	0.380	2,007	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.01		0.01		0.01	0.38				0.38	0.01
Jones	494.935	495.225	0.290	1,532	SD075	353653	Mp	Mosher-Capa silt loams		0.01			0.19		0.27		0.27	0.29					0.01
Jones	495.225	495.355	0.129	684	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.12		0.01		0.13	0.13				0.13	0.00
Jones	495.355	495.373	0.018	96	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.02			0.00		0.00		0.00	0.02		0.02			0.00
Jones	495.373	495.556	0.183	966	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.17		0.01		0.18	0.18				0.18	0.00
Jones	495.556	496.233	0.677	3,575	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.61			0.07		0.03		0.07	0.64		0.58	0.03		0.03
Jones	496.233	496.312	0.079	415	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.07			0.01		0.01		0.01	0.08		0.07			0.00
Jones	496.312	496.341	0.029	154	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.03		0.00		0.03	0.03				0.03	0.00
Jones	496.341	496.346	0.006	30	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.01			0.00		0.00		0.00	0.01		0.01			0.00
Jones	496.346	496.668	0.322	1,701	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.29			0.03		0.02		0.03	0.31		0.27	0.02		0.02
Jones	496.668	496.782	0.114	600	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.11				0.11	0.00
Jones	496.782	497.126	0.344	1,817	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.31			0.02		0.03		0.04	0.34		0.31			0.01
Jones	497.126	497.274	0.148	780	SD075	353658	OkE	Okaton-Wendte-Bullcreek complex, 0 to 45 percent slopes		0.08		0.07	0.05		0.03		0.05	0.15		0.08			0.00
Jones	497.274	497.346	0.072	382	SD075	353636	KeD	Kirley clay loam, 9 to 15 percent slopes		0.01			0.00		0.00		0.00	0.07		0.07	0.00		
Jones	497.346	497.746	0.399	2,109	SD075	353640	KnD	Kirley-Vivian complex, 9 to 25 percent slopes		0.18		0.15						0.28		0.40	0.12		

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Jones	497.746	497.754	0.008	45	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.01				0.01	0.00
Jones	497.754	498.290	0.535	2,827	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.51		0.03		0.52	0.54				0.54	0.01
Jones	498.290	498.454	0.165	870	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15			0.02		0.01		0.02	0.16		0.14	0.01		0.01
Jones	498.454	498.595	0.140	741	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.14				0.14	0.00
Jones	498.595	498.771	0.176	930	SD075	353670	PrC	Promise clay, 6 to 9 percent slopes		0.01		0.01	0.16		0.01		0.17	0.18		0.16			
Jones	498.771	498.811	0.040	212	SD075	353675	ReB	Ree loam, 2 to 6 percent slopes					0.00		0.00		0.00	0.04				0.04	0.00
Jones	498.811	499.044	0.233	1,231	SD075	353652	Mo	Mosher silt loam					0.21		0.22		0.22	0.23					0.01
Jones	499.044	499.132	0.088	463	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.08		0.01		0.09	0.09				0.09	0.00
Jones	499.132	499.414	0.282	1,489	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.27			0.28		0.01		0.28	0.28				0.28	0.00
Jones	499.414	499.741	0.327	1,726	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.01		0.01		0.01	0.33				0.33	0.01
Jones	499.741	499.838	0.097	512	SD075	353684	Wt	Witten silty clay					0.10		0.00		0.10	0.10				0.10	0.00
Jones	499.838	500.242	0.405	2,136	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.38		0.02		0.40	0.40				0.40	0.01
Jones	500.242	500.348	0.106	561	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.10			0.01		0.01		0.01	0.10		0.09	0.01		0.01
Jones	500.348	500.499	0.151	797	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.14		0.01		0.15	0.15				0.15	0.00
Jones	500.499	500.939	0.439	2,320	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.40			0.04		0.02		0.04	0.42		0.37	0.02		0.02
Jones	500.939	501.052	0.113	596	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.11		0.01		0.11	0.11				0.11	0.00
Jones	501.052	501.238	0.186	982	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.18		0.01		0.18	0.19				0.19	0.00
Jones	501.238	501.386	0.149	785	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.13		0.00	0.14		0.01		0.14	0.15		0.13			0.01
Jones	501.386	501.484	0.098	517	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.09		0.01		0.10	0.10				0.10	0.00
Jones	501.484	501.614	0.130	685	SD075	353658	OkE	Okaton-Wendte-Bullcreek complex, 0 to 45 percent slopes		0.07		0.06	0.04		0.03		0.04	0.13		0.07			0.00
Jones	501.614	501.816	0.202	1,065	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.18			0.02		0.01		0.02	0.19		0.17	0.01		0.01
Jones	501.816	501.978	0.163	859	SD075	353670	PrC	Promise clay, 6 to 9 percent slopes		0.00		0.00	0.15		0.01		0.16	0.16		0.15			
Jones	501.978	502.067	0.089	470	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.08		0.01		0.09	0.09				0.09	0.00
Jones	502.067	502.162	0.095	501	SD075	353678	SoE	Sansarc-Opal clays, 9 to 40 percent slopes		0.09		0.09	0.04		0.01		0.04	0.09		0.09	0.00		
Jones	502.162	502.194	0.032	169	SD075	353681	W	Water															
Jones	502.194	502.241	0.046	245	SD075	353678	SoE	Sansarc-Opal clays, 9 to 40 percent slopes		0.04		0.04	0.02		0.00		0.02	0.05		0.04	0.00		
Jones	502.241	502.306	0.065	345	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.06		0.00		0.06	0.07				0.07	0.00
Jones	502.306	502.725	0.419	2,214	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.40		0.03		0.41	0.42				0.42	0.01
Jones	502.725	502.799	0.074	390	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.07		0.00	0.07		0.01		0.07	0.07		0.07			0.00
Jones	502.799	503.905	1.106	5,839	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		1.00			0.11		0.06		0.11	1.05		0.94	0.06		0.06
Jones	503.905	504.024	0.119	628	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.11			0.01		0.01		0.01	0.12		0.11			0.00
Jones	504.024	504.880	0.856	4,521	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.77			0.09		0.04		0.09	0.81		0.73	0.04		0.04
Jones	504.880	504.953	0.072	383	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.06		0.00	0.07		0.01		0.07	0.07		0.06			0.00
Jones	504.953	505.127	0.174	918	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.16			0.02		0.01		0.02	0.17		0.15	0.01		0.01
Jones	505.127	505.397	0.271	1,429	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.24		0.01	0.25		0.02		0.26	0.27		0.24			0.01
Jones	505.397	505.422	0.024	127	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.02		0.00	0.02		0.00		0.02	0.02		0.02			0.00
Jones	505.422	505.686	0.264	1,396	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.24			0.02		0.02		0.03	0.26		0.24			0.01
Jones	505.686	505.783	0.097	513	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.09		0.00	0.09		0.01		0.09	0.10		0.09			0.00
Jones	505.783	506.138	0.355	1,873	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.34		0.00	0.35		0.01		0.35	0.35		0.34			0.00
Jones	506.138	506.185	0.047	250	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.04		0.00	0.04		0.00		0.05	0.05		0.04			0.00
Jones	506.185	506.221	0.036	189	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.03			0.00		0.00		0.00	0.03		0.03	0.00		0.00
Jones	506.221	506.245	0.024	126	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.02		0.00	0.02		0.00		0.02	0.02		0.02			0.00
Jones	506.245	506.409	0.164	867	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.15			0.02		0.01		0.02	0.16		0.14	0.01		0.01
Jones	506.409	506.574	0.165	873	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.16		0.01		0.16	0.17				0.17	0.00
Jones	506.574	506.628	0.054	284	SD075	353683	Wd	Wendte silty clay, channeled					0.00		0.00		0.01	0.05					0.00
Jones	506.628	506.678	0.050	265	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.04		0.00	0.05		0.00		0.05	0.05		0.04			0.00
Jones	506.678	506.882	0.203	1,073	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.20		0.00	0.20		0.01		0.20	0.20		0.20			0.00
Jones	506.882	507.177	0.296	1,561	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.28		0.02		0.29	0.30				0.30	0.01
Jones	507.177	507.274	0.097	513	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.09			0.10		0.00		0.10	0.10				0.10	0.00
Jones	507.274	507.381	0.106	560	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.09		0.00	0.10		0.01		0.10	0.11		0.09			0.00
Jones	507.381	507.504	0.124	653	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11			0.01		0.01		0.01	0.12		0.11	0.01		0.01
Jones	507.504	507.606	0.102	540	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.10			0.10		0.00		0.10	0.10				0.10	0.00
Jones	507.606	507.649	0.043	226	SD075	353657	ObE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.04		0.04	0.00		0.00		0.00	0.04		0.04	0.00		0.00
Jones	507.649	507.700	0.051	269	SD075	353627	Hb	Herdcamp-Bullcreek complex		0.00			0.05		0.02		0.05	0.05		0.00			0.03
Jones	507.700	507.752	0.052	273	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.05		0.00	0.05		0.00		0.05	0.05		0.05			0.00
Jones	507.752	507.822	0.070	370	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.07			0.07		0.00		0.07	0.07				0.07	0.00
Jones	507.822	507.929	0.107	564	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.09		0.00	0.10		0.01		0.10	0.11		0.09			0.00
Jones	507.929	508.104	0.175	924	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.17		0.00	0.17		0.01		0.17	0.18		0.17			0.00
Jones	508.104	508.177	0.074	388	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.07			0.01		0.01		0.01	0.07		0.07			0.00
Jones	508.177	508.276	0.099	521	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.09		0.00	0.10		0.00		0.10	0.10		0.09			0.00
Jones	508.276	508.452	0.176	930	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.17			0.17		0.00		0.18	0.18				0.18	0.00
Jones	508.452	508.527	0.075	394	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.07		0.00	0.07		0.00		0.07	0.07		0.07			0.00
Jones	508.527	508.856	0.329	1,737	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.29		0.01	0.31		0.03		0.32	0.33		0.29			0.01
Jones	508.856	509.331	0.476	2,512	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.43			0.05		0.02		0.05	0.45		0.40	0.02		0.02

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Jones	509.331	509.613	0.282	1,488	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.27			0.28		0.01		0.28	0.28				0.28	0.00
Jones	509.613	509.865	0.252	1,329	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.24		0.00	0.25		0.01		0.25	0.25		0.24			0.00
Jones	509.865	509.925	0.060	317	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.06			0.06		0.00		0.06	0.06				0.06	0.00
Jones	509.925	510.334	0.409	2,159	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.36		0.01	0.38		0.03		0.40	0.41		0.36			0.02
Jones	510.334	510.433	0.099	525	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.10		0.00	0.10		0.00		0.10	0.10		0.10			0.00
Jones	510.433	510.851	0.418	2,205	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.37		0.01	0.39		0.03		0.41	0.42		0.37			0.02
Jones	510.851	511.965	1.114	5,883	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		1.00			0.11		0.06		0.11	1.06		0.95	0.06		0.06
Jones	511.965	512.007	0.042	219	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.04		0.00		0.04	0.04				0.04	0.00
Jones	512.007	512.093	0.086	456	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.08		0.00	0.08		0.00		0.09	0.09		0.08			0.00
Jones	512.093	512.283	0.190	1,004	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.18		0.01		0.19	0.19				0.19	0.00
Jones	512.283	512.362	0.079	415	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.07			0.08		0.00		0.08	0.08				0.08	0.00
Jones	512.362	512.501	0.139	736	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.13		0.01		0.14	0.14				0.14	0.00
Jones	512.501	512.641	0.140	739	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.13			0.14		0.00		0.14	0.14				0.14	0.00
Jones	512.641	512.854	0.213	1,126	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.20		0.01		0.21	0.21				0.21	0.00
Jones	512.854	512.915	0.061	319	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.05			0.00		0.00		0.01	0.06		0.05			0.00
Jones	512.915	512.990	0.075	396	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.07			0.01		0.00		0.01	0.07		0.06	0.00		0.00
Jones	512.990	513.364	0.374	1,977	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.33		0.01	0.35		0.03		0.36	0.37		0.33			0.01
Jones	513.364	513.548	0.184	970	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.16			0.01		0.01		0.02	0.18		0.16			0.01
Jones	513.548	513.671	0.124	653	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.11			0.01		0.01		0.01	0.12		0.11	0.01		0.01
Jones	513.671	513.769	0.098	517	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.09		0.01		0.10	0.10				0.10	0.00
Jones	513.769	513.885	0.116	611	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.11		0.00	0.11		0.00		0.11	0.12		0.11			0.00
Jones	513.885	514.299	0.414	2,185	SD075	353665	OpD	Opal clay, 6 to 15 percent slopes		0.36		0.01	0.38		0.03		0.40	0.41		0.36			0.02
Jones	514.299	515.328	1.029	5,432	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.93			0.10		0.05		0.10	0.98		0.87	0.05		0.05
Jones	515.328	515.677	0.349	1,843	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.33			0.34		0.01		0.35	0.35				0.35	0.00
Jones	515.677	515.789	0.112	594	SD075	353671	PsA	Promise-Bullcreek clays		0.01			0.10		0.04		0.10	0.11		0.00			0.00
Jones	515.789	516.066	0.277	1,463	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.26			0.27		0.01		0.28	0.28				0.28	0.00
Jones	516.066	516.122	0.055	292	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.05		0.00		0.05	0.06				0.06	0.00
Jones	516.122	516.176	0.055	289	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.05			0.00		0.00		0.01	0.05		0.05			0.00
Jones	516.176	516.323	0.147	775	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.14			0.14		0.00		0.15	0.15				0.15	0.00
Jones	516.323	516.402	0.079	418	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.08		0.00		0.08	0.08				0.08	0.00
Jones	516.402	516.523	0.120	636	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.11			0.12		0.00		0.12	0.12				0.12	0.00
Jones	516.523	516.726	0.203	1,074	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.19			0.01		0.01		0.01	0.20				0.20	0.00
Jones	516.726	516.983	0.257	1,358	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.23			0.02		0.02		0.03	0.26		0.23			0.01
Jones	516.983	517.233	0.250	1,319	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.24			0.24		0.00		0.25	0.25				0.25	0.00
Jones	517.233	517.277	0.045	235	SD075	353627	Hb	Herdcamp-Bullcreek complex		0.00			0.04		0.02		0.04	0.04		0.00			0.03
Jones	517.277	517.367	0.090	473	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.08			0.01		0.00		0.01	0.09		0.08	0.00		0.00
Jones	517.367	517.513	0.146	773	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		0.14		0.00	0.14		0.00		0.15	0.15		0.14			0.00
Jones	517.513	517.984	0.470	2,483	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.45			0.46		0.01		0.47	0.47				0.47	0.00
Jones	517.984	518.088	0.104	548	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.10		0.01		0.10	0.10				0.10	0.00
Jones	518.088	518.181	0.094	495	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.09			0.09		0.00		0.09	0.09				0.09	0.00
Jones	518.181	518.270	0.088	467	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.08			0.01		0.01		0.01	0.09		0.08			0.00
Jones	518.270	518.874	0.604	3,191	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.54			0.06		0.03		0.06	0.57		0.51	0.03		0.03
Jones	518.874	518.898	0.024	125	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.02			0.00		0.00		0.00	0.02				0.02	0.00
Jones	518.898	519.378	0.480	2,535	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.43			0.05		0.02		0.05	0.46		0.41	0.02		0.02
Jones	519.378	519.604	0.226	1,192	SD075	353661	OlD	Opal clay loam, 6 to 15 percent slopes		0.20			0.21		0.01		0.21	0.23		0.20			0.01
Jones	519.604	519.944	0.340	1,797	SD075	353660	OlC	Opal clay loam, 6 to 9 percent slopes		0.32			0.34				0.34	0.34		0.32		0.34	0.02
Jones	519.944	520.041	0.098	515	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.00			0.09		0.09		0.10	0.10					
Jones	520.041	520.135	0.093	493	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.09		0.01		0.09	0.09				0.09	0.00
Jones	520.135	520.307	0.173	911	SD075	353660	OlC	Opal clay loam, 6 to 9 percent slopes		0.16			0.17				0.17	0.17		0.16		0.17	0.01
Jones	520.307	520.325	0.018	94	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.02		0.00		0.02	0.02				0.02	0.00
Jones	520.325	520.422	0.097	512	SD075	353671	PsA	Promise-Bullcreek clays		0.01			0.08		0.04		0.09	0.10		0.00			0.00
Jones	520.422	520.706	0.284	1,499	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.27		0.02		0.28	0.28				0.28	0.01
Jones	520.706	520.807	0.101	531	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.00			0.09		0.10		0.10	0.10					
Jones	520.807	521.198	0.391	2,066	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.37		0.02		0.38	0.39				0.39	0.01
Jones	521.198	521.429	0.231	1,220	SD075	353650	MlB	Millboro silty clay loam, 3 to 6 percent slopes					0.23		0.00		0.23	0.23				0.23	0.00
Jones	521.429	521.793	0.364	1,921	SD075	353649	MlA	Millboro silty clay loam, 0 to 3 percent slopes					0.36		0.01		0.36	0.36				0.36	0.01
Jones	521.793	522.003	0.210	1,109	SD075	353671	PsA	Promise-Bullcreek clays		0.01			0.18		0.08		0.19	0.21		0.01			0.01
Jones	522.003	522.085	0.083	436	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.08			0.00		0.00		0.00	0.08				0.08	0.00
Jones	522.085	522.305	0.219	1,158	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.00			0.20		0.21		0.21	0.22					
Jones	522.305	522.539	0.235	1,238	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.22		0.01		0.23	0.23				0.23	0.00
Jones	522.539	522.593	0.053	282	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.00			0.05		0.05		0.05	0.05					
Jones	522.593	522.868	0.275	1,454	SD075	353649	MlA	Millboro silty clay loam, 0 to 3 percent slopes					0.27		0.01		0.27	0.28				0.28	0.01
Jones	522.868	523.008	0.140	739	SD075	353671	PsA	Promise-Bullcreek clays		0.01			0.12		0.05		0.12	0.14		0.00			0.01
Jones	523.008	523.089	0.082	431	SD075	353649	MlA	Millboro silty clay loam, 0 to 3 percent slopes					0.08		0.00		0.08	0.08				0.08	0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Jones	523.089	523.203	0.114	601	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		0.11			0.00		0.00		0.01	0.11				0.11	0.00
Jones	523.203	523.371	0.168	885	SD075	353650	MlB	Millboro silty clay loam, 3 to 6 percent slopes					0.16		0.00		0.16	0.17				0.17	0.00
Jones	523.371	523.392	0.021	109	SD075	353649	MlA	Millboro silty clay loam, 0 to 3 percent slopes					0.02		0.00		0.02	0.02				0.02	0.00
Jones	523.392	523.769	0.378	1,993	SD075	353684	Wt	Witten silty clay					0.37		0.01		0.37	0.38				0.38	0.00
Jones	523.769	523.887	0.118	622	SD075	353650	MlB	Millboro silty clay loam, 3 to 6 percent slopes					0.12		0.00		0.12	0.12				0.12	0.00
Jones	523.887	524.126	0.239	1,261	SD075	353651	MlC	Millboro silty clay loam, 6 to 9 percent slopes		0.01			0.23		0.01		0.23	0.24		0.22			
Jones	524.126	524.605	0.480	2,532	SD075	353650	MlB	Millboro silty clay loam, 3 to 6 percent slopes					0.47		0.01		0.47	0.48				0.48	0.01
Jones	524.605	525.017	0.412	2,176	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					0.39		0.02		0.40	0.41				0.41	0.01
Lyman	525.017	525.662	0.645	3,406	SD085	355608	PoA	Promise clay, 0 to 3 percent slopes		0.02			0.63		0.04		0.65	0.65				0.65	0.01
Lyman	525.662	525.718	0.056	296	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.05		0.00		0.05	0.06				0.06	0.00
Lyman	525.718	526.245	0.527	2,784	SD085	355590	MmA	Millboro silty clay, 0 to 3 percent slopes		0.02			0.49		0.02		0.51	0.53				0.53	0.02
Lyman	526.245	526.300	0.054	287	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.05		0.00		0.05	0.05				0.05	0.00
Lyman	526.300	526.380	0.080	421	SD085	355590	MmA	Millboro silty clay, 0 to 3 percent slopes		0.00			0.07		0.00		0.08	0.08				0.08	0.00
Lyman	526.380	526.487	0.108	569	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.10		0.00		0.10	0.11				0.11	0.00
Lyman	526.487	526.488	0.000	2	SD085	355626	Wt	Witten silty clay		0.00			0.00		0.00		0.00	0.00				0.00	0.00
Lyman	526.488	526.600	0.113	595	SD085	355574	Ko	Kolls silty clay					0.01		0.01		0.01	0.11					0.11
Lyman	526.600	526.714	0.114	599	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.11		0.00		0.11	0.11				0.11	0.00
Lyman	526.714	527.008	0.294	1,554	SD085	355626	Wt	Witten silty clay		0.01			0.28		0.02		0.29	0.29				0.29	0.01
Lyman	527.008	527.250	0.242	1,279	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.01			0.23		0.01		0.23	0.24				0.24	0.01
Lyman	527.250	527.525	0.274	1,449	SD085	355626	Wt	Witten silty clay		0.01			0.26		0.02		0.27	0.27				0.27	0.01
Lyman	527.525	528.156	0.631	3,330	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.03			0.59		0.03		0.61	0.63				0.63	0.02
Lyman	528.156	528.234	0.079	416	SD085	355608	PoA	Promise clay, 0 to 3 percent slopes		0.00			0.08		0.00		0.08	0.08				0.08	0.00
Lyman	528.234	528.245	0.011	57	SD085	355626	Wt	Witten silty clay		0.00			0.01		0.00		0.01	0.01				0.01	0.00
Lyman	528.245	528.644	0.399	2,107	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.02			0.37		0.02		0.39	0.40				0.40	0.01
Lyman	528.644	528.796	0.151	799	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.02			0.08				0.08	0.15		0.15			
Lyman	528.796	529.697	0.901	4,758	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.04			0.84		0.04		0.87	0.90				0.90	0.03
Lyman	529.697	529.832	0.135	713	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.02			0.07				0.07	0.14		0.14			
Lyman	529.832	529.948	0.116	614	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.01			0.11		0.10		0.11	0.12					0.00
Lyman	529.948	530.611	0.662	3,498	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.03			0.62		0.03		0.64	0.66				0.66	0.02
Lyman	530.611	530.721	0.111	584	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.01			0.10		0.10		0.11	0.11					0.00
Lyman	530.721	530.752	0.031	163	SD085	355577	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.03			0.00				0.00	0.03		0.03			0.00
Lyman	530.752	531.321	0.569	3,004	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.02			0.53		0.02		0.55	0.57				0.57	0.02
Lyman	531.321	531.536	0.215	1,136	SD085	355590	MmA	Millboro silty clay, 0 to 3 percent slopes		0.01			0.20		0.01		0.21	0.22				0.22	0.01
Lyman	531.536	532.026	0.490	2,587	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.02			0.46		0.02		0.48	0.49				0.49	0.01
Lyman	532.026	532.419	0.393	2,073	SD085	355590	MmA	Millboro silty clay, 0 to 3 percent slopes		0.02			0.37		0.02		0.38	0.39				0.39	0.01
Lyman	532.419	532.556	0.137	726	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.01			0.13		0.01		0.13	0.14				0.14	0.00
Lyman	532.556	532.786	0.229	1,212	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.03			0.12				0.12	0.23		0.23			
Lyman	532.786	532.965	0.179	946	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.17		0.17	0.08		0.01		0.08	0.17		0.17	0.01		0.00
Lyman	532.965	533.041	0.077	405	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.01			0.07		0.07		0.07	0.08					0.00
Lyman	533.041	533.216	0.174	919	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.17		0.16	0.08		0.01		0.08	0.17		0.17	0.01		0.00
Lyman	533.216	533.443	0.228	1,203	SD085	355578	LbD	Lakoma-Okaton silty clays, 6 to 15 percent slopes		0.21			0.03				0.03	0.23		0.23			0.00
Lyman	533.443	533.681	0.238	1,255	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.04			0.12				0.12	0.24		0.24			
Lyman	533.681	533.738	0.057	301	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.05		0.00		0.06	0.06				0.06	0.00
Lyman	533.738	533.863	0.125	659	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.12		0.12	0.06		0.00		0.06	0.12		0.12	0.00		0.00
Lyman	533.863	533.995	0.133	700	SD085	355578	LbD	Lakoma-Okaton silty clays, 6 to 15 percent slopes		0.12			0.02				0.02	0.13		0.13			0.00
Lyman	533.995	534.124	0.128	678	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.02			0.07				0.07	0.13		0.13			
Lyman	534.124	534.283	0.159	841	SD085	355578	LbD	Lakoma-Okaton silty clays, 6 to 15 percent slopes		0.15			0.02				0.02	0.16		0.16			0.00
Lyman	534.283	534.651	0.368	1,941	SD085	355593	MnC	Millboro-Boro silty clays, 6 to 9 percent slopes		0.06			0.19				0.19	0.37		0.37			
Lyman	534.651	535.246	0.595	3,142	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.02			0.55		0.02		0.58	0.60				0.60	0.02
Lyman	535.246	535.500	0.254	1,343	SD085	355572	HrA	Capa silt loam, 0 to 6 percent slopes		0.01			0.04		0.23		0.25	0.25					0.00
Lyman	535.500	535.586	0.086	454	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.08		0.00		0.08	0.09				0.09	0.00
Lyman	535.586	535.774	0.188	992	SD085	355597	OhE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.18	0.01	0.19	0.01				0.01	0.18		0.19	0.01		
Lyman	535.774	535.821	0.047	250	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.05		0.04	0.02		0.00		0.02	0.05		0.05	0.00		0.00
Lyman	535.821	535.834	0.013	70	SD085	355597	OhE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.01	0.00	0.01	0.00				0.00	0.01		0.01	0.00		
Lyman	535.834	535.926	0.092	484	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.09		0.09	0.04		0.00		0.04	0.09		0.09	0.00		0.00
Lyman	535.926	536.025	0.099	521	SD085	355597	OhE	Okaton-Lakoma silty clays, 15 to 40 percent slopes		0.09	0.00	0.10	0.00				0.00	0.09		0.10	0.00		
Lyman	536.025	536.612	0.587	3,102	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.56		0.55	0.28		0.02		0.28	0.57		0.56	0.02		0.01
Lyman	536.612	536.668	0.055	293	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.00			0.05		0.05		0.05	0.06					0.00
Lyman	536.668	536.749	0.081	428	SD085	355608	PoA	Promise clay, 0 to 3 percent slopes		0.00			0.08		0.00		0.08	0.08				0.08	0.00
Lyman	536.749	536.814	0.065	345	SD085	355570	Hm	Hilmoe silty clay			0.00		0.06				0.06	0.06				0.07	0.00
Lyman	536.814	536.845	0.031	165	SD085	355562	Bg	Bigbend silt loam			0.00		0.00				0.00	0.03	0.00			0.03	0.00
Lyman	536.845	536.875	0.030	156	SD085	355595	Mr	Munjor fine sandy loam			0.03		0.00				0.00	0.00	0.00			0.03	0.00
Lyman	536.875	536.918	0.043	229	SD085	355627	W	Water															
Tripp	536.918	536.971	0.053	281	SD123	354467	W	Water															

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	536.971	537.160	0.188	994	SD123	354417	Mu	Munjor fine sandy loam			0.18							0.01				0.19	0.00
Tripp	537.160	537.326	0.167	880	SD123	354394	Ha	Bigbend soils			0.01							0.15				0.17	0.00
Tripp	537.326	537.349	0.022	117	SD123	354430	PtA	Hilmoe clay, 0 to 2 percent slopes					0.02				0.02	0.02				0.02	0.00
Tripp	537.349	537.614	0.266	1,402	SD123	354424	OsE	Opal-Sansarc clays, 9 to 25 percent slopes		0.24		0.24	0.03				0.03	0.27		0.24			0.00
Tripp	537.614	537.759	0.145	764	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.13	0.01	0.14	0.00				0.00	0.13		0.14	0.01		
Tripp	537.759	537.784	0.025	132	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.02	0.02	0.00				0.00	0.00		0.02	0.02		0.00
Tripp	537.784	537.925	0.141	745	SD123	354407	LwA	Lowry silt loam, 0 to 4 percent slopes		0.00					0.00		0.00	0.01				0.14	0.00
Tripp	537.925	538.019	0.094	496	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.09	0.09	0.00				0.00	0.01		0.09	0.09		0.00
Tripp	538.019	538.176	0.157	828	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.01			0.00		0.00		0.00	0.16		0.00		0.16	0.00
Tripp	538.176	538.211	0.035	186	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.03	0.03	0.00				0.00	0.00		0.03	0.03		0.00
Tripp	538.211	538.253	0.042	221	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.00			0.00		0.00		0.00	0.04		0.00		0.04	0.00
Tripp	538.253	538.429	0.176	929	SD123	354407	LwA	Lowry silt loam, 0 to 4 percent slopes		0.00					0.00		0.00	0.02				0.18	0.00
Tripp	538.429	538.767	0.339	1,789	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.02			0.01		0.01		0.01	0.34		0.01		0.34	0.01
Tripp	538.767	538.926	0.159	839	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.01	0.15	0.15	0.00				0.00	0.01		0.16	0.15		0.00
Tripp	538.926	538.965	0.039	207	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.04	0.00	0.04	0.00				0.00	0.04		0.04	0.00		0.00
Tripp	538.965	539.067	0.102	538	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.09	0.01	0.10	0.00				0.00	0.09		0.10	0.01		
Tripp	539.067	539.184	0.117	616	SD123	354450	Sw	Bullcreek clay					0.12		0.10		0.12	0.12					0.00
Tripp	539.184	539.990	0.806	4,255	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.73	0.06	0.77	0.02				0.02	0.75		0.78	0.06		
Tripp	539.990	540.226	0.236	1,247	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.21	0.00	0.21	0.01				0.01	0.23		0.23	0.00		0.00
Tripp	540.226	540.307	0.081	426	SD123	354447	ShE	Schamber-Murdo complex, 15 to 40 percent slopes		0.01	0.07	0.07						0.04		0.08	0.07		
Tripp	540.307	540.345	0.038	203	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.04	0.04	0.00				0.00	0.00		0.04	0.04		0.00
Tripp	540.345	541.045	0.700	3,694	SD123	354432	RaA	Ree loam, 0 to 3 percent slopes					0.02		0.02		0.02	0.70				0.70	0.05
Tripp	541.045	541.091	0.046	242	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.04	0.04	0.00				0.00	0.00		0.05	0.04		0.00
Tripp	541.091	541.630	0.540	2,849	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.49	0.01	0.49	0.02				0.02	0.53		0.53	0.01		0.01
Tripp	541.630	542.136	0.505	2,668	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.45	0.04	0.49	0.02				0.02	0.47		0.49	0.04		
Tripp	542.136	542.188	0.052	276	SD123	354450	Sw	Bullcreek clay					0.05		0.05		0.05	0.05					0.00
Tripp	542.188	542.334	0.146	771	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.13	0.01	0.14	0.00				0.00	0.14		0.14	0.01		
Tripp	542.334	542.397	0.063	331	SD123	354450	Sw	Bullcreek clay					0.06		0.06		0.06	0.06					0.00
Tripp	542.397	542.671	0.275	1,450	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.25	0.02	0.26	0.01				0.01	0.26		0.27	0.02		
Tripp	542.671	542.970	0.299	1,579	SD123	354450	Sw	Bullcreek clay					0.30		0.27		0.30	0.30					0.00
Tripp	542.970	543.060	0.090	475	SD123	354423	OpC	Opal clay, 3 to 9 percent slopes		0.09			0.00		0.00		0.01	0.09		0.09			0.00
Tripp	543.060	543.197	0.137	721	SD123	354450	Sw	Bullcreek clay					0.14		0.12		0.14	0.14					0.00
Tripp	543.197	543.460	0.264	1,391	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.24	0.02	0.25	0.01				0.01	0.25		0.26	0.02		
Tripp	543.460	543.916	0.455	2,404	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.41	0.01	0.41	0.02				0.02	0.45		0.45	0.01		0.00
Tripp	543.916	544.067	0.151	800	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.00	0.00		0.00		0.00		0.00	0.15		0.14	0.00	0.15	0.01
Tripp	544.067	544.211	0.144	759	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.13	0.00	0.13	0.01				0.01	0.14		0.14	0.00		0.00
Tripp	544.211	544.758	0.547	2,889	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.47	0.02		0.03				0.03	0.53		0.52	0.02		0.01
Tripp	544.758	544.863	0.105	554	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.00	0.00		0.00		0.00		0.00	0.10		0.09	0.00	0.10	0.00
Tripp	544.863	544.923	0.060	317	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.05	0.00		0.00				0.00	0.06		0.06	0.00		0.00
Tripp	544.923	545.100	0.177	935	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.16	0.00	0.16	0.01				0.01	0.17		0.18	0.00		0.00
Tripp	545.100	545.209	0.109	577	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.09	0.00		0.01				0.01	0.10		0.10	0.00		0.00
Tripp	545.209	546.009	0.799	4,221	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.72	0.02	0.72	0.03				0.03	0.78		0.79	0.02		0.01
Tripp	546.009	546.049	0.040	214	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.02			0.02		0.00		0.02	0.04		0.04			0.00
Tripp	546.049	546.050	0.001	5	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.00	0.00	0.00	0.00				0.00	0.00		0.00	0.00		0.00
Tripp	546.050	546.619	0.569	3,007	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.29			0.22		0.01		0.23	0.57		0.51			0.01
Tripp	546.619	546.811	0.191	1,011	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.17		0.02		0.18	0.19			0.00	0.19	0.00
Tripp	546.811	546.961	0.150	793	SD123	354415	Mr	Mosher silt loam					0.14		0.14		0.14	0.15					0.00
Tripp	546.961	547.088	0.127	669	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.13		0.01		0.13	0.13				0.13	0.00
Tripp	547.088	547.204	0.116	611	SD123	354415	Mr	Mosher silt loam					0.11		0.11		0.11	0.12					0.00
Tripp	547.204	547.442	0.239	1,259	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.24		0.02		0.24	0.24				0.24	0.00
Tripp	547.442	547.540	0.098	516	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.09		0.01		0.09	0.10			0.00	0.10	0.00
Tripp	547.540	547.646	0.106	562	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.01			0.04				0.04	0.11		0.09		0.11	0.00
Tripp	547.646	548.179	0.533	2,812	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.02	0.01		0.48		0.04		0.50	0.53			0.01	0.53	0.01
Tripp	548.179	548.271	0.092	486	SD123	354465	Wn	Witten silty clay					0.09		0.00		0.09	0.09				0.09	0.00
Tripp	548.271	548.400	0.129	682	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.12		0.01		0.12	0.13			0.00	0.13	0.00
Tripp	548.400	548.417	0.017	89	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.00			0.01				0.01	0.02		0.01		0.02	0.00
Tripp	548.417	548.420	0.003	17	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.00			0.00		0.00		0.00	0.00		0.00		0.00	0.00
Tripp	548.420	548.598	0.177	937	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.02			0.07				0.07	0.18		0.15		0.18	0.00
Tripp	548.598	548.634	0.036	189	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.00			0.00		0.00		0.00	0.04		0.00		0.04	0.00
Tripp	548.634	548.816	0.182	963	SD123	354437	ReB	Reliance silty clay loam, 3 to 6 percent slopes		0.00	0.01		0.01		0.00		0.01	0.18			0.01	0.18	0.01
Tripp	548.816	549.399	0.583	3,081	SD123	354438	ReC	Reliance silty clay loam, 6 to 9 percent slopes		0.01	0.01		0.02		0.01		0.03	0.58		0.55	0.01	0.58	0.01
Tripp	549.399	549.660	0.260	1,375	SD123	354437	ReB	Reliance silty clay loam, 3 to 6 percent slopes		0.01	0.01		0.01		0.01		0.02	0.25			0.01	0.26	0.01
Tripp	549.660	549.807	0.148	779	SD123	354421	On	Onita silt loam		0.00			0.00		0.00		0.00	0.15				0.15	0.00
Tripp	549.807	550.186	0.379	2,001	SD123	354437	ReB	Reliance silty clay loam, 3 to 6 percent slopes		0.01	0.01		0.02		0.01		0.03	0.37			0.01	0.38	0.02

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	550.186	550.288	0.102	538	SD123	354404	Ko	Kolls clay		0.00			0.01		0.01		0.01	0.10					0.09
Tripp	550.288	550.852	0.563	2,975	SD123	354437	ReB	Reliance silty clay loam, 3 to 6 percent slopes		0.01	0.02		0.03		0.01		0.04	0.55			0.02	0.56	0.03
Tripp	550.852	551.015	0.163	860	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.01	0.00		0.14		0.00		0.14	0.16		0.15	0.00	0.16	
Tripp	551.015	551.076	0.062	325	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.06		0.00		0.06	0.06			0.00	0.06	0.00
Tripp	551.076	551.296	0.220	1,163	SD123	354379	Cc	Carter silty clay loam		0.01			0.21		0.19		0.22	0.22					0.00
Tripp	551.296	551.355	0.058	308	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.06		0.00		0.06	0.06				0.06	0.00
Tripp	551.355	551.512	0.157	829	SD123	354379	Cc	Carter silty clay loam		0.01			0.15		0.13		0.16	0.16					0.00
Tripp	551.512	551.602	0.090	477	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.08		0.01		0.08	0.09			0.00	0.09	0.00
Tripp	551.602	551.783	0.181	953	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.18		0.01		0.18	0.18				0.18	0.00
Tripp	551.783	551.962	0.180	948	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.16		0.01		0.17	0.18			0.00	0.18	0.00
Tripp	551.962	552.160	0.198	1,043	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.20		0.01		0.20	0.20				0.20	0.00
Tripp	552.160	552.404	0.245	1,291	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.22		0.02		0.23	0.24			0.00	0.24	0.00
Tripp	552.404	552.442	0.038	200	SD123	354465	Wn	Witten silty clay					0.04		0.00		0.04	0.04				0.04	0.00
Tripp	552.442	552.573	0.131	692	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.02			0.06				0.06	0.13		0.11		0.13	0.00
Tripp	552.573	552.629	0.056	296	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.05		0.00		0.05	0.06			0.00	0.06	0.00
Tripp	552.629	553.029	0.399	2,109	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.05			0.17				0.17	0.40		0.35		0.40	0.01
Tripp	553.029	553.107	0.078	412	SD123	354379	Cc	Carter silty clay loam		0.00			0.07		0.07		0.08	0.08					0.00
Tripp	553.107	554.369	1.262	6,665	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.04	0.01		1.14		0.10		1.17	1.25			0.01	1.26	0.01
Tripp	554.369	554.588	0.219	1,156	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.11			0.09		0.00		0.09	0.22		0.19			0.00
Tripp	554.588	554.649	0.061	323	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.06		0.00		0.06	0.06			0.00	0.06	0.00
Tripp	554.649	554.800	0.151	795	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.08			0.06		0.00		0.06	0.15		0.13			0.00
Tripp	554.800	554.934	0.134	710	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.12							0.13		0.12	0.12		
Tripp	554.934	555.024	0.090	474	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.05			0.04		0.00		0.04	0.09		0.08			0.00
Tripp	555.024	555.042	0.018	95	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.02							0.02		0.02	0.02		
Tripp	555.042	555.191	0.149	786	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.08			0.06		0.00		0.06	0.15		0.13			0.00
Tripp	555.191	555.320	0.130	685	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.12		0.01		0.12	0.13			0.00	0.13	0.00
Tripp	555.320	555.487	0.166	879	SD123	354465	Wn	Witten silty clay					0.16		0.01		0.16	0.17				0.17	0.00
Tripp	555.487	556.311	0.825	4,354	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.02	0.01		0.74		0.07		0.77	0.82			0.01	0.82	0.01
Tripp	556.311	556.659	0.348	1,838	SD123	354465	Wn	Witten silty clay					0.34		0.02		0.34	0.35				0.35	0.01
Tripp	556.659	556.985	0.326	1,721	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.32		0.02		0.32	0.33				0.33	0.01
Tripp	556.985	557.033	0.048	254	SD123	354465	Wn	Witten silty clay					0.05		0.00		0.05	0.05				0.05	0.00
Tripp	557.033	557.142	0.109	575	SD123	354391	Er	Erd clay					0.11		0.00	0.00	0.11	0.11					0.00
Tripp	557.142	557.348	0.206	1,088	SD123	354392	Es	Erd-Capa complex					0.15		0.06		0.20	0.20					0.00
Tripp	557.348	557.662	0.314	1,657	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.28		0.03		0.29	0.31			0.00	0.31	0.00
Tripp	557.662	557.721	0.058	309	SD123	354379	Cc	Carter silty clay loam		0.00			0.05		0.05		0.06	0.06					0.00
Tripp	557.721	557.875	0.154	814	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.14		0.01		0.14	0.15			0.00	0.15	0.00
Tripp	557.875	558.003	0.128	678	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.07			0.05		0.00		0.05	0.13		0.11			0.00
Tripp	558.003	558.300	0.297	1,570	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.29		0.02		0.29	0.30				0.30	0.01
Tripp	558.300	558.367	0.066	350	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.06		0.01		0.06	0.07			0.00	0.07	0.00
Tripp	558.367	558.460	0.093	492	SD123	354465	Wn	Witten silty clay					0.09		0.00		0.09	0.09				0.09	0.00
Tripp	558.460	558.649	0.189	996	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.19		0.01		0.19	0.19				0.19	0.00
Tripp	558.649	558.716	0.068	357	SD123	354465	Wn	Witten silty clay					0.07		0.00		0.07	0.07				0.07	0.00
Tripp	558.716	559.080	0.364	1,922	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.36		0.03		0.36	0.36				0.36	0.01
Tripp	559.080	559.229	0.148	784	SD123	354465	Wn	Witten silty clay					0.15		0.01		0.15	0.15				0.15	0.00
Tripp	559.229	560.120	0.891	4,704	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.88		0.06		0.88	0.89				0.89	0.02
Tripp	560.120	560.250	0.131	689	SD123	354392	Es	Erd-Capa complex					0.10		0.04		0.13	0.13					0.00
Tripp	560.250	560.341	0.091	481	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.09		0.01		0.09	0.09				0.09	0.00
Tripp	560.341	560.441	0.099	525	SD123	354392	Es	Erd-Capa complex					0.07		0.03		0.10	0.10					0.00
Tripp	560.441	560.938	0.497	2,627	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.49		0.03		0.49	0.50				0.50	0.01
Tripp	560.938	561.033	0.094	498	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.08		0.01		0.09	0.09			0.00	0.09	0.00
Tripp	561.033	561.213	0.180	950	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.01	0.00		0.15		0.00		0.15	0.18		0.17	0.00	0.18	
Tripp	561.213	561.424	0.211	1,115	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.18	0.01		0.01				0.01	0.20		0.20	0.01		0.00
Tripp	561.424	561.628	0.205	1,080	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.10			0.08		0.00		0.08	0.20		0.18			0.00
Tripp	561.628	561.970	0.342	1,804	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.02	0.01		0.29		0.01		0.29	0.33		0.31	0.01	0.34	
Tripp	561.970	562.041	0.071	375	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.04			0.03		0.00		0.03	0.07		0.06			0.00
Tripp	562.041	562.503	0.462	2,442	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.03	0.01		0.39		0.01		0.40	0.45		0.43	0.01	0.46	
Tripp	562.503	562.624	0.121	637	SD123	354465	Wn	Witten silty clay					0.12		0.01		0.12	0.12				0.12	0.00
Tripp	562.624	562.833	0.209	1,103	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.19		0.02		0.19	0.21			0.00	0.21	0.00
Tripp	562.833	563.021	0.188	995	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.19		0.01		0.19	0.19				0.19	0.00
Tripp	563.021	563.105	0.084	443	SD123	354465	Wn	Witten silty clay					0.08		0.00		0.08	0.08				0.08	0.00
Tripp	563.105	563.260	0.155	818	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.15		0.01		0.15	0.15				0.15	0.00
Tripp	563.260	563.483	0.223	1,176	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.11			0.09		0.00		0.09	0.22		0.20			0.00
Tripp	563.483	563.537	0.054	286	SD123	354467	W	Water															
Tripp	563.537	563.649	0.112	592	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.06			0.04		0.00		0.04	0.11		0.10			0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	563.649	563.778	0.129	682	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.11	0.01		0.01				0.01	0.12		0.12	0.01		0.00
Tripp	563.778	563.879	0.101	531	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.09							0.09		0.09	0.09		
Tripp	563.879	563.954	0.075	395	SD123	354377	CaB	Canning loam, 2 to 5 percent slopes			0.07							0.07			0.07	0.07	0.00
Tripp	563.954	563.962	0.008	44	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.01							0.01		0.01	0.01		
Tripp	563.962	563.983	0.021	110	SD123	354377	CaB	Canning loam, 2 to 5 percent slopes			0.02							0.02			0.02	0.02	0.00
Tripp	563.983	564.051	0.068	361	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.06							0.06		0.06	0.06		
Tripp	564.051	564.303	0.252	1,328	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.21	0.01		0.02				0.02	0.24		0.24	0.01		0.00
Tripp	564.303	564.535	0.232	1,224	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.12			0.09		0.00		0.09	0.23		0.21			0.00
Tripp	564.535	564.567	0.033	172	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.03	0.00		0.00				0.00	0.03		0.03	0.00		0.00
Tripp	564.567	564.619	0.051	271	SD123	354378	CbD	Canning-Murdo loams, 6 to 15 percent slopes			0.04							0.05		0.04	0.04		
Tripp	564.619	564.759	0.140	741	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.12	0.01		0.01				0.01	0.13		0.13	0.01		0.00
Tripp	564.759	564.858	0.099	520	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.05			0.04		0.00		0.04	0.10		0.09			0.00
Tripp	564.858	565.049	0.191	1,009	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.17		0.02		0.18	0.19			0.00	0.19	0.00
Tripp	565.049	565.299	0.250	1,322	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.13			0.10		0.00		0.10	0.25		0.22			0.01
Tripp	565.299	565.395	0.096	506	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.09		0.01		0.09	0.09			0.00	0.10	0.00
Tripp	565.395	565.452	0.058	305	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.06		0.00		0.06	0.06				0.06	0.00
Tripp	565.452	565.554	0.101	533	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.09		0.01		0.09	0.10			0.00	0.10	0.00
Tripp	565.554	565.623	0.070	368	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.04			0.03		0.00		0.03	0.07		0.06			0.00
Tripp	565.623	565.721	0.098	517	SD123	354400	Ic	Inavale complex, channeled			0.08							0.01	0.08				0.00
Tripp	565.721	566.083	0.362	1,913	SD123	354375	Bp	Bridgeport complex			0.01		0.10		0.05	0.00	0.10	0.35				0.36	
Tripp	566.083	566.108	0.025	132	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.00	0.02		0.00		0.00	0.00	0.00	0.00				0.03	0.00
Tripp	566.108	566.245	0.136	720	SD123	354375	Bp	Bridgeport complex			0.00		0.04		0.02	0.00	0.04	0.13				0.14	
Tripp	566.245	566.534	0.289	1,526	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.01	0.19		0.01		0.01	0.01	0.01	0.01				0.29	0.01
Tripp	566.534	566.659	0.126	663	SD123	354375	Bp	Bridgeport complex			0.00		0.04		0.02	0.00	0.04	0.12				0.13	
Tripp	566.659	566.965	0.305	1,612	SD123	354465	Wn	Witten silty clay					0.30		0.02		0.30	0.31				0.31	0.01
Tripp	566.965	567.171	0.206	1,089	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.20		0.01		0.20	0.21				0.21	0.00
Tripp	567.171	567.255	0.084	445	SD123	354465	Wn	Witten silty clay					0.08		0.00		0.08	0.08				0.08	0.00
Tripp	567.255	567.418	0.163	859	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.16		0.01		0.16	0.16				0.16	0.00
Tripp	567.418	567.689	0.271	1,433	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.01	0.00		0.24		0.02		0.25	0.27			0.00	0.27	0.00
Tripp	567.689	567.847	0.157	831	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					0.16		0.01		0.16	0.16				0.16	0.00
Tripp	567.847	567.860	0.013	68	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.01		0.00		0.01	0.01			0.00	0.01	0.00
Tripp	567.860	567.930	0.071	372	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.04			0.03		0.00		0.03	0.07		0.06			0.00
Tripp	567.930	568.619	0.689	3,639	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.59	0.03		0.04				0.04	0.66		0.65	0.03		0.01
Tripp	568.619	568.894	0.274	1,448	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.01	0.01		0.01		0.01		0.01	0.27		0.25	0.01	0.27	0.01
Tripp	568.894	568.913	0.020	104	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.00	0.00		0.02		0.00		0.02	0.02		0.02	0.00	0.02	
Tripp	568.913	569.279	0.365	1,929	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.01	0.01		0.01		0.01		0.01	0.37		0.33	0.01	0.37	0.01
Tripp	569.279	569.361	0.082	433	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.04			0.03		0.00		0.03	0.08		0.07			0.00
Tripp	569.361	569.546	0.185	975	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.01	0.01		0.01		0.01		0.01	0.18		0.17	0.01	0.18	0.01
Tripp	569.546	569.647	0.101	534	SD123	354435	RaD	Ree loam, 9 to 15 percent slopes		0.01	0.01	0.01						0.09		0.10	0.01		0.00
Tripp	569.647	569.801	0.154	815	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.00	0.00		0.00		0.00		0.00	0.15		0.14	0.00	0.15	0.01
Tripp	569.801	569.944	0.143	753	SD123	354428	PrC	Promise clay, 6 to 9 percent slopes		0.00			0.13		0.00		0.14	0.14		0.14			0.00
Tripp	569.944	570.016	0.073	384	SD123	354414	MoC	Millboro silty clay, 6 to 9 percent slopes		0.00	0.00		0.06		0.00		0.06	0.07		0.07	0.00	0.07	
Tripp	570.016	570.101	0.084	446	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.00	0.03	0.07	0.00							0.01	0.07	0.02		
Tripp	570.101	570.518	0.418	2,205	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.01	0.01		0.01		0.01		0.01	0.42		0.38	0.01	0.42	0.02
Tripp	570.518	570.641	0.123	647	SD123	354409	MaB	Manter fine sandy loam, 3 to 9 percent slopes		0.01	0.12							0.00	0.00		0.00	0.12	0.00
Tripp	570.641	570.732	0.092	483	SD123	354408	MaA	Manter fine sandy loam, 0 to 3 percent slopes			0.09							0.00			0.00	0.09	0.00
Tripp	570.732	570.882	0.150	792	SD123	354409	MaB	Manter fine sandy loam, 3 to 9 percent slopes		0.01	0.14							0.00	0.00		0.00	0.15	0.00
Tripp	570.882	571.093	0.211	1,112	SD123	354365	AbB	Anselmo fine sandy loam, 3 to 6 percent slopes		0.01	0.21								0.01			0.21	0.00
Tripp	571.093	571.197	0.104	548	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.01	0.07		0.00		0.00	0.00	0.00	0.00				0.10	0.00
Tripp	571.197	571.326	0.129	680	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.12		0.00		0.00	0.00	0.00	0.00	0.12		0.00		
Tripp	571.326	571.329	0.003	16	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.00								0.00				0.00
Tripp	571.329	571.390	0.062	325	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.06		0.00		0.00	0.00	0.00	0.00	0.06		0.00		
Tripp	571.390	571.439	0.049	259	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.05								0.05				0.00
Tripp	571.439	571.609	0.170	895	SD123	354364	AaB2	Anselmo loamy fine sand, 0 to 9 percent slopes, eroded			0.15								0.15				0.00
Tripp	571.609	572.182	0.573	3,025	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.01	0.02	0.56								0.54		0.02		0.01
Tripp	572.182	572.241	0.060	316	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.03			0.00	0.00	0.00	0.00	0.00	0.03				0.00
Tripp	572.241	572.354	0.113	596	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.11								0.11		0.00		0.00
Tripp	572.354	572.542	0.187	989	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.10			0.00	0.00	0.00	0.00	0.01	0.10				0.01
Tripp	572.542	572.657	0.116	611	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		0.06			0.05		0.00		0.05	0.12		0.10			0.00
Tripp	572.657	573.083	0.426	2,248	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.38	0.02		0.00		0.00	0.00	0.00	0.39			0.00		0.00
Tripp	573.083	573.238	0.155	820	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.15								0.15		0.00		0.00
Tripp	573.238	573.837	0.599	3,161	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.01	0.32			0.01	0.01	0.01	0.01	0.02	0.32				0.02
Tripp	573.837	573.935	0.098	518	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.10								0.10		0.00		0.00
Tripp	573.935	574.070	0.135	713	SD123	354389	Em	Elsmere fine sandy loam			0.01			0.01	0.01	0.01	0.01	0.01	0.01			0.13	0.01

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	574.070	574.175	0.105	555	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.10								0.10		0.00		0.00
Tripp	574.175	574.244	0.069	365	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.07								0.07		0.00		0.00
Tripp	574.244	574.315	0.071	374	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.04			0.00	0.00	0.00	0.00	0.00	0.04				0.00
Tripp	574.315	574.387	0.071	376	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.07								0.07		0.00		0.00
Tripp	574.387	574.547	0.160	847	SD123	354389	Em	Elsmere fine sandy loam			0.01			0.01	0.01	0.01	0.01	0.01	0.01			0.16	0.01
Tripp	574.547	574.613	0.066	349	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.06								0.06		0.00		0.00
Tripp	574.613	574.686	0.073	383	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.04			0.00	0.00	0.00	0.00	0.00	0.04				0.00
Tripp	574.686	575.191	0.505	2,668	SD123	354455	VnD	Valentine-Longpine complex, 6 to 15 percent slopes	0.01	0.11	0.50								0.39		0.11		
Tripp	575.191	575.195	0.004	22	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.00								0.00		0.00		0.00
Tripp	575.195	575.748	0.553	2,921	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.01	0.01	0.54								0.54		0.01		0.01
Tripp	575.748	575.953	0.205	1,080	SD123	354441	RoB	Ronson-Longpine fine sandy loams, 0 to 6 percent slopes		0.16	0.10		0.00		0.00	0.00	0.00	0.00	0.01		0.07		0.00
Tripp	575.953	576.110	0.157	829	SD123	354455	VnD	Valentine-Longpine complex, 6 to 15 percent slopes	0.00	0.03	0.15								0.12		0.03		
Tripp	576.110	576.224	0.114	600	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.11								0.11		0.00		0.00
Tripp	576.224	576.406	0.182	962	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.10			0.00	0.00	0.00	0.00	0.01	0.10				0.01
Tripp	576.406	576.444	0.038	201	SD123	354389	Em	Elsmere fine sandy loam			0.00			0.00	0.00	0.00	0.00	0.00	0.00			0.04	0.00
Tripp	576.444	576.542	0.098	519	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.05			0.00	0.00	0.00	0.00	0.00	0.05				0.00
Tripp	576.542	576.619	0.077	406	SD123	354389	Em	Elsmere fine sandy loam			0.00			0.00	0.00	0.00	0.00	0.00	0.00			0.08	0.00
Tripp	576.619	576.778	0.159	837	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.08			0.00	0.00	0.00	0.00	0.00	0.08				0.00
Tripp	576.778	576.882	0.104	549	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.10								0.10		0.00		0.00
Tripp	576.882	577.017	0.135	712	SD123	354440	RfA	Ronson fine sandy loam, 0 to 4 percent slopes		0.12	0.01		0.00		0.00	0.00	0.00	0.00	0.00		0.00		
Tripp	577.017	577.194	0.177	937	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.08	0.17										0.01	0.18	0.00
Tripp	577.194	577.287	0.092	488	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.09		0.00		0.00	0.00	0.00	0.00	0.09		0.00		
Tripp	577.287	577.375	0.089	469	SD123	354365	AbB	Anselmo fine sandy loam, 3 to 6 percent slopes		0.00	0.09								0.00			0.09	0.00
Tripp	577.375	577.592	0.217	1,146	SD123	354389	Em	Elsmere fine sandy loam			0.01			0.01	0.01	0.01	0.01	0.01	0.01			0.22	0.01
Tripp	577.592	577.634	0.041	218	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.04		0.00		0.00	0.00	0.00	0.00	0.04		0.00		
Tripp	577.634	577.874	0.240	1,267	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.11	0.23										0.01	0.24	0.00
Tripp	577.874	577.917	0.043	228	SD123	354456	Vt	Vetal fine sandy loam			0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.04	0.00
Tripp	577.917	578.044	0.127	673	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.12		0.00		0.00	0.00	0.00	0.00	0.12		0.00		
Tripp	578.044	578.114	0.070	367	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.07								0.07		0.00		0.00
Tripp	578.114	578.366	0.253	1,335	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.11	0.24										0.01	0.25	0.00
Tripp	578.366	578.417	0.050	265	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.03	0.05										0.00		0.00
Tripp	578.417	578.791	0.375	1,979	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.36								0.36		0.00		0.00
Tripp	578.791	578.884	0.093	489	SD123	354463	Wh	Whitelake fine sandy loam			0.01		0.00	0.08	0.08	0.08	0.08	0.08	0.00				0.00
Tripp	578.884	579.007	0.122	646	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.12		0.00		0.00	0.00	0.00	0.00	0.11		0.00		
Tripp	579.007	579.189	0.182	963	SD123	354463	Wh	Whitelake fine sandy loam			0.01		0.00	0.16	0.17	0.17	0.17	0.17	0.01				0.00
Tripp	579.189	579.335	0.146	768	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.14		0.00		0.00	0.00	0.00	0.00	0.13		0.00		
Tripp	579.335	579.403	0.069	364	SD123	354464	Wk	Whitelake-Lute fine sandy loams			0.01		0.02	0.03	0.06	0.06	0.06	0.06	0.01				0.00
Tripp	579.403	579.776	0.372	1,964	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.24	0.35										0.01		0.00
Tripp	579.776	579.993	0.217	1,146	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.20	0.01		0.00		0.00	0.00	0.00	0.20			0.00		0.00
Tripp	579.993	580.051	0.058	307	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.00	0.04		0.00		0.00	0.00	0.00	0.00				0.06	0.00
Tripp	580.051	580.294	0.243	1,284	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.22	0.01		0.00		0.00	0.00	0.00	0.22			0.00		0.00
Tripp	580.294	580.447	0.153	808	SD123	354461	WgA	Wewela fine sandy loam, 0 to 3 percent slopes		0.13	0.01		0.00	0.00	0.01	0.01	0.01	0.14					0.00
Tripp	580.447	580.479	0.032	166	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.03	0.00		0.00		0.00	0.00	0.00	0.03			0.00		0.00
Tripp	580.479	580.531	0.053	277	SD123	354452	TrF	Longpine-Rock outcrop complex, 15 to 40 percent slopes	0.02	0.04	0.03	0.05							0.00	0.05	0.04		
Tripp	580.531	580.642	0.111	586	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.11		0.00		0.00	0.00	0.00	0.00	0.10		0.00		
Tripp	580.642	580.828	0.186	983	SD123	354463	Wh	Whitelake fine sandy loam			0.01		0.00	0.17	0.17	0.17	0.17	0.17	0.01				0.00
Tripp	580.828	580.972	0.144	759	SD123	354464	Wk	Whitelake-Lute fine sandy loams			0.03		0.04	0.07	0.12	0.12	0.12	0.12	0.01				0.00
Tripp	580.972	581.009	0.037	194	SD123	354463	Wh	Whitelake fine sandy loam			0.00		0.00	0.03	0.03	0.03	0.03	0.03	0.00				0.00
Tripp	581.009	581.035	0.026	139	SD123	354464	Wk	Whitelake-Lute fine sandy loams			0.01		0.01	0.01	0.02	0.02	0.02	0.02	0.00				0.00
Tripp	581.035	581.237	0.202	1,067	SD123	354463	Wh	Whitelake fine sandy loam			0.01		0.00	0.18	0.18	0.18	0.18	0.18	0.01				0.00
Tripp	581.237	581.330	0.093	491	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.09		0.00		0.00	0.00	0.00	0.00	0.09		0.00		
Tripp	581.330	581.476	0.145	768	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.14								0.14				0.00
Tripp	581.476	581.853	0.378	1,994	SD123	354455	VnD	Valentine-Longpine complex, 6 to 15 percent slopes	0.01	0.08	0.37								0.29		0.08		
Tripp	581.853	581.938	0.084	446	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.08		0.00		0.00	0.00	0.00	0.00	0.08		0.00		
Tripp	581.938	581.982	0.045	236	SD123	354455	VnD	Valentine-Longpine complex, 6 to 15 percent slopes	0.00	0.01	0.04								0.03		0.01		
Tripp	581.982	582.097	0.114	602	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.11		0.00		0.00	0.00	0.00	0.00	0.10		0.00		
Tripp	582.097	582.215	0.119	627	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.12								0.12		0.00		0.00
Tripp	582.215	582.267	0.052	272	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.03			0.00	0.00	0.00	0.00	0.00	0.03				0.00
Tripp	582.267	582.389	0.122	645	SD123	354455	VnD	Valentine-Longpine complex, 6 to 15 percent slopes	0.00	0.03	0.12								0.10		0.03		
Tripp	582.389	582.600	0.211	1,113	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.01	0.21								0.20		0.01		0.00
Tripp	582.600	582.644	0.044	234	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.04								0.04		0.00		0.00
Tripp	582.644	582.681	0.037	196	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.02			0.00	0.00	0.00	0.00	0.00	0.02				0.00
Tripp	582.681	582.764	0.083	438	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.08								0.08		0.00		0.00
Tripp	582.764	582.852	0.088	464	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.05			0.00	0.00	0.00	0.00	0.00	0.05				0.00

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	582.852	582.960	0.108	570	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.10								0.10		0.00		0.00
Tripp	582.960	583.013	0.054	283	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.05								0.05		0.00		0.00
Tripp	583.013	583.032	0.019	98	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.02		0.00		0.00	0.00	0.00	0.00	0.02		0.00		
Tripp	583.032	583.108	0.076	399	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.07								0.07		0.00		0.00
Tripp	583.108	583.281	0.173	914	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.16		0.00		0.00	0.00	0.00	0.00	0.16		0.00		
Tripp	583.281	583.357	0.077	404	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.00	0.00	0.07								0.07		0.00		0.00
Tripp	583.357	583.564	0.207	1,093	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.20								0.20		0.00		0.00
Tripp	583.564	583.646	0.082	431	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.04			0.00	0.00	0.00	0.00	0.00	0.04				0.00
Tripp	583.646	583.850	0.204	1,079	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.19								0.19				0.00
Tripp	583.850	583.894	0.044	232	SD123	354440	RfA	Ronson fine sandy loam, 0 to 4 percent slopes		0.04	0.00		0.00		0.00	0.00	0.00	0.00	0.00		0.00		
Tripp	583.894	583.898	0.003	18	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.00								0.00				0.00
Tripp	583.898	584.292	0.394	2,080	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.37		0.00		0.00	0.00	0.00	0.00	0.36		0.00		
Tripp	584.292	584.411	0.119	630	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.06			0.00	0.00	0.00	0.00	0.00	0.06				0.00
Tripp	584.411	584.675	0.264	1,396	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.26								0.26		0.00		0.00
Tripp	584.675	584.854	0.178	942	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.17		0.00		0.00	0.00	0.00	0.00	0.16		0.00		
Tripp	584.854	584.942	0.089	469	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.06	0.08										0.00		0.00
Tripp	584.942	585.017	0.074	392	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.07								0.07				0.00
Tripp	585.017	585.305	0.289	1,524	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.26	0.01		0.00		0.00	0.00	0.00	0.26			0.00		0.00
Tripp	585.305	585.308	0.002	13	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00		0.00		
Tripp	585.308	585.409	0.101	535	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.05	0.10										0.01	0.10	0.00
Tripp	585.409	585.410	0.002	8	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00		0.00		
Tripp	585.410	585.543	0.133	700	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.06	0.13										0.01	0.13	0.00
Tripp	585.543	585.646	0.103	545	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.10		0.00		0.00	0.00	0.00	0.00	0.09		0.00		
Tripp	585.646	585.715	0.069	365	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.04			0.00	0.00	0.00	0.00	0.00	0.04				0.00
Tripp	585.715	585.853	0.137	725	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.13								0.13				0.00
Tripp	585.853	585.937	0.084	445	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.08								0.08		0.00		0.00
Tripp	585.937	586.175	0.239	1,260	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.23								0.23				0.00
Tripp	586.175	586.380	0.205	1,080	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.19		0.00		0.00	0.00	0.00	0.00	0.19		0.00		
Tripp	586.380	586.633	0.253	1,337	SD123	354388	DuC	Dunday-Doger loamy fine sands, 3 to 9 percent slopes			0.24								0.24				0.00
Tripp	586.633	587.126	0.492	2,600	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.47		0.00		0.00	0.00	0.00	0.00	0.45		0.00		
Tripp	587.126	587.618	0.492	2,599	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.22	0.47										0.02	0.49	0.00
Tripp	587.618	587.717	0.099	524	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.06	0.09										0.00		0.00
Tripp	587.717	588.197	0.480	2,534	SD123	354368	AhC	Anselmo-Holt fine sandy loams, 3 to 9 percent slopes		0.22	0.46										0.02	0.48	0.00
Tripp	588.197	588.215	0.018	95	SD123	354385	DgB	Doger loamy fine sand, 0 to 6 percent slopes	0.00	0.00	0.02		0.00		0.00	0.00	0.00	0.00	0.02		0.00		
Tripp	588.215	588.331	0.115	609	SD123	354386	DmA	Doger-Elsmere complex, 0 to 3 percent slopes		0.00	0.06			0.00	0.00	0.00	0.00	0.00	0.06				0.00
Tripp	588.331	588.418	0.087	460	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.00	0.00	0.08								0.08		0.00		0.00
Tripp	588.418	588.626	0.208	1,100	SD123	354441	RoB	Ronson-Longpine fine sandy loams, 0 to 6 percent slopes		0.17	0.10		0.00		0.00	0.00	0.00	0.00	0.01		0.07		0.00
Tripp	588.626	588.750	0.124	655	SD123	354440	RfA	Ronson fine sandy loam, 0 to 4 percent slopes		0.11	0.01		0.00		0.00	0.00	0.00	0.00	0.00		0.00		
Tripp	588.750	588.789	0.039	207	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.00	0.01	0.03	0.00							0.00	0.03	0.01		
Tripp	588.789	589.051	0.262	1,383	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.03	0.23	0.24						0.03		0.26	0.02		0.01
Tripp	589.051	589.176	0.125	662	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.01	0.04	0.11	0.01							0.01	0.10	0.03		
Tripp	589.176	589.240	0.063	335	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.04	0.06										0.00		0.00
Tripp	589.240	589.336	0.096	509	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.00	0.03	0.08	0.00							0.01	0.08	0.02		
Tripp	589.336	589.458	0.122	644	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.08	0.11										0.00		0.00
Tripp	589.458	589.554	0.096	506	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.00	0.03	0.08	0.00							0.01	0.08	0.02		
Tripp	589.554	590.019	0.464	2,452	SD123	354409	MaB	Manter fine sandy loam, 3 to 9 percent slopes		0.02	0.44							0.00	0.01		0.00	0.46	0.00
Tripp	590.019	590.189	0.171	902	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.01	0.05	0.14	0.01							0.02	0.13	0.04		
Tripp	590.189	590.334	0.144	762	SD123	354409	MaB	Manter fine sandy loam, 3 to 9 percent slopes		0.01	0.14							0.00	0.00		0.00	0.14	0.00
Tripp	590.334	590.495	0.161	851	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.14	0.01		0.00		0.00	0.00	0.00	0.15			0.00		0.00
Tripp	590.495	590.561	0.066	349	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.01	0.06	0.06						0.01		0.06	0.01		0.00
Tripp	590.561	590.756	0.195	1,031	SD123	354409	MaB	Manter fine sandy loam, 3 to 9 percent slopes		0.01	0.18							0.00	0.01		0.00	0.20	0.00
Tripp	590.756	590.867	0.110	582	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.01	0.10	0.10						0.01		0.11	0.01		0.00
Tripp	590.867	590.922	0.055	291	SD123	354458	Wb	Wann fine sandy loam		0.00	0.00			0.00		0.00	0.00	0.05	0.00			0.06	0.00
Tripp	590.922	591.106	0.185	975	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		0.17	0.01		0.00		0.00	0.00	0.00	0.17			0.00		0.00
Tripp	591.106	591.180	0.074	390	SD123	354373	BnC	Boyd clay, 5 to 9 percent slopes		0.06	0.00		0.00				0.00	0.07		0.07			0.00
Tripp	591.180	591.222	0.042	223	SD123	354458	Wb	Wann fine sandy loam		0.00	0.00			0.00			0.00	0.04	0.00			0.04	0.00
Tripp	591.222	591.487	0.264	1,396	SD123	354373	BnC	Boyd clay, 5 to 9 percent slopes		0.23	0.01		0.01				0.01	0.26		0.25			0.01
Tripp	591.487	591.541	0.054	283	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.01	0.05	0.05						0.01		0.05	0.00		0.00
Tripp	591.541	591.728	0.188	990	SD123	354408	MaA	Manter fine sandy loam, 0 to 3 percent slopes			0.18							0.00			0.01	0.19	0.00
Tripp	591.728	591.847	0.119	629	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.02	0.10	0.11						0.01		0.12	0.01		0.00
Tripp	591.847	592.307	0.459	2,426	SD123	354374	BOD	Boyd-Okaton association, 9 to 25 percent slopes		0.39	0.03	0.39	0.00				0.00	0.43		0.42			0.00
Tripp	592.307	592.712	0.406	2,142	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.02	0.12	0.34	0.02							0.04	0.32	0.10		
Tripp	592.712	592.731	0.019	98	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.00	0.02	0.02						0.00		0.02	0.00		0.00
Tripp	592.731	592.799	0.068	359	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.00	0.02	0.06	0.00							0.01	0.05	0.02		

County	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	MapunR Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Tripp	592.799	592.839	0.040	213	SD123	354452	TrF	Longpine-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.03	0.03	0.04							0.00	0.04	0.03		
Tripp	592.839	592.921	0.081	430	SD123	354374	BOD	Boyd-Okaton association, 9 to 25 percent slopes		0.07	0.01	0.07	0.00				0.00	0.08		0.07			0.00
Tripp	592.921	593.009	0.088	464	SD123	354452	TrF	Longpine-Rock outcrop complex, 15 to 40 percent slopes	0.03	0.07	0.06	0.08							0.00	0.08	0.07		
Tripp	593.009	593.113	0.104	550	SD123	354366	AbC	Anselmo fine sandy loam, 6 to 9 percent slopes		0.00	0.10								0.00	0.09		0.10	0.00
Tripp	593.113	593.227	0.114	605	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.01	0.10	0.11						0.01		0.11	0.01		0.00
Tripp	593.227	593.329	0.101	535	SD123	354366	AbC	Anselmo fine sandy loam, 6 to 9 percent slopes		0.00	0.10								0.00	0.09		0.10	0.00
Tripp	593.329	593.451	0.123	648	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.02	0.11	0.11						0.01		0.12	0.01		0.00
Tripp	593.451	593.490	0.039	206	SD123	354366	AbC	Anselmo fine sandy loam, 6 to 9 percent slopes		0.00	0.04								0.00	0.04		0.04	0.00
Tripp	593.490	593.646	0.156	823	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.02	0.14	0.14						0.02		0.15	0.01		0.00
Tripp	593.646	594.197	0.551	2,907	SD123	354369	AtD	Anselmo-Longpine fine sandy loams, 10 to 20 percent slopes	0.02	0.17	0.46	0.02							0.05	0.43	0.13		
Tripp	594.197	594.433	0.236	1,247	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.03	0.21	0.22						0.03		0.23	0.02		0.00
Tripp	594.433	594.533	0.101	531	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.01			0.00		0.00		0.00	0.10		0.00		0.10	0.00
Tripp	594.533	594.649	0.116	612	SD123	354408	MaA	Manter fine sandy loam, 0 to 3 percent slopes			0.11							0.00			0.01	0.12	0.00
Tripp	594.649	594.655	0.005	27	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.00			0.00		0.00		0.00	0.01		0.00		0.01	0.00
Tripp	594.655	594.679	0.024	127	SD123	354408	MaA	Manter fine sandy loam, 0 to 3 percent slopes			0.02							0.00			0.00	0.02	0.00
Tripp	594.679	594.715	0.037	195	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.00	0.03	0.03						0.00		0.04	0.00		0.00
Tripp	594.715	595.143	0.428	2,258	SD123	354374	BOD	Boyd-Okaton association, 9 to 25 percent slopes		0.36	0.03	0.36	0.00				0.00	0.40		0.39			0.00
Tripp	595.143	595.286	0.143	754	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.02	0.13	0.13						0.02		0.14	0.01		0.00
Tripp	595.286	595.511	0.225	1,188	SD123	354374	BOD	Boyd-Okaton association, 9 to 25 percent slopes		0.19	0.02	0.19	0.00				0.00	0.21		0.21			0.00
Tripp	595.511	595.588	0.078	409	SD123	354427	PrB	Promise clay, 3 to 6 percent slopes					0.08				0.08	0.08				0.08	0.00
Tripp	595.588	595.722	0.133	703	SD123	354376	Bt	Bridgeport complex, channeled			0.01		0.02		0.01		0.02	0.11	0.01				0.00
Tripp	595.722	595.860	0.138	730	SD123	354375	Bp	Bridgeport complex			0.00		0.04		0.02	0.00	0.04	0.14				0.14	
Tripp	595.860	595.923	0.063	332	SD123	354427	PrB	Promise clay, 3 to 6 percent slopes					0.06				0.06	0.06				0.06	0.00
Tripp	595.923	596.079	0.156	822	SD123	354384	DbD	Dix soils, 9 to 18 percent slopes			0.15									0.15	0.14		
Tripp	596.079	596.202	0.124	654	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.01	0.08		0.00		0.00	0.00	0.00	0.00				0.12	0.00
Tripp	596.202	596.232	0.029	156	SD123	354384	DbD	Dix soils, 9 to 18 percent slopes			0.03									0.03	0.03		
Tripp	596.232	596.490	0.258	1,364	SD123	354370	AvA	Anselmo-Vetal fine sandy loams, 0 to 3 percent slopes		0.01	0.17		0.01		0.01	0.01	0.01	0.01				0.26	0.01
Tripp	596.490	596.610	0.120	634	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.02	0.11	0.11						0.01		0.12	0.01		0.00
Tripp	596.610	596.645	0.035	186	SD123	354374	BOD	Boyd-Okaton association, 9 to 25 percent slopes		0.03	0.00	0.03	0.00				0.00	0.03		0.03			0.00

County	Route ID	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	CAR-041	0.000	0.066	0.066	348	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.07	0.02	0.01		0.01	0.02		0.03	0.02		0.01			
Harding	CAR-041	0.066	0.210	0.144	761	SD063	355743	GhB	Glendive-Archin fine sandy loams, 2 to 6 percent slopes		0.01	0.01		0.09		0.05		0.13	0.14	0.00				
Harding	CAR-041	0.210	0.440	0.230	1,213	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.23	0.06	0.02		0.02	0.08		0.10	0.08		0.02			
Harding	CAR-041	0.440	0.469	0.030	157	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.03		0.02			0.00		0.00	0.02		0.03	0.01		
Harding	CAR-041	0.469	0.509	0.039	207	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.04	0.01	0.00		0.00	0.01		0.02	0.01		0.00			
Harding	CAR-041	0.509	0.657	0.148	782	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.04	0.14		0.12			0.01		0.01	0.09		0.14	0.04		
Harding	CAR-041	0.657	1.477	0.820	4,331	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.82	0.43	0.03		0.03	0.67		0.71	0.76		0.12			
Harding	CAR-041	1.477	1.672	0.195	1,029	SD063	355757	Kg	Korchea loam, channeled					0.02		0.01		0.03	0.19					0.01
Harding	CAR-041	1.672	1.750	0.078	411	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.07		0.03	0.00		0.04		0.04	0.08		0.07			
Harding	CAR-041	1.750	1.842	0.093	490	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.01		0.01		0.07		0.08	0.09					
Harding	CAR-041	1.842	1.879	0.037	194	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.03		0.01	0.00		0.02		0.02	0.04		0.03			
Harding	CAR-041	1.879	2.084	0.205	1,081	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.03		0.02		0.15		0.18	0.19					
Harding	CAR-041	2.084	2.218	0.134	708	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.03	0.13		0.10			0.01		0.01	0.09		0.13	0.04		
Harding	CAR-041	2.218	2.281	0.063	333	SD063	355787	SaA	Sage loam					0.06		0.00		0.06	0.06					0.05
Harding	CAR-041	2.281	2.453	0.172	908	SD063	355818	ZaD	Zeona loamy fine sand, 9 to 25 percent slopes		0.03	0.16	0.15			0.02		0.02	0.02	0.15	0.17			
Harding	CAR-041	2.453	2.539	0.086	453	SD063	355742	Ge	Glendive fine sandy loam					0.08		0.01		0.09	0.09				0.09	0.00
Harding	CAR-041	2.539	2.664	0.125	661	SD063	355752	Hh	Havre-Harlake complex					0.11		0.01		0.12	0.12				0.13	0.01
Harding	CAR-043B	0.000	0.020	0.020	104	SD063	355770	MtD	Marmarth-Twilight fine sandy loams, 9 to 15 percent slopes		0.02	0.01	0.00		0.00	0.00		0.00	0.01		0.01			
Harding	CAR-043B	0.020	0.876	0.857	4,523	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.86	0.45	0.03		0.03	0.70		0.74	0.80		0.13			
Harding	CAR-043B	0.876	0.991	0.114	604	SD063	355769	MtC	Marmarth-Twilight fine sandy loams, 6 to 9 percent slopes		0.11	0.04	0.01		0.01	0.01		0.02	0.07		0.08		0.11	
Harding	CAR-043B	0.991	1.114	0.123	649	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.12	0.07	0.00		0.00	0.10		0.11	0.11		0.02			
Harding	CAR-043B	1.114	1.305	0.191	1,009	SD063	355769	MtC	Marmarth-Twilight fine sandy loams, 6 to 9 percent slopes		0.19	0.07	0.01		0.01	0.02		0.03	0.12		0.13		0.19	
Harding	CAR-043B	1.305	1.634	0.329	1,737	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.33	0.17	0.01		0.01	0.27		0.28	0.31		0.05			
Harding	CAR-043B	1.634	1.784	0.150	793	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.02		0.02		0.11		0.13	0.14					
Harding	CAR-043B	1.784	1.797	0.013	70	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		0.01		0.00	0.00		0.01		0.01	0.01		0.01			
Harding	CAR-044	0.000	0.323	0.323	1,708	SD063	355781	RmB	Rhame-Parchin fine sandy loams, 2 to 6 percent slopes		0.32	0.08	0.03		0.03	0.11		0.15	0.11		0.03			
Harding	CAR-045	0.000	0.243	0.243	1,285	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.24	0.07	0.01		0.01	0.07		0.08	0.21		0.03			
Harding	CAR-045	0.243	0.403	0.160	844	SD063	355767	McC	Marmarth-Cabbart complex, 6 to 9 percent slopes		0.15	0.02				0.01		0.01	0.14		0.14			
Harding	CAR-045	0.403	0.422	0.019	99	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.02	0.01	0.00		0.00	0.00		0.01	0.00		0.01			
Harding	CAR-045	0.422	0.496	0.074	390	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.06		0.06	0.07		0.01			
Harding	CAR-045	0.496	0.562	0.066	350	SD063	355769	MtC	Marmarth-Twilight fine sandy loams, 6 to 9 percent slopes		0.07	0.02	0.00		0.00	0.01		0.01	0.04		0.05		0.07	
Harding	CAR-045	0.562	0.669	0.106	562	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	CAR-045	0.669	0.847	0.178	942	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.16	0.07				0.14		0.14	0.16		0.01			
Harding	CAR-045	0.847	1.107	0.260	1,374	SD063	355712	AkA	Archin-Bullock fine sandy loams, 0 to 4 percent slopes			0.03		0.03		0.20		0.23	0.24					
Harding	CAR-045	1.107	1.250	0.143	753	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.14	0.08	0.01		0.01	0.12		0.12	0.13		0.02			
Harding	CAR-069	0.000	0.019	0.019	101	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.02	0.01	0.00		0.00	0.00		0.01	0.00		0.01			
Harding	CAR-069	0.019	0.076	0.057	302	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.06	0.02	0.00		0.00	0.02		0.02	0.05		0.01			
Harding	CAR-069	0.076	0.132	0.056	295	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.05	0.04	0.01		0.01	0.01		0.02	0.01		0.02			
Harding	CAR-069	0.132	0.441	0.308	1,628	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.31	0.16	0.01		0.01	0.25		0.27	0.29		0.05			
Harding	CAR-069	0.441	0.556	0.116	611	SD063	355768	MpB	Marmarth-Parchin fine sandy loams, 2 to 6 percent slopes		0.12	0.03	0.01		0.01	0.03		0.04	0.10		0.02			
Harding	CAR-069	0.556	0.657	0.101	534	SD063	355801	TtC	Trey-Fleak loamy fine sands, 2 to 15 percent slopes		0.10	0.09				0.02		0.02	0.02	0.08	0.02			
Harding	CAR-069	0.657	0.767	0.109	577	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	CAR-069	0.767	0.859	0.092	485	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.06	0.01	0.07			0.01		0.01	0.04		0.08	0.05		
Harding	CAR-069	0.859	0.883	0.024	127	SD063	355729	CeE	Cabbart-Rock outcrop complex, 15 to 40 percent slopes	0.01	0.02		0.02			0.00		0.00	0.02		0.02	0.01		
Harding	CAR-069	0.883	1.006	0.123	650	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.12	0.10	0.01		0.01	0.04		0.04	0.05		0.05			
Harding	CAR-069	1.006	1.027	0.021	111	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.00	0.01	0.00	0.02			0.00		0.00	0.01		0.02	0.01		
Harding	CAR-069	1.027	1.079	0.052	275	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.05	0.04	0.00		0.00	0.02		0.02	0.02		0.02			
Harding	CAR-069	1.079	1.155	0.076	402	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.05	0.01	0.06			0.01		0.01	0.03		0.07	0.04		
Harding	CAR-069	1.155	1.195	0.040	211	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.04	0.02	0.00		0.00	0.03		0.03	0.04		0.01			
Harding	CAR-069	1.195	1.256	0.061	322	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.01	0.04	0.01	0.05			0.01		0.01	0.02		0.05	0.03		
Harding	CAR-069	1.256	1.326	0.070	372	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.06		0.06	0.07		0.01			
Harding	CAR-069	1.326	1.388	0.062	326	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.01	0.04	0.01	0.05			0.01		0.01	0.02		0.06	0.03		
Harding	CAR-069	1.388	1.459	0.071	373	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.06		0.06	0.07		0.01			
Harding	CAR-069	1.459	1.633	0.175	922	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.03	0.12	0.02	0.13			0.02		0.02	0.07		0.16	0.09		
Harding	CAR-069	1.633	1.942	0.308	1,628	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.28	0.12				0.25		0.25	0.27		0.01			
Harding	CAR-069	1.942	1.965	0.023	123	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.00	0.02	0.00	0.02			0.00		0.00	0.01		0.02	0.01		
Harding	CAR-069	1.965	2.318	0.353	1,863	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.32	0.14				0.28		0.28	0.31		0.01			
Harding	CAR-090	0.000	0.395	0.395	2,085	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.39	0.21	0.02		0.02	0.32		0.34	0.37		0.06			
Harding	CAR-090	0.395	0.474	0.079	415	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.07	0.05	0.02		0.02	0.01		0.03	0.02		0.03			
Harding	CAR-090	0.474	0.514	0.041	216	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.01	0.03	0.00	0.03			0.00		0.00	0.02		0.04	0.02		
Harding	CAR-090	0.514	0.872	0.357	1,887	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		0.34	0.23	0.09		0.09	0.04		0.13	0.07		0.14			
Harding	CAR-090	0.872	0.967	0.095	502	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.07	0.01	0.07			0.01		0.01	0.04		0.09	0.05		
Harding	CAR-090	0.967	1.072	0.105	555	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.10	0.09	0.01		0.01	0.03		0.04	0.04		0.04			
Harding	CAR-090	1.072	1.173	0.101	535	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.02	0.07	0.01	0.08			0.01		0.01	0.04		0.09	0.05		
Harding	CAR-090	1.173	1.281	0.108	568	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.11	0.06	0.00		0.00	0.09		0.09	0.10		0.02			
Harding	CAR-090	1.281	1.429	0.148	782	SD063	355755	KcF	Kirby-Cabbart-Rock outcrop complex, 15 to 60 percent slopes	0.03	0.10	0.01	0.11			0.01		0.01	0.06		0.13	0.07		
Harding	CAR-090	1.429	1.608	0.179	947	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.16	0.07				0.14		0.14	0.16		0.01			
Harding	CAR-090	1.608	1.688	0.080	420	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.08	0.04	0.00		0.00	0.07		0.07	0.07		0.01			
Harding	CAR-090	1.688	1.810	0.122	644	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.11	0.05				0.10		0.10	0.11		0.00			

County	Route ID	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Harding	CAR-090	1.810	1.826	0.016	83	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.02	0.01	0.00		0.00	0.01		0.01	0.01		0.00			
Harding	CAR-090	1.826	1.881	0.056	293	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.05	0.02				0.04		0.04	0.05		0.00			
Harding	CAR-090	1.881	1.953	0.071	376	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.07	0.04	0.00		0.00	0.06		0.06	0.07		0.01			
Harding	CAR-090	1.953	2.325	0.372	1,965	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.34	0.15				0.30		0.30	0.33		0.01			
Harding	CAR-090	2.325	2.482	0.157	830	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.15	0.13	0.01		0.01	0.05		0.06	0.06		0.06			
Harding	CAR-090	2.482	2.486	0.004	22	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00			
Perkins	CAR-046A	0.000	0.390	0.390	2,060	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.39	0.12				0.37		0.37	0.39					
Perkins	CAR-047	0.000	0.109	0.109	576	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.11	0.07	0.00	0.00	0.00	0.03		0.04	0.06		0.03			0.00
Perkins	CAR-047	0.109	0.149	0.040	212	SD105	354615	BdB	Belfield-Marmarth complex, 0 to 6 percent slopes		0.02	0.00		0.00		0.03		0.03	0.04				0.04	0.00
Perkins	CAR-047	0.149	0.496	0.347	1,831	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.35	0.10				0.33		0.33	0.35					
Perkins	CAR-047	0.496	0.897	0.400	2,114	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.40	0.26	0.02	0.01	0.01	0.11		0.13	0.23		0.12			0.00
Perkins	CAR-047	0.897	1.277	0.380	2,006	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.38	0.11				0.36		0.36	0.38					
Perkins	CAR-047	1.277	1.386	0.110	579	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.11	0.07	0.00	0.00	0.00	0.03		0.04	0.06		0.03			0.00
Perkins	CAR-047	1.386	1.421	0.035	185	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.03	0.00	0.03		0.01	0.00		0.02	0.02		0.03			
Perkins	CAR-047	1.421	1.511	0.090	475	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.09	0.03				0.09		0.09	0.09					
Perkins	CAR-047	1.511	1.649	0.138	730	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.13	0.01	0.11		0.06	0.01		0.07	0.08		0.12			
Perkins	CAR-047	1.649	1.973	0.323	1,707	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.32	0.21	0.01	0.01	0.01	0.09		0.11	0.19		0.10			0.00
Perkins	CAR-047	1.973	2.104	0.131	694	SD105	354664	Ta	Trembles fine sandy loam			0.01		0.01				0.01		0.01			0.13	0.00
Perkins	CAR-047	2.104	2.269	0.165	873	SD105	354663	Sh	Lohler-Trembles complex			0.01		0.12				0.12	0.12	0.01		0.01	0.17	0.00
Perkins	CAR-047	2.269	2.891	0.622	3,283	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.59	0.03	0.50		0.25	0.06		0.31	0.34		0.53			
Perkins	CAR-047	2.891	3.073	0.182	961	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.18	0.01	0.01		0.01	0.15		0.16	0.17		0.02			
Perkins	CAR-047	3.073	3.221	0.148	780	SD105	354618	BhE	Blackhall-Cabbart complex, 15 to 40 percent slopes		0.14	0.01	0.12		0.06	0.01		0.07	0.08		0.13			
Perkins	CAR-048	0.000	0.042	0.042	223	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.04	0.03	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	CAR-048	0.042	0.141	0.099	524	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.10	0.00	0.01		0.00	0.08		0.09	0.09		0.01			
Perkins	CAR-048	0.141	0.579	0.438	2,311	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.44	0.13				0.42		0.42	0.44					
Perkins	CAR-048	0.579	0.659	0.080	422	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.08	0.00	0.01		0.00	0.07		0.07	0.07		0.01			
Perkins	CAR-048	0.659	0.711	0.052	276	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.05	0.02				0.05		0.05	0.05					
Perkins	CAR-048	0.711	1.090	0.379	1,999	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.38	0.01	0.03		0.02	0.32		0.34	0.35		0.05			
Perkins	CAR-048	1.090	1.313	0.223	1,176	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.22	0.07				0.21		0.21	0.22					
Perkins	CAR-048	1.313	1.360	0.047	249	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.05	0.00	0.00		0.00	0.04		0.04	0.04		0.01			
Perkins	CAR-048	1.360	1.661	0.301	1,588	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.30	0.09				0.29		0.29	0.30					
Perkins	CAR-048	1.661	2.215	0.554	2,926	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.55	0.02	0.04		0.02	0.47		0.49	0.52		0.07			
Perkins	CAR-048	2.215	2.269	0.054	284	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.05	0.02				0.05		0.05	0.05					
Perkins	CAR-048	2.269	2.339	0.071	372	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.07	0.00	0.01		0.00	0.06		0.06	0.07		0.01			
Perkins	CAR-048	2.339	2.661	0.322	1,702	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.32	0.10				0.31		0.31	0.32					
Perkins	CAR-048	2.661	2.740	0.079	415	SD105	354608	AbC	Bullock-Slickspots complex, 0 to 15 percent slopes		0.08	0.00	0.01		0.00	0.07		0.07	0.07		0.01			
Perkins	CAR-049A	0.000	0.144	0.144	761	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.14	0.09	0.01	0.00	0.00	0.04		0.05	0.08		0.04			0.00
Perkins	CAR-049A	0.144	0.328	0.183	968	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.18	0.05				0.17		0.17	0.18					
Perkins	CAR-049A	0.328	0.361	0.034	179	SD105	354666	TcD	Twilight-Marmarth-Parchin association, gently rolling		0.03	0.02	0.00	0.00	0.00	0.01		0.01	0.02		0.01			0.00
Perkins	CAR-049A	0.361	0.465	0.103	546	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.10	0.03				0.10		0.10	0.10					
Meade	CAR-077	0.179	1.071	0.893	4,714	SD601	355439	Gc	Glenberg fine sandy loam			0.07		0.06				0.06	0.06	0.07			0.89	
Meade	CAR-077	1.071	1.235	0.164	864	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.15		0.00		0.15	0.15	0.00			0.16	0.00
Meade	CAR-077	1.235	1.374	0.139	734	SD601	355446	KyB	Kyle clay, 2 to 6 percent slopes		0.01			0.01		0.13		0.14	0.14		0.01			0.00
Meade	CAR-078	0.000	0.041	0.041	219	SD601	355446	KyB	Kyle clay, 2 to 6 percent slopes		0.00			0.00		0.04		0.04	0.04		0.00			0.00
Meade	CAR-078	0.041	0.167	0.125	662	SD601	355451	Ld	Lohmiller silty clay loam			0.00		0.11		0.00		0.12	0.12	0.00			0.13	0.00
Meade	CAR-078	0.167	0.375	0.208	1,097	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.21				0.21	0.21					0.00
Meade	CAR-078	0.375	0.452	0.077	408	SD601	355457	PeB	Pierre clay, 2 to 6 percent slopes		0.08			0.00		0.00		0.01	0.08		0.00			
Meade	CAR-078	0.452	0.579	0.127	670	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.13				0.13	0.13					0.00
Meade	CAR-078	0.579	0.648	0.069	365	SD601	355445	KyA	Kyle clay, 0 to 2 percent slopes					0.01		0.06		0.07	0.07					0.00
Meade	CAR-078	0.648	0.718	0.070	370	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.07				0.07	0.07					0.00
Meade	CAR-078	0.718	1.382	0.664	3,505	SD601	355445	KyA	Kyle clay, 0 to 2 percent slopes					0.07		0.60		0.66	0.66					0.01
Meade	CAR-078	1.382	1.575	0.193	1,018	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.19				0.19	0.19					0.00
Meade	CAR-078	1.575	1.825	0.250	1,322	SD601	355451	Ld	Lohmiller silty clay loam			0.01		0.23		0.01		0.24	0.24	0.01			0.25	0.00
Meade	CAR-078	1.825	2.004	0.180	948	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.18				0.18	0.18					0.00
Meade	CAR-078	2.004	2.071	0.067	353	SD601	355446	KyB	Kyle clay, 2 to 6 percent slopes		0.00			0.01		0.06		0.07	0.07		0.00			0.00
Meade	CAR-078	2.071	2.601	0.530	2,798	SD601	355452	Lg	Lohmiller silty clay loam, channeled					0.53				0.53	0.53					0.01
Meade	CAR-078	2.601	2.694	0.092	488	SD601	355462	SaD	Samsil clay, 6 to 25 percent slopes		0.09		0.08	0.08		0.00		0.09	0.09		0.09	0.00		
Haakon	CAR-052A	0.000	0.061	0.061	323	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.00		0.00	0.06				0.08	0.00
Haakon	CAR-052A	0.061	0.260	0.199	1,049	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.02			0.02		0.02		0.02	0.20				0.20	0.00
Haakon	CAR-052A	0.260	0.745	0.486	2,564	SD055	354110	LbE	Lakoma-Vivian complex, 9 to 25 percent slopes		0.42	0.03	0.18						0.34		0.49	0.15		
Haakon	CAR-052A	0.745	0.780	0.034	180	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.00			0.00		0.00		0.00	0.03				0.03	0.00
Haakon	CAR-052A	0.780	0.882	0.102	540	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.10				0.10	0.01
Haakon	CAR-079	0.000	0.249	0.249	1,313	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.01		0.01		0.01	0.25				0.25	0.01
Haakon	CAR-079	0.249	0.513	0.265	1,398	SD055	354162	StF	Schamber-Samsil complex, 6 to 60 percent slopes		0.12	0.14	0.26	0.11				0.11	0.12		0.26	0.15		
Haakon	CAR-079	0.513	0.693	0.180	951	SD055	354155	SbF	Samsil clay, 25 to 60 percent slopes		0.17	0.01	0.17	0.17		0.01		0.17	0.17		0.17	0.01		
Haakon	CAR-079	0.693	0.815	0.122	642	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.11	0.00	0.12	0.05	0.00	0.00	0.00	0.05	0.11		0.12	0.01		
Lyman	CAR-080	0.000	0.174	0.174	919	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.01			0.16		0.01		0.17	0.17				0.17	0.01
Lyman	CAR-080	0.174	0.350	0.176	930	SD085	355578	LbD	Lakoma-Okaton silty clays, 6 to 15 percent slopes		0.16			0.03				0.03	0.18		0.17			0.00
Lyman	CAR-080	0.350	0.500	0.149	789	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.14		0.14	0.07		0.00		0.07	0.14		0.14	0.00		0.00

County	Route ID	From Milepost	To Milepost	Length (mi)	Length (ft)	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (mi)	All Shallow Restrictive Layers (mi)	Drought Prone (mi)	Steeply Sloping (mi)	Saline (mi)	Sodic (mi)	Saline-Sodic (mi)	Low or High pH (mi)	Low Revegetation Potential (mi)	Compaction Prone (mi)	Severe Wind Erodible (mi)	Severe Water Erodible (mi)	Stony or Rocky (mi)	Prime Farmland (mi)	Hydric (mi)
Lyman	CAR-080	0.500	0.581	0.081	430	SD085	355578	LbD	Lakoma-Okaton silty clays, 6 to 15 percent slopes		0.07			0.01				0.01	0.08		0.08			0.00
Lyman	CAR-080	0.581	0.640	0.058	308	SD085	355607	Pg	Pits, gravel			0.06	0.06	0.00				0.00	0.00		0.06	0.06		0.00
Lyman	CAR-080	0.640	1.032	0.393	2,075	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.38		0.37	0.18		0.01		0.18	0.38		0.38	0.01		0.00
Lyman	CAR-080	1.032	1.243	0.210	1,109	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.01			0.20		0.19		0.20	0.21					0.00
Lyman	CAR-080	1.243	1.288	0.046	241	SD085	355619	SbE	Sansarc-Opal clays, 9 to 40 percent slopes		0.04		0.04	0.02		0.00		0.02	0.04		0.04	0.00		0.00
Lyman	CAR-080	1.288	1.402	0.114	603	SD085	355563	BuA	Bullcreek clay, 0 to 6 percent slopes		0.01			0.11		0.10		0.11	0.11					0.00
Lyman	CAR-080	1.402	1.479	0.077	404	SD085	355608	PoA	Promise clay, 0 to 3 percent slopes		0.00			0.07		0.00		0.08	0.08				0.08	0.00
Lyman	CAR-080	1.479	1.504	0.025	133	SD085	355595	Mr	Munjor fine sandy loam			0.02		0.00				0.00	0.00	0.00			0.03	0.00
Lyman	CAR-080	1.504	1.658	0.154	814	SD085	355570	Hm	Hilmoe silty clay			0.01		0.14				0.14	0.15				0.15	0.00
Tripp	CAR-081	0.000	0.330	0.330	1,741	SD123	354432	RaA	Ree loam, 0 to 3 percent slopes					0.01		0.01		0.01	0.33				0.33	0.02
Tripp	CAR-081	0.330	0.399	0.070	367	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.07	0.07	0.00				0.00	0.01		0.07	0.07		0.00
Tripp	CAR-081	0.399	1.138	0.738	3,898	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.66	0.01	0.66	0.03				0.03	0.72		0.73	0.01		0.01
Tripp	CAR-081	1.138	1.443	0.306	1,614	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.28	0.02	0.29	0.01				0.01	0.28		0.30	0.02		
Tripp	CAR-081	1.443	1.692	0.249	1,313	SD123	354450	Sw	Bullcreek clay					0.25		0.22		0.25	0.25					0.00
Tripp	CAR-081	1.692	2.004	0.312	1,650	SD123	354445	SAE	Sansarc-Opal association, 15 to 40 percent slopes		0.28	0.02	0.30	0.01				0.01	0.29		0.30	0.02		
Tripp	CAR-081	2.004	2.099	0.095	499	SD123	354419	OBE	Okaton-Lakoma association, 15 to 40 percent slopes		0.09	0.00	0.09	0.00				0.00	0.09		0.09	0.00		0.00
Tripp	CAR-081	2.099	2.141	0.043	225	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.00	0.04	0.04	0.00				0.00	0.00		0.04	0.04		0.00
Tripp	CAR-082	0.000	0.045	0.045	237	SD123	354432	RaA	Ree loam, 0 to 3 percent slopes					0.00		0.00		0.00	0.04				0.04	0.00
Tripp	CAR-082	0.045	0.176	0.131	693	SD123	354459	WeE	Westover loam, 9 to 25 percent slopes		0.01	0.12	0.13	0.00				0.00	0.01		0.13	0.12		0.00
Tripp	CAR-082	0.176	0.233	0.057	303	SD123	354432	RaA	Ree loam, 0 to 3 percent slopes					0.00		0.00		0.00	0.06				0.06	0.00
Tripp	CAR-091	0.000	0.256	0.256	1,352	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.01	0.01		0.01		0.01		0.01	0.26		0.23	0.01	0.26	0.01
Tripp	CAR-091	0.256	0.579	0.323	1,703	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.27	0.01		0.02				0.02	0.31		0.31	0.01		0.00
Tripp	CAR-091	0.579	0.845	0.266	1,405	SD123	354433	RaB	Ree loam, 3 to 6 percent slopes		0.02			0.01		0.01		0.01	0.27		0.01		0.27	0.01
Tripp	CAR-091	0.845	0.923	0.078	411	SD123	354406	LoD	Lakoma-Okaton silty clays, 9 to 15 percent slopes		0.07	0.00		0.00				0.00	0.07		0.07	0.00		0.00

Facility Type	Facility ID	County	Facility Acres	Mapunit Acres	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (ac)	All Shallow Restictive Layers (ac)	Drought Prone (ac)	Steeply Sloping (ac)	Saline (ac)	Sodic (ac)	Saline-Sodic (ac)	Low or High pH (ac)	Low Revegetation Potential (ac)	Compaction Prone (ac)	Severe Wind Erodible (ac)	Severe Water Erodible (ac)	Stony or Rocky (ac)	Prime Farmland (ac)	Hydric (ac)
CC	Winner	Tripp	80.042	8.782	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		1.05			3.69				3.69	8.78		7.64		8.78	0.18
CC	Winner	Tripp	80.042	11.454	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					11.34		0.80		11.34	11.45				11.45	0.23
CC	Winner	Tripp	80.042	1.763	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					1.75		0.12		1.75	1.76				1.76	0.04
CC	Winner	Tripp	80.042	3.274	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					3.24		0.23		3.24	3.27				3.27	0.07
CC	Winner	Tripp	80.042	54.770	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		1.64	0.55		49.29		4.36		50.94	54.22			0.55	54.77	0.55
CY	BUFFALO	Harding	30.097	11.652	SD063	355783	RnB	Rhoades-Daglum loams, 2 to 9 percent slopes		11.30			6.41		10.25		10.25	11.30		10.60			
CY	BUFFALO	Harding	30.097	10.151	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		10.15	5.38	0.41		0.41	8.32		8.73	9.44		1.52			
CY	BUFFALO	Harding	30.097	0.570	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.09	0.55				0.05		0.05	0.05	0.51	0.05			
CY	BUFFALO	Harding	30.097	7.724	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		7.03	3.01				6.18		6.18	6.80		0.23			
CY	FAITH	Meade	30.348	9.365	SD601	355425	BoE	Bullock-Lardell-Blackhall fine sandy loams, 2 to 40 percent slopes		6.56		1.87		1.40	6.56	2.81	7.96	7.02		2.34	0.47		
CY	FAITH	Meade	30.348	8.248	SD601	355473	TwC	Twilight-Marmarth-Parchin fine sandy loams, 4 to 9 percent slopes		8.25	1.65			0.66	2.23		2.89	4.29		2.06			
CY	FAITH	Meade	30.348	12.736	SD601	355426	BpB	Bullock-Parchin fine sandy loams, 0 to 4 percent slopes		12.61	3.82		0.13		10.95		11.08	11.97					0.13
CY	PHILIP	Haakon	30.122	21.922	SD055	354103	KnD	Kirley-Vivian complex, 6 to 15 percent slopes		9.86		1.53						15.35		15.35	6.58		
CY	PHILIP	Haakon	30.122	7.306	SD055	354109	LaD	Lakoma silty clay, 6 to 15 percent slopes		6.50		0.29	0.22		0.29		0.51	7.31		6.79			0.22
CY	PHILIP	Haakon	30.122	0.895	SD055	354141	PkE	Pierre-Samsil clays, 15 to 25 percent slopes		0.83	0.04	0.87	0.38	0.03	0.03	0.03	0.38	0.83		0.87	0.06		
CY	MURDO	Jones	30.097	13.857	SD075	353664	OpC	Opal clay, 6 to 9 percent slopes		13.30		0.14	13.58		0.42		13.72	13.86		13.30			0.14
CY	MURDO	Jones	30.097	0.043	SD075	353663	OpB	Opal clay, 3 to 6 percent slopes		0.04			0.04		0.00		0.04	0.04				0.04	0.00
CY	MURDO	Jones	30.097	16.197	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					15.39		0.97		15.87	16.20				16.20	0.32
CY	FAIRFAX	Gregory	30.064	1.343	SD053	355285	ReA	Reliance silty clay loam, 0 to 3 percent slopes										1.34				1.34	0.09
CY	FAIRFAX	Gregory	30.064	2.209	SD053	355242	HoB	Holt fine sandy loam, 3 to 6 percent slopes		1.99	2.10							0.11		0.11		2.21	
CY	FAIRFAX	Gregory	30.064	8.590	SD053	355274	Ot	Onita silt loam, moist					0.26		0.26		0.26	8.59			0.26	8.59	0.17
CY	FAIRFAX	Gregory	30.064	0.443	SD053	355285	ReA	Reliance silty clay loam, 0 to 3 percent slopes										0.44				0.44	0.03
CY	FAIRFAX	Gregory	30.064	17.479	SD053	355286	ReB	Reliance silty clay loam, 3 to 6 percent slopes										17.48				17.48	0.87
MLV	MLV-15	Harding	0.028	0.028	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.01	0.00		0.00	0.02		0.02	0.03		0.00			
MLV	CK-MLV-16	Harding	0.028	0.028	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.01	0.00		0.00	0.02		0.02	0.03		0.00			
MLV	MLV-17	Perkins	0.028	0.028	SD105	354607	AaB	Bullock-Parchin loams, 0 to 9 percent slopes		0.03	0.01				0.03		0.03	0.03					
MLV	MLV-18	Meade	0.028	0.028	SD601	355469	TdB	Tanna-Delridge complex, 2 to 6 percent slopes		0.02			0.02				0.02	0.03		0.00		0.03	
MLV	CK-MLV-19	Haakon	0.028	0.028	SD055	354148	ReA	Ree loam, 0 to 2 percent slopes			0.03		0.00		0.00		0.00	0.03				0.03	0.00
MLV	MLV-20	Haakon	0.028	0.028	SD055	354108	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.03		0.00	0.00		0.00		0.00	0.03		0.03			0.00
MLV	MLV-21	Jones	0.028	0.028	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.00			0.03		0.03		0.03	0.03					
MLV	MLV-22	Lyman	0.028	0.028	SD085	355591	MmB	Millboro silty clay, 3 to 6 percent slopes		0.00			0.03		0.00		0.03	0.03				0.03	0.00
MLV	MLV-23	Tripp	0.028	0.028	SD123	354434	RaC	Ree loam, 6 to 9 percent slopes		0.00	0.00		0.00		0.00		0.00	0.03		0.02	0.00	0.03	0.00
PS	PS-15	Harding	7.419	2.595	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		2.36	1.01				2.08		2.08	2.28		0.08			
PS	PS-15	Harding	7.419	4.824	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		4.82	2.56	0.19		0.19	3.96		4.15	4.49		0.72			
PS	PS-15	Harding	7.419	0.000	SD063	355805	TyC	Twilight-Parchin fine sandy loams, 6 to 15 percent slopes		0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00			
PS	PS-16	Harding	5.007	2.090	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		2.09	1.11	0.08		0.08	1.71		1.80	1.94		0.31			
PS	PS-16	Harding	5.007	2.291	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		2.29	1.21	0.09		0.09	1.88		1.97	2.13		0.34			
PS	PS-16	Harding	5.007	0.625	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.57	0.24				0.50		0.50	0.55		0.02			
PS	PS-16	Harding	5.007	0.001	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.00	0.00				0.00		0.00	0.00		0.00			
PS	PS-17	Meade	5.007	1.524	SD601	355450	LcA	Loburn-Gerdrum loams, 0 to 3 percent slopes		0.11			0.91		1.34		1.34	1.52					
PS	PS-17	Meade	5.007	3.483	SD601	355434	EdB	Eapa-Delridge loams, 2 to 6 percent slopes		1.15			2.33				2.33	3.48		0.28		3.48	
PS	PS-18	Haakon	4.995	4.995	SD055	354134	OwB	Ottumwa-Lakoma silty clays, 3 to 6 percent slopes		1.50			0.10		0.20		0.20	4.99				4.99	0.05
PS	PS-19	Jones	6.508	6.193	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		5.57			0.62		0.31		0.62	5.88		5.26	0.31		0.31
PS	PS-19	Jones	6.508	0.029	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.03		0.00		0.03	0.03				0.03	0.00
PS	PS-19	Jones	6.508	0.286	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					0.27		0.02		0.28	0.29				0.29	0.01
PS	PS-20	Tripp	7.897	6.902	SD123	354405	LkC	Lakoma-Millboro silty clays, 5 to 9 percent slopes		3.52			2.69		0.07		2.76	6.90		6.14			0.14
PS	PS-20	Tripp	7.897	0.921	SD123	354427	PrB	Promise clay, 3 to 6 percent slopes					0.91				0.91	0.92				0.92	0.02
PS	PS-20	Tripp	7.897	0.074	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.00	0.00		0.07		0.01		0.07	0.07			0.00	0.07	0.00
PS	PS-21	Tripp	5.007	4.055	SD123	354408	MaA	Manter fine sandy loam, 0 to 3 percent slopes			3.85							0.04			0.20	4.06	0.08
PS	PS-21	Tripp	5.007	0.951	SD123	354410	MfE	Manter-Anselmo fine sandy loams, 15 to 30 percent slopes		0.12	0.84	0.88						0.10		0.93	0.08		0.02
PY	PY-10	Harding	29.992	13.305	SD063	355722	BoD	Bullock-Cabbart complex, 6 to 25 percent slopes		12.64		4.39	0.67		6.79		7.45	12.91		12.64			
PY	PY-10	Harding	29.992	6.783	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		6.78	3.59	0.27		0.27	5.56		5.83	6.31		1.02			
PY	PY-10	Harding	29.992	7.875	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		7.17	3.07				6.30		6.30	6.93		0.24			
PY	PY-10	Harding	29.992	2.028	SD063	355734	DcC	Delridge-Cabbart loams, 6 to 15 percent slopes		2.03	0.14				0.20		0.20	1.91		1.91			
PY	PY-11	Harding	29.992	0.033	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		0.03	0.02	0.00		0.00	0.03		0.03	0.03		0.00			
PY	PY-11	Harding	29.992	13.242	SD063	355803	TwC	Twilight fine sandy loam, 6 to 9 percent slopes		12.85	12.05	0.40		0.40	0.79		1.19	1.59		1.59			
PY	PY-11	Harding	29.992	1.139	SD063	355804	TxE	Twilight-Blackhall fine sandy loams, 9 to 25 percent slopes		1.08	0.74	0.28		0.28	0.11		0.40	0.23		0.46			
PY	PY-11	Harding	29.992	15.578	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		15.58	0.78	0.78		0.78	1.56		2.34	2.34		0.78		15.58	
PY	PY-12	Harding	29.992	0.006	SD063	355748	Hd	Hanly-Dogiecreek fine sandy loams		0.00			0.00		0.00		0.00	0.00					0.00
PY	PY-12	Harding	29.992	4.018	SD063	355730	ChA	Chinook fine sandy loam, 0 to 3 percent slopes			3.58		0.12		0.32		0.44	0.60			0.16	4.02	
PY	PY-12	Harding	29.992	1.740	SD063	355817	ZaB	Zeona loamy fine sand, 2 to 9 percent slopes		0.26	1.67				0.14		0.14	0.14	1.55	0.14			
PY	PY-12	Harding	29.992	5.101	SD063	355728	CdE	Cabbart-Delridge loams, 15 to 40 percent slopes		5.10	0.15	3.98			0.46		0.46	4.54		4.69	0.15		

Facility Type	Facility ID	County	Facility Acres	Mapunit Acres	Soil Series	Mapunit Key	Mapunit Symbol	Mapunit Name	Shallow Bedrock (ac)	All Shallow Restrictive Layers (ac)	Drought Prone (ac)	Steeply Sloping (ac)	Saline (ac)	Sodic (ac)	Saline-Sodic (ac)	Low or High pH (ac)	Low Revegetation Potential (ac)	Compaction Prone (ac)	Severe Wind Erodible (ac)	Severe Water Erodible (ac)	Stony or Rocky (ac)	Prime Farmland (ac)	Hydric (ac)
PY	PY-12	Harding	29.992	9.390	SD063	355780	RhB	Rhame fine sandy loam, 2 to 6 percent slopes		9.39	0.47	0.47		0.47	0.94		1.41	1.41		0.47		9.39	
PY	PY-12	Harding	29.992	6.502	SD063	355746	Ha	Hanly fine sandy loam					0.59		0.39		0.98	0.78					0.33
PY	PY-12	Harding	29.992	3.236	SD063	355749	He	Hanly-Slickspots complex		0.65	1.94		0.32		0.97		1.29	1.26	1.94				0.03
PY	PY-13	Meade	30.891	24.408	SD601	355436	EgB	Eapa-Grail complex, 2 to 6 percent slopes		4.88			21.97				21.97	24.41				24.41	
PY	PY-13	Meade	30.891	4.956	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.45			0.15		4.51		4.51	4.81					
PY	PY-13	Meade	30.891	0.056	SD601	355434	EdB	Eapa-Delridge loams, 2 to 6 percent slopes		0.02			0.04				0.04	0.06		0.00		0.06	
PY	PY-13	Meade	30.891	1.471	SD601	355456	PbB	Parchin-Bullock fine sandy loams, 2 to 6 percent slopes		1.47	0.88			0.07	1.25		1.32	1.32					
PY	PY-14	Meade	26.904	22.216	SD601	355431	EaA	Eapa loam, 0 to 2 percent slopes					22.22				22.22	22.22				22.22	0.22
PY	PY-14	Meade	26.904	4.377	SD601	355432	EaB	Eapa loam, 2 to 6 percent slopes		0.22			4.16				4.16	4.38				4.38	0.04
PY	PY-14	Meade	26.904	0.311	SD601	355432	EaB	Eapa loam, 2 to 6 percent slopes		0.02			0.30				0.30	0.31				0.31	0.00
PY	PY-15	Haakon	30.072	8.305	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.58		0.58	8.30				8.30	0.66
PY	PY-15	Haakon	30.072	1.179	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.12			0.11		0.11		0.11	1.18				1.18	0.01
PY	PY-15	Haakon	30.072	11.366	SD055	354133	OvA	Ottumwa-Capa complex, 0 to 3 percent slopes		0.34					3.98		3.98	11.37					0.34
PY	PY-15	Haakon	30.072	0.730	SD055	354083	CbA	Capa silt loam, 0 to 6 percent slopes		0.03			0.05		0.67		0.70	0.73					
PY	PY-15	Haakon	30.072	1.322	SD055	354094	KeA	Kirley clay loam, 0 to 2 percent slopes					0.07		0.07		0.07	1.32				1.32	0.07
PY	PY-15	Haakon	30.072	3.069	SD055	354095	KeB	Kirley clay loam, 2 to 6 percent slopes		0.15			0.12		0.12		0.12	3.07				3.07	0.03
PY	PY-15	Haakon	30.072	4.100	SD055	354101	KmB	Kirley-Ottumwa complex, 2 to 6 percent slopes		0.41			0.37		0.37		0.37	4.10				4.10	0.04
PY	PY-16	Haakon	30.421	24.272	SD055	354132	OtB	Ottumwa silty clay, 3 to 6 percent slopes		1.21					1.21		1.21	24.27				24.27	1.21
PY	PY-16	Haakon	30.421	4.172	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.29		0.29	4.17				4.17	0.33
PY	PY-16	Haakon	30.421	1.977	SD055	354131	OtA	Ottumwa silty clay, 0 to 3 percent slopes							0.14		0.14	1.98				1.98	0.16
PY	PY-17	Jones	30.062	2.838	SD075	353643	LaB	Lakoma silty clay, 3 to 6 percent slopes		2.70			0.09		0.11		0.14	2.84				2.84	0.03
PY	PY-17	Jones	30.062	0.894	SD075	353644	LaC	Lakoma silty clay, 6 to 9 percent slopes		0.80			0.06		0.07		0.10	0.89		0.80			0.03
PY	PY-17	Jones	30.062	0.302	SD075	353652	Mo	Mosher silt loam					0.27		0.28		0.28	0.30					0.01
PY	PY-17	Jones	30.062	3.160	SD075	353642	Kp	Kolls silty clay, ponded										3.16					3.16
PY	PY-17	Jones	30.062	4.648	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					4.42		0.28		4.55	4.65				4.65	0.09
PY	PY-17	Jones	30.062	0.308	SD075	353641	Ko	Kolls silty clay					0.02		0.01		0.02	0.31					0.29
PY	PY-17	Jones	30.062	10.233	SD075	353634	KeB	Kirley clay loam, 2 to 6 percent slopes					0.20		0.20		0.20	10.23				10.23	0.31
PY	PY-17	Jones	30.062	5.401	SD075	353635	KeC	Kirley clay loam, 6 to 9 percent slopes		0.54								5.13		5.13	0.27	5.40	
PY	PY-17	Jones	30.062	0.181	SD075	353645	LaD	Lakoma silty clay, 6 to 15 percent slopes		0.16			0.02		0.01		0.02	0.17		0.15	0.01		0.01
PY	PY-17	Jones	30.062	2.098	SD075	353633	KeA	Kirley clay loam, 0 to 2 percent slopes					0.04		0.04		0.04	2.10				2.10	0.06
PY	PY-18	Jones	29.992	10.971	SD075	353622	Bu	Bullcreek clay, 0 to 6 percent slopes		0.22			10.20		10.42		10.75	10.97					
PY	PY-18	Jones	29.992	19.021	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					18.07		1.14		18.64	19.02				19.02	0.38
PY	PY-19	Tripp	30.005	23.686	SD123	354413	MoB	Millboro silty clay, 3 to 6 percent slopes		0.71	0.24		21.32		1.89		22.03	23.45			0.24	23.69	0.24
PY	PY-19	Tripp	30.005	1.111	SD123	354372	BmC	Boro-Millboro silty clays, 5 to 9 percent slopes		0.13			0.47				0.47	1.11		0.97		1.11	0.02
PY	PY-19	Tripp	30.005	4.309	SD123	354412	MoA	Millboro silty clay, 0 to 3 percent slopes					4.27		0.30		4.27	4.31				4.31	0.09
PY	PY-19	Tripp	30.005	0.112	SD123	354465	Wn	Witten silty clay					0.11		0.01		0.11	0.11				0.11	0.00
PY	PY-19	Tripp	30.005	0.786	SD123	354379	Cc	Carter silty clay loam		0.04			0.74		0.67		0.78	0.79					0.02
PY	PY-20	Tripp	30.005	1.485	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.01	0.06	1.46								1.41		0.06		0.01
PY	PY-20	Tripp	30.005	1.371	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.88	1.29										0.05		0.01
PY	PY-20	Tripp	30.005	25.418	SD123	354387	DnC2	Dunday loamy fine sand, 3 to 9 percent slopes, eroded	0.25	0.25	24.66								24.66		0.25		0.25
PY	PY-20	Tripp	30.005	1.731	SD123	354454	VdC	Valentine-Dunday complex, 3 to 9 percent slopes	0.02	0.07	1.70								1.64		0.07		0.02
SA	SA-05	Harding	5.017	2.090	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		2.09	1.11	0.08		0.08	1.71		1.80	1.94		0.31			
SA	SA-05	Harding	5.017	0.925	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.84	0.36				0.74		0.74	0.81		0.03			
SA	SA-05	Harding	5.017	1.377	SD063	355772	PbB	Parchin-Bullock fine sandy loams, 2 to 9 percent slopes		1.38	0.73	0.06		0.06	1.13		1.18	1.28		0.21			
SA	SA-05	Harding	5.017	0.625	SD063	355723	BpB	Bullock-Parchin-Slickspots complex, 2 to 9 percent slopes		0.57	0.24				0.50		0.50	0.55		0.02			
SA	SA-06	Meade	5.013	1.115	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		1.12			1.00				1.00	1.12		1.12		1.12	
SA	SA-06	Meade	5.013	0.005	SD601	355430	DeC	Delridge-Cabbart loams, 6 to 15 percent slopes		0.00	0.00		0.00		0.00		0.00	0.00		0.00			
SA	SA-06	Meade	5.013	3.873	SD601	355438	GaA	Gerdrum loam, 0 to 4 percent slopes		0.35			0.12		3.52		3.52	3.76					
SA	SA-06	Meade	5.013	0.020	SD601	355416	AbC	Abor silty clay, 6 to 9 percent slopes		0.02			0.02				0.02	0.02		0.02		0.02	
SA	SA-07	Jones	4.986	3.220	SD075	353669	PrB	Promise clay, 3 to 6 percent slopes					3.06		0.19		3.16	3.22				3.22	0.06
SA	SA-07	Jones	4.986	1.766	SD075	353668	PrA	Promise clay, 0 to 3 percent slopes					1.68		0.11		1.73	1.77				1.77	0.04
SA	SA-08	Tripp	5.026	1.270	SD123	354395	HbA	Holt-Anselmo fine sandy loams, 0 to 3 percent slopes		0.81	1.19										0.05		0.01
SA	SA-08	Tripp	5.026	3.756	SD123	354462	WgB	Wewela fine sandy loam, 3 to 6 percent slopes		3.38	0.19		0.04		0.04	0.04	0.04	3.42			0.04		0.04

3-24

Data Request:

Provide definitions of the soil limitations discussed in the application. The definitions should identify the soil properties and ranges in properties used to place soils within a certain limitation category (e.g., slight, moderate, and severe limitations due to slope, ranges in electrical conductivity for salinity, and Sodium Adsorption Ratio for sodicity).

Response:

The soil assessment for the proposed project is based on SSURGO database review and analyses. As noted in DR 3-23, a table generated from GIS for the updated centerline (2/15/09) provided soil limitation information. The following soil limitation categories provided in the application are:

Severe Wind Erodible Soils - Includes all soils in WEG of 1, 2, 3.

Severe Water Erodible Soils - Slopes >8% with a Kw>0.24 and all slope greater than 15%

Low Reclamation Potential Soils – pH less than 3.5 (very acidic) greater than 8.5 (very alkaline)

Criteria	Saline	Sodic	Saline-Sodic
EC (mmhos/cm)	> 4	< 4	> 4
SAR	< 13	> 13	> 13

Prime Farmland - Includes land listed by the NRCS (2007) as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

Hydric Soils – As designated by the NRCS (yes/no)

Compaction Prone Soils- Includes soils that have clay loam or finer textures

Response prepared by: Scott Patti, AECOM

3-24 (Continued)

Stony/Rocky Soils - Includes soils that have either: 1) a cobbly, stony, bouldery, gravelly, channery, flaggy, or shaly modifier to the textural class, or 2) have >five percent (weight basis) of stones larger than three inches in the surface layer.

Shallow Bedrock - Includes soils that have lithic bedrock within 60 inches of the soil surface.

Droughty Soils - Includes coarse-textured soils (sandy loams and coarser) that are well drained or excessively drained.

These interpretations were based on data available within the SSURGO database. SSURGO data were downloaded for each county crossed and run in GIS for the proposed project locations. Soil characteristics, identified above, for each soil component within a map unit were then identified within the Access database. The Soil Data Viewer extension for SSURGO only allows limited analysis and can get as specific as the Access data base (not able to pull out information on minor components), and therefore was not used for this in-depth analysis.

Response prepared by: Scott Patti, AECOM

3-25

Data Request:

In areas with substantial amounts of soils identified as saline, sodic, or saline-sodic, identify any specialized construction and/or restoration efforts or mitigation measures that are proposed to maintain soil productivity (particularly in agricultural lands).

Response:

Specifications for construction/reclamation procedures will be developed prior to construction. These specifications, called Construction/Reclamation (Con/Rec) Units, will provide the contractor with instructions for practices such as clearing and grading, topsoil salvage, trenching, erosion control, seedbed preparation, seed mix and seeding method. The Con/Rec Unit (example Con/Rec Unit names are Mixed Grass Prairie, Badlands, Forested Waterway, Crop Field and Tame Pasture) assigned to any given location along the pipeline route will be determined by site-specific conditions including, but not limited to, pre-construction land use, slope, soils and vegetation. Some of the construction/reclamation measures that might be utilized at sites with saline, sodic or saline-sodic soils could include:

- alter soil handling procedures to reduce disturbance of natural soil horizons;
- segregation of topsoil materials conserved to avoid increasing soil quality concerns to unaffected areas;
- discing or harrowing respread topsoil only to the depth of the topsoil, to avoid mixing with subsoils;
- selection of a seed mix appropriate for the site; and
- to the extent practicable, avoiding small saline seeps in agricultural lands, if these seeps do not encroach substantially into the ROW.

Response prepared by: Pat Farmer, Westech

3-26

Data Request:

Identify any specialized construction and/or restoration efforts or mitigation measures that are proposed to be used in steep areas characterized by the presence of sodium bentonite that have been identified as having potential slump and/or restoration problems.

Response:

The primary goal of post-construction restoration and reclamation on steep slopes with bentonitic clays would be to stabilize the right-of-way (ROW) to prevent accelerated erosion. Construction, reclamation and mitigation measures that could potentially be used at these sites, depending on site-specific characteristics such as slope steepness, include but would not be limited to:

- temporary sediment barriers to retard slope erosion during construction;
- placement of trench plugs to restrict subsurface water flow in the backfilled trench, which could accelerate slope slumping;
- recontouring the ROW to match surrounding topography to the extent practicable, to minimize concentrating storm water runoff on the ROW;
- permanent sediment control structures such as water bars to divert storm water runoff from the regraded ROW;
- depending on the amount of naturally occurring rock or woody debris on the reclaimed slope, mulching with materials such as straw on more gentle slopes, wood fiber mulch and tackifier on moderately steep slopes and erosion control matting on extremely steep slopes or at sites where other mulching methods might not be effective; and
- revegetation, if appropriate for the site, with species similar to those found adjacent to the ROW.

Response prepared by: Pat Farmer, Westech

3-27

Data Request:

Identify any specialized construction methods that are proposed to maintain a safe workplace when construction occurs during wet periods (i.e., after heavy precipitation events) on "greasy" sodium-affected soils, especially when these conditions occur in areas that are not level.

Response:

Should the precipitation event be substantial enough to prevent personnel and equipment from reaching the site, work will be shut down until site conditions permit safe transportation to the job.

Depending upon the slope, working equipment will be secured to stationary equipment or "dead-man", by means of cables. The muddy, slick surface shall be bladed to permit equipment and personnel to perform their tasks, minimizing the risk of accident. The open ditch shall be pumped free of standing water through a filter bag or straw bales to capture sediment.

Response prepared by: John Phillips, UEI

3-28

Data Request:

Portions of the pipeline route cross areas with soils containing shallow, near-surface (both lithic and paralithic) bedrock. Excavation in these areas may result in a significant bulking factor due to the addition of large voids between clods of excavated material when spoil is returned to the trench. Identify, by milepost, areas containing shallow or near-surface bedrock, and describe how Keystone would dispose of excess spoil material in these areas.

Response:

A table of shallow bedrock is found in response 3-23. Such rocks shall be disposed of as explained in DR 3-14.

Response prepared by: John Phillips, UEI

3-29

Data Request:

Clarify whether any of the aboveground facilities would be built on soils classified as prime farmland. If so, identify the acreage of prime farmland to be permanently affected by the project for each facility.

Response:

Please see response to 3-23. The acreage of prime farmland and farmland of other importance (as listed by the NRCS) permanently impacted by aboveground facilities is 13.6 acres.

Response prepared by: Jon Schmidt, Trow

3-30

Data Request:

Provide a more detailed description of soil types along the pipeline route in the Sand Hills region in southern Tripp County. Identify the Sand Hills region on the soils mapset. Identify and describe any special construction or reclamation methods proposed for restoring soils in this region.

Response:

See response 3-61 for a table of soils with sand hills characteristics and a map of the region.

The CMR Plan, Section 4.15 provides construction and restoration measures to be implemented in this area.

Response prepared by: Jon Schmidt, Trow

3-31

Data Request:

Much of the land along the pipeline route is in pasture or range. Many of the seed mixes and reclamation procedures for disturbed rangeland are dependent on range classification rather than soil type. Identify the applicable NRCS range class equivalent (NRCS Ecological site, e.g. impervious clay, saline loamy, etc. in the SSURGO2 database) for the soils crossed by the pipeline route.

Response:

Please see the response to Data Request 3-25 for an explanation of the Construction/Reclamation (Con/Rec) Units that will be used in this project. Con/Rec Units are based on several factors, including but not limited to soil type, and will be determined from information gathered from several sources, including a pre-construction reconnaissance of the entire pipeline route, aerial photo analysis, and contact with NRCS offices in every county crossed by the pipeline. At that time, NRCS Ecological Sites/SSURGO2 data may be incorporated into Units, or used to group sites into a common Unit.

Response prepared by: Pat Farmer, Westech

3-32

Data Request:

Provide an estimate of the length of the pipeline route, in miles, in which agricultural draintile systems are likely to be encountered during trenching activities.

Response:

Keystone estimates that drain tile may be encountered along approximately three miles of the pipeline route in South Dakota. This represents a highly conservative estimate of potential drain tile locations.

Response prepared by: John Phillips, UEI

3-33

Data Request:

Describe how Keystone would monitor the pipeline right-of-way to identify areas where soil productivity may be degraded as a result of pipeline construction. Describe what further reclamation measures may be implemented to restore soil productivity.

Response:

Keystone's Construction, Mitigation and Reclamation (CMR) Plan, Section 4.11.1 identifies that follow-on inspections will occur to monitor restoration success (see CMR Plan page 29). See also Section 4.16 of the CMR Plan that outlines Keystone's responsibility to work with landowners to restore areas to suitable productivity.

Response prepared by: Jon Schmidt, Trow

3-34

Data Request:

Identify whether Keystone will seek National Pollutant Discharge Elimination System general permit coverage for construction-related stormwater discharges from the South Dakota Department of Environment & Natural Resources. Describe how Keystone will ensure that temporary erosion control measures are monitored and maintained after the construction contractor demobilizes and before revegetation has been determined to be successful.

Response:

Yes, Keystone will apply for the general storm water permit coverage for construction. As indicated in the CMR Plan, section 4.16, Keystone will monitor and maintain the right-of-way after construction has been completed.

Response prepared by: Jon Schmidt, Trow

3-35

Data Request:

Describe the erosion and sediment control practices to be implemented at pump station and valve sites and pipe and contractor yards.

Response:

The erosion and sediment control practices outlined in the CMR Plan are for all areas disturbed by construction, not just the pipeline right-of-way.

Response prepared by: Jon Schmidt, Trow

3-36

Data Request:

Identify areas where Keystone proposes site-specific erosion control measures due to slope length, magnitude, and soils and describe those measures. For example, are there sensitive areas where site-specific erosion control BMPs, including spacing requirements, have or would be identified through the application of the RUSLE2 equation?

Response:

Keystone has not yet identified any areas requiring site specific erosion and sediment control plans. Keystone is however implementing the measures as outlined in the CMRP which includes specifications for BMPs as related to slope length and magnitude. These general specifications were developed with consideration for soil loss computations.

Final design efforts will include the preparing of site specific drawings which will include the site specific specification of erosion and sediment control BMP's which will be based on soil loss computations.

Response prepared by: Richard Gale, Trow

3-37

Data Request:

Identify the width of each waterbody along the pipeline route at the proposed crossing location where the crossing would be greater than 10 feet wide (i.e., intermediate and major waterbodies as defined in the CMRP). Additionally, identify any waterbodies located within pump station or valve sites, within contractor or pipe yards, or along access roads.

Response:

Based on surveys in 2008 and 2009, a preliminary estimate of waters-edge to waters-edge widths for perennial and intermittent streams was taken in the field during environmental surveys. A table of those intermittent and perennial waterbodies is provided in the attached table 3-37.1.

In addition, a separate table of waterbodies along access roads, pipe and contractor yards and pump stations is provided in table 3-37.2.

Table 3-37.1

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
1555312	1555343	294.567	294.573	31	INT	UNNAMED
1558508	1558601	295.172	295.190	94	INT	TRIB TO KIMBLE CREEK
1559527	1559608	295.365	295.380	80	INT	TRIB TO KIMBLE CREEK
1561970	1562028	295.828	295.839	58	INT	TRIB TO KIMBLE CREEK
1567873	1567912	296.946	296.953	39	INT	TRIB TO KIMBLE CREEK
1569670	1569722	297.286	297.296	52	INT	TRIB TO KIMBLE CREEK
1569856	1569913	297.321	297.332	57	INT	KIMBLE CREEK
1571799	1571830	297.689	297.695	31	INT	UNNAMED
1586000	1586038	300.379	300.386	38	INT	DRY HOUSE CREEK
1601178	1601206	303.253	303.259	28	INT	TRIB TO JONES CREEK

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
1601212	1601282	303.260	303.273	70	INT	TRIB TO JONES CREEK
1604819	1604868	303.943	303.952	50	INT	TRIB TO JONES CREEK
1609068	1609095	304.748	304.753	27	INT	TRIB TO JONES CREEK
1733585	1733658	328.330	328.344	74	INT	WEST SQUAW CREEK
1733986	1734079	328.406	328.424	94	INT	WEST SQUAW CREEK
1734340	1734484	328.473	328.501	144	INT	WEST SQUAW CREEK
1734487	1734538	328.501	328.511	50	INT	WEST SQUAW CREEK
1743452	1743477	330.199	330.204	24	INT	TRIB TO WEST SQUAW CREEK
1743904	1743944	330.285	330.292	40	INT	TRIB TO WEST SQUAW CREEK
1745995	1746030	330.681	330.688	35	INT	TRIB TO WEST SQUAW CREEK
1746562	1746604	330.788	330.796	42	INT	UNNAMED
1749631	1749701	331.370	331.383	69	INT	UNNAMED
1750724	1750794	331.577	331.590	70	INT	TRIB TO WEST SQUAW CREEK
1751054	1751175	331.639	331.662	121	INT	TRIB TO WEST SQUAW CREEK
1785092	1785125	338.086	338.092	33	INT	RED BUTTE CREEK
1786504	1786561	338.353	338.364	56	INT	RED BUTTE CREEK
1786755	1786847	338.401	338.418	92	INT	RED BUTTE CREEK
1786879	1786952	338.424	338.438	73	INT	RED BUTTE CREEK
1787112	1787153	338.468	338.476	41	INT	RED BUTTE CREEK
1787616	1787655	338.564	338.571	40	INT	RED BUTTE CREEK
1787789	1787860	338.596	338.610	70	INT	RED BUTTE CREEK
1788121	1788177	338.659	338.670	56	INT	RED BUTTE CREEK
1792817	1792848	339.549	339.555	31	INT	GIANNONATTI CREEK
1793125	1793161	339.607	339.614	36	INT	GIANNONATTI CREEK
1806961	1806987	342.227	342.232	26	INT	LITTLE COWBOY CREEK
1808949	1809017	342.604	342.617	68	INT	TRIB TO NORTH FORK MOREAU RIVER

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
1833841	1833886	347.318	347.327	44	INT	SPRING CREEK
1837086	1837125	347.933	347.940	39	INT	TRIB TO SPRING CREEK
1843990	1844019	349.241	349.246	29	INT	UNNAMED
1850352	1850396	350.445	350.454	44	INT	DRY CREEK
1861516	1861544	352.560	352.565	28	INT	TRIB NORTH FORK MOREAU RIVER
1885555	1885593	357.113	357.120	38	INT	TRIB TO NORTH FORK MOREAU RIVER
1932219	1932245	365.951	365.955	26	INT	BEVERLY CREEK
1972552	1972576	373.589	373.594	24	INT	TRIB TO CEDAR CREEK
1974049	1974082	373.873	373.879	32	INT	TRIB TO CEDAR CREEK
1998944	1998965	378.588	378.592	21	INT	WEST BRANCH PINE CREEK
2024944	2024964	383.512	383.516	20	INT	UNNAMED
2083798	2083827	394.659	394.664	29	INT	UNNAMED
2084845	2084866	394.857	394.861	20	INT	TRIB TO WEST BRANCH PINE CREEK
2086211	2086261	395.116	395.125	49	INT	TRIB TO WEST BRANCH PINE CREEK
2087642	2087680	395.387	395.394	37	INT	TRIB TO WEST BRANCH PINE CREEK
2087829	2087858	395.422	395.428	29	INT	TRIB TO WEST BRANCH PINE CREEK
2088131	2088258	395.479	395.503	127	INT	TRIB TO WEST BRANCH PINE CREEK
2154074	2154102	407.969	407.974	28	INT	RED OWL CREEK
2202467	2202479	417.134	417.136	12	INT	TRIB TO NARCELLE CREEK
2202552	2202571	417.150	417.154	19	INT	TRIB TO NARCELLE CREEK
2203036	2203063	417.242	417.247	27	INT	TRIB TO NARCELLE CREEK
2216609	2216628	419.812	419.816	20	INT	WEST BRANCH NARCELLE CREEK
2219250	2219280	420.313	420.318	30	INT	WEST BRANCH NARCELLE CREEK
2228068	2228139	421.983	421.996	71	INT	NARCELLE CREEK
2228707	2228721	422.104	422.106	14	INT	TRIB TO NARCELLE CREEK

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
2231820	2231912	422.693	422.711	92	INT	NARCELLE CREEK
2233245	2233391	422.963	422.991	146	INT	Narcelle Creek
2234662	2234744	423.231	423.247	82	INT	Narcelle River
2241340	2241377	424.496	424.503	37	INT	NEGRO CREEK
2241633	2241704	424.552	424.565	72	INT	NEGRO CREEK
2241902	2241976	424.603	424.617	73	INT	NEGRO CREEK
1643318	1643356	311.235	311.242	38	OW	UNNAMED
2219398	2219456	420.341	420.352	58	OW	UNNAMED
136567	136624	25.865	25.876	57	PER	FRENCHMAN CREEK
207019	207096	39.208	39.223	77	PER	ROCK CREEK
213267	213308	40.392	40.399	41	PER	UNNAMED
436745	436859	82.717	82.738	113	PER	MILK RIVER
469282	470307	88.879	89.073	1025	PER	MISSOURI RIVER
494991	495012	93.748	93.752	21	PER	WEST FORK LOST CREEK
499501	499522	94.603	94.606	21	PER	UNNAMED
673546	673634	127.566	127.582	88	PER	EAST FORK OF PRAIRIE ELK CREEK
773925	774013	146.577	146.593	88	PER	REDWATER RIVER
809469	809510	153.309	153.316	41	PER	BUFFALO SPRINGS CREEK
925018	925103	175.193	175.209	85	PER	CLEAR CREEK
1033217	1033276	195.685	195.696	59	PER	SIDE CHANNEL OF YELLOWSTONE RIVER
1034452	1035170	195.919	196.055	718	PER	YELLOWSTONE RIVER
1063442	1063455	201.410	201.412	13	PER	CABIN CREEK
1066407	1066429	201.971	201.975	23	PER	CABIN CREEK
1198214	1198321	226.934	226.955	108	PER	DRY FORK CREEK
1237895	1237914	234.450	234.453	19	PER	PENNEL CREEK
1244857	1244884	235.768	235.773	27	PER	UNNAMED
1385513	1385539	262.408	262.413	26	PER	LITTLE BEAVER CREEK

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
1485987	1486050	281.437	281.449	63	PER	BOX ELDER CREEK
1542021	1542121	292.050	292.068	99	PER	LITTLE MISSOURI RIVER
1707683	1707715	323.425	323.431	32	PER	CLARK'S FORK CREEK
1734538	1734714	328.511	328.544	177	PER	WEST SQUAW CREEK
1882178	1882278	356.473	356.492	101	PER	NORTH FORK MOREAU RIVER
1923797	1923915	364.356	364.378	118	PER	S FORK MOREAU RIVER
2023289	2023320	383.199	383.205	31	PER	Pine Creek
2109599	2109667	399.545	399.558	67	PER	SULPHUR CREEK
2244566	2244587	425.107	425.111	21	PER	Narcelle Creek
2248413	2249014	425.836	425.950	601	PER	CHEYENNE RIVER
2264669	2264696	428.915	428.920	26	PER	BRIDGER CREEK
2329156	2329179	441.128	441.132	23	INT	TRIB TO WEST PLUM CREEK
2342462	2342529	443.648	443.661	67	PER	WEST PLUM CREEK
2414460	2414574	457.284	457.306	114	OW	UNNAMED
2432620	2432648	460.724	460.729	28	INT	Witcher Holes
2432713	2432767	460.741	460.751	54	INT	Witcher Holes
2454196	2454439	464.810	464.856	243	OW	UNNAMED
2472115	2472208	468.204	468.221	93	INT	TRIB TO NOWLIN CREEK
2500734	2500844	473.624	473.645	110	INT	UNNAMED
2502906	2502979	474.035	474.049	73	INT	UNNAMED
2529526	2529556	479.077	479.083	31	PER	MITCHELL CK
2541466	2541514	481.338	481.347	48	PER	BAD RIVER
2563333	2563396	485.480	485.492	63	INT	UNNAMED
2576833	2576944	488.036	488.058	111	INT	UNNAMED
2577812	2577871	488.222	488.233	59	INT	UNNAMED
2597870	2597953	492.021	492.037	83	INT	UNNAMED
2599073	2599122	492.249	492.258	49	INT	UNNAMED

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
2600987	2601032	492.611	492.620	45	INT	UNNAMED
2606810	2606831	493.714	493.718	21	INT	DRY CREEK
2611009	2611022	494.509	494.512	12	INT	UNNAMED
2622039	2622088	496.598	496.608	49	INT	UNNAMED
2625205	2625244	497.198	497.205	39	INT	UNNAMED
2648293	2648306	501.571	501.573	13	INT	WHITE CLAY CREEK
2701413	2701464	511.631	511.641	50	INT	UNNAMED
2719524	2719573	515.061	515.071	49	INT	UNNAMED
2731073	2731094	517.249	517.253	21	INT	UNNAMED
2741437	2741464	519.212	519.217	27	INT	UNNAMED
2756691	2756776	522.100	522.117	85	INT	UNNAMED
2764020	2764056	523.489	523.496	37	INT	UNNAMED
2764296	2764335	523.541	523.548	39	INT	UNNAMED
2764533	2764592	523.586	523.597	59	INT	UNNAMED
2798002	2798014	529.925	529.927	11	INT	SEDLANO CREEK
2801974	2802018	530.677	530.685	43	INT	UNNAMED
2814082	2814152	532.970	532.983	70	INT	UNNAMED
2834635	2835123	536.863	536.955	488	PER	WHITE RIVER
2846419	2846524	539.094	539.114	105	INT	LITTLE DOG CREEK
2863508	2863540	542.331	542.337	31	INT	UNNAMED
2866461	2866495	542.890	542.897	34	INT	COTTONWOOD CREEK
2901020	2901050	549.436	549.441	29	INT	UNNAMED
2910434	2910486	551.219	551.228	52	INT	UNNAMED
2920430	2920464	553.112	553.118	34	INT	OWL CREEK
2957666	2957688	560.164	560.168	22	INT	UNNAMED
2957797	2957816	560.189	560.192	19	INT	UNNAMED
2957904	2957921	560.209	560.212	17	INT	UNNAMED

Response prepared by: Richard Gale, Trow

STA [ft]		MP		Width	LULC	NAME
FROM	TO	FROM	TO	[ft]		
2986876	2986891	565.696	565.699	15	INT	DOG EAR CREEK
2989272	2989287	566.150	566.153	15	INT	MUDDY CREEK
3022762	3022788	572.493	572.498	26	INT	SAND CREEK
3044317	3044328	576.575	576.577	11	INT	PONCA CREEK
3119960	3120011	590.901	590.911	51	INT	LUTE CREEK
3124615	3124639	591.783	591.788	25	INT	UNNAMED
3125992	3126062	592.044	592.057	70	INT	UNNAMED
3145244	3145304	595.690	595.702	60	INT	BUFFALO CREEK

Table 3-37.2

FEATURE TYPE	FEATURE ID	LENGTH [ft]	TYPE	LULC	WATERBODY NAME
	CAR-078	18	Temporary	PER	NEGRO CREEK
	CAR-078	51	Temporary	PER	NARCELLE CREEK
	CAR-081	21	Temporary	INT	LITTLE DOG CREEK
PS	---	---	---	---	---
MLVs	---	---	---	---	---
CONTRACTOR YARDS	---	---	---	---	---
PIPE YARDS	PY-13	---	---	INT	UNNAMED
		---	---	OW	UNNAMED

Response prepared by: Richard Gale, Trow

3-38

Data Request:

Table 1 in Exhibit C identifies 8 lakes and 5 reservoirs that would be crossed by the project in South Dakota. Provide descriptions for each of these features that identify their functions, attributes, or any special uses (e.g., aquatic habitat, recreational uses, and irrigation water). Identify the length and proposed construction method for each crossing. Provide an assessment of impacts on the lakes and reservoirs resulting from construction and operation of the pipeline, including any impacts on current or future uses of these features. Identify any measures that Keystone would implement to avoid or minimize impacts on lakes and reservoirs or other users of these features.

Response:

Table 1 in Exhibit C actually identifies eight lakes and seven reservoirs that would be crossed by the project in South Dakota, which are listed below. The list below provides additional information for each of the crossings. An updated Exhibit C has been filed with the revised SD PUC Application.

Included are the estimated length of each crossing, the nature of the feature and whether it is avoided by reroute, and the proposed crossing construction method, if applicable. Because access has not been granted to crossings in Harding County, the nature of those crossings cannot yet be confirmed.

Aside from the four sites that appear to be stock ponds, there is no other identified function, attribute or special use (such as aquatic habitat, recreational uses, and irrigation water) for any of these features.

Five of the identified features were avoided by reroute subsequent to the filing and are identified as such.

Any feature with standing water at the time of construction will be crossed using the Non- Flowing Open Cut Crossing Method described in the Construction Mitigation and Reclamation Plan (CMRP), Section 7.4.1.

While it is not anticipated that flowing water will be encountered at any of these features, any feature with flowing water at the time of construction will crossed using the Flowing

3-38 (Continued)

Open Cut Crossing Method described in the Construction Mitigation and Reclamation Plan (CMRP), Section 7.4.2.

Reservoirs and Lakes Identified in Table 1, Exhibit C of the Filing

County:	Harding
Approx MP:	284.91
Feature Name:	Unknown
Feature Type:	Reservoir
Length of Crossing:	less than 100 feet
Function:	Apparent stock pond
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	Access has not been granted to this site.

County:	Harding
Approx MP:	290.33
Feature Name:	Stock Pond Reservoir
Feature Type:	Reservoir
Length of Crossing:	0 feet - avoided
Function:	Stock pond
Attribute:	None
Special Use:	None
Proposed Crossing Method:	The feature is not crossed by the centerline.
Discussion:	Access has not been granted to this site.

County:	Harding
Approx MP:	311.00
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	approximately 200 feet
Proposed Crossing Method:	Open Cut
Discussion:	Access has not been granted to this site. From the aerial photograph, this feature appears be dry.

Response prepared by: Richard Gale, Trow

3-38 (Continued)

County:	Harding
Approx MP:	328.91
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	less than 50 feet
Function:	None
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	Access has not been granted to this site. From the aerial photograph, this feature appears be dry.

County:	Harding
Approx MP:	346.98
Feature Name:	Oxbow Spring Creek
Feature Type:	Lake
Length of Crossing:	approximately 80 feet
Function:	Apparent stock pond
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	Access has not been granted to this site. This feature is apparently a stock pond with standing water.

County:	Perkins
Approx MP:	358.89
Feature Name:	Unknown
Feature Type:	Reservoir
Length of Crossing:	approximately 100 feet
Function:	Apparent stock pond
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	This feature is a stock pond with standing water.

Response prepared by: Richard Gale, Trow

3-38 (Continued)

County:	Meade
Approx MP:	403.92
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	less than 50 feet
Function:	None
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	Field survey identified this as a dry feature.

County:	Meade
Approx MP:	418.39
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	0 feet - avoided
Function:	N/A
Attribute:	N/A
Special Use:	N/A
Proposed Crossing Method:	Avoided
Discussion:	This feature was avoided by reroute, reflected in the 2/15/09 centerline.

County:	Meade
Approx MP:	420.42
Feature Name:	Unknown
Feature Type:	Reservoir
Length of Crossing:	0 feet - avoided
Function:	N/A
Attribute:	N/A
Special Use:	N/A
Proposed Crossing Method:	Avoided
Discussion:	This feature was avoided by reroute, reflected in the 2/15/09 centerline.

Response prepared by: Richard Gale, Trow

3-38 (Continued)

County:	Haakon
Approx MP:	451.6
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	0 feet - avoided
Function:	N/A
Attribute:	N/A
Special Use:	N/A
Proposed Crossing Method:	voided
Discussion:	This feature was avoided by reroute, reflected in the 2/15/09 centerline.

County:	Haakon
Approx MP:	456.91
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	0 feet
Function:	None
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	No feature was identified in the field survey of this location.

County:	Haakon
Approx MP:	458.63
Feature Name:	Unnamed
Feature Type:	Lake
Length of Crossing:	0 feet
Function:	None
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	No feature was identified in the field survey of this location.

3-38 (Continued)

County:	Haakon
Approx MP:	479.99
Feature Name:	Unnamed
Feature Type:	Reservoir
Length of Crossing:	0 feet - avoided
Function:	N/A
Attribute:	N/A
Special Use:	N/A
Proposed Crossing Method:	Avoided
Discussion:	This feature was avoided by reroute, reflected in the 2/15/09 centerline.

County:	Tripp
Approx MP:	561.99
Feature Name:	Unnamed
Feature Type:	Reservoir
Length of Crossing:	0 feet
Function:	None
Attribute:	None
Special Use:	None
Proposed Crossing Method:	Open Cut
Discussion:	No feature was identified in the field survey of this location.

County:	Tripp
Approx MP:	562.73
Feature Name:	Unnamed
Feature Type:	Reservoir
Length of Crossing:	0 feet - avoided
Function:	N/A
Attribute:	N/A
Special Use:	N/A
Proposed Crossing Method:	Avoided
Discussion:	This feature was avoided by reroute, reflected in the 2/15/09 centerline.

3-39

Data Request:

Assess the likelihood for successfully crossing the Cheyenne, White, and Little Missouri Rivers using the horizontal directional drilling (HDD) construction method based on the geotechnical investigations referenced in section 5.4.1 of the application. Describe the criteria under which an attempted HDD would be deemed to have failed, and Keystone's alternative river crossing plans in the event of failure. Also, provide a copy of the contingency plan referenced in section 5.4.1 that contains preventative and response measures related to frac-outs.

Response:

Geotechnical investigations have been conducted at the Cheyenne River, White River, and Little Missouri River crossings to assist in the design and construction plan for horizontal directional drilling (HDD) those crossings. Based on the geotechnical reports, engineering judgment is that the HDD crossings are likely to be successful. Of course, no subsurface investigation in advance of construction can fully categorize the soils and conditions that will be encountered in the execution of the HDD.

The Keystone project has successfully completed thirteen HDD's, ranging in lengths of about 1500 feet to 4000 feet. There were no failures. Based on the geotechnical data and Keystone experience constructing HDD crossings, including some in comparable soil and subgrade materials, it is anticipated that the HDD crossings of the Cheyenne River, White River, and Little Missouri River will be successful.

For an HDD crossing to be completed successfully, each of the following must be accomplished: 1) pilot bore hole drilled for the full length of the crossing, on substantially the HDD profile and with the required depth of cover of the feature (in these cases, the feature is the river bottom); 2) reaming the bore hole with successive passes to the specified hole diameter; and 3) pull-back of welded and tested pipe.

If an HDD crossing fails, Keystone will address alternate plans with regulating agencies, as necessary. A copy of the contingency plan that was prepared for the Keystone project, and is referenced in the application, Section 5.4.1 is attached to this response. The frac-out contingency plan contains preventative and response measures related to frac-outs. HDD contractors on the Keystone XL project will be provided with this contingency plan, from which each HDD contractor will be required to prepare a frac-out contingency plan for its work, to be reviewed and approved before the work begins.

Response prepared by: Richard Gale, Trow

ATTACHMENT D

Horizontal Directional Drill Frac-out Contingency Plan

Keystone Pipeline Project

HORIZIONTAL DIRECTIONAL DRILL FRAC-OUT CONTINGENCY PLAN

Prepared for:

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Project No: THES0050388E
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Revision No: 3
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1. Introduction

This Horizontal Directional Frac-out Contingency Plan provides specific procedures and steps to contain the inadvertent releases of drilling mud (frac-outs) for water bodies that are crossed using horizontal direction drilling (HDD) techniques.

2. Drilling Fluid and Drilling Fluid System

The HDD process involves the use of a drilling fluid (also referred to as drilling mud) made up primarily of water. Bentonite clay is added to the water to enhance lubricating, spoil transport and caking properties of the drilling fluid. Bentonite is a naturally occurring, non-toxic, inert substance that meets NSF/ANSI 60 NSF Drinking Water Additives Standards and is frequently used for drilling potable water wells.

The primary purpose of drilling fluid is to power the downhole cutting tools, remove cuttings from the drill hole, stabilize the hole, and act as a coolant and lubricant during the drilling process.

The drilling fluid is prepared in a mixing tank containing both new and clean recycled drilling fluid. The fluid is pumped at rate of 100 to 1,000 gallons per minute (gpm) through the center of the drill pipe to the cutters. Return flow is through the annulus created between the wall of the boring and the drill pipe. The cuttings are then carried back to either the entry or the exit pit, depending on a combination of elevation difference and drilling/hole opening direction. Once in the entry pit, the fluid moves to the pickup pit to be pumped to the fluid processing equipment. Typically, shaker screens, desanders and desilters remove increasingly finer cuttings from the drilling fluid. The cleaned and recycled fluid is returned to the mixing tank and pumps for reuse in the borehole. Cuttings and bentonite mud (clay) are often desirable for agricultural applications and would either be made available to landowners for use or disposed of in a landfill. Landowners would be instructed that any beneficial use of the bentonite must include safeguards to keep the material separated from public water ways.

The HDD method has the potential for loss or seepage of drilling fluid into the native material through which the drill passes. In some cases, the drilling fluid may be forced to the surface resulting in what is commonly referred to as an inadvertent release or a frac-out. While one of the positive aspects of the HDD method is the avoidance surface disturbance, surface disturbances may occur when there is an inadvertent release of drilling fluid. Drilling fluid release is typically caused by pressurization of the drill hole beyond the containment capability of the overburden soil material or due to inherent weaknesses within the overlying soils such as a fissure or other pathway. In some cases, the pathway can be associated with boreholes advanced for geotechnical investigations or by bridge or building pilings.

The HDD operation is a closed system to minimize the discharge of drilling mud, fluids, and cuttings outside of the work area. In order to minimize the possibility of fluid escape, berms shall be used to contain the drilling fluids. The drilling fluids are cleaned and recycled to the extent possible. Tanks or dumpsters will be installed in lined pits. Care will be taken to prevent the fluids from getting into the soil and to prevent groundwater from entering the pits. Any drilling mud that inadvertently exits at points other than the entry and exit points shall be contained and collected to the extent practical, and the HDD contractor shall immediately notify a Keystone representative.

3. HDD Contractor Responsibilities and Requirements

The HDD contractor is responsible for execution of the HDD operation, including actions for detecting and controlling the inadvertent release of drilling fluid. Keystone will closely supervise the progress and actions of the HDD contractor through the use of onsite inspection teams.

The HDD contractor will be required to prepare a project specific Spill Preventation Control and Countermeasure Plan which includes project specific procedures concerning monitoring and response to frac-outs; including specific project and agency notification protocol. This plan will be reviewed and approved by Keystone prior to initiation of construction.

The Contractor will be equipped with a tracked hydraulic excavator, straw or hay bales, stakes to secure bails, silt fence, sand bags, shovels, pumps, and any other materials or equipment necessary to contain and clean up inadvertent releases.

A vacuum truck will be on call during drilling operations.

Ancillary items that will be readily available during drilling operations include: a light tower in case cleanup operations are needed after dark, a boat with relevant safety equipment during the crossing of large water bodies, and flexible plastic piping for potential mitigation where small creeks or drainages are involved.

4. Fracture Detection

Drilling crews and the Keystone inspection personnel will be responsible for the monitoring and detection of frac-outs. The most obvious signs of a frac-out are the visible pooling of drilling mud on the surface, a sudden decease in mud volume returns during drilling operations, or loss in drilling mud pump pressure. Drilling and mud system personnel will observe the volume of drilling fluid return and immediately report reductions to the foreman and Keystone personnel. The mud system operator will monitor actual drilling fluid volumes from the pumps and the return flow from the borehole. The operator will alert the on-site personnel if there is a significant variance. In the event of partial circulation loss, pumping of drilling fluid may be reduced to reduce pressure applied to native formation materials.

5. Corrective Action for an Inadvertent Release

In the event of an inadvertent release to the surface at locations other than the borehole location, the following actions will be taken:

If the release is large, mud circulation will cease immediately as practical. If the spill is small to moderate the contractor will continue circulation in order to maintain pressure in the hole. Maintaining circulation will also be necessary if the native material does not have the frictional characteristics necessary to maintain hole stability without the presence of mud provided under pressure.

In all cases, the contractor will also proceed as follows:

- Contain any drilling fluid that has surfaced (See section 6)
- Notify the Keystone representative
- Reduce circulation pressure and evaluate the circumstances leading to circulation loss to determine if the fracture can be sealed
- Thicken the drilling fluid to attempt to seal off the location of the release as practical.

6. Containment of Drilling Fluid Release

Immediately following the detection of the inadvertent drilling fluid release, containment and clean-up operations shall commence. For releases on land, Contractor shall use straw bales, silt fences, sand bags and earth berms to prevent fluid from migrating or flowing from the immediate area of the discharge. If the volume released is too small for containment measures or, if the release occurs in an environmentally sensitive area where release of containments can cause additional damage, the receiving area will be allowed to dry naturally. If there is a threat to a sensitive resource, or a threat to public safety, HDD activities will cease immediately until a plan to proceed is discussed.

Other containment measures include the following:

- Additional berms may be constructed around the release area as directed by the Keystone representative to prevent release of materials into the adjacent water body
- If the amount of fluid released is large enough to prevent practical collection, the affected area will be diluted with fresh water and allowed to dry. Measures will be implemented (berm, silt fence, and/or hay bale installation) to prevent silt laden water from flowing into the water body.
- If hand tools cannot contain a small on-land release, small collection sumps may be constructed to pump the released material into the mud processing system.
- Sump pumps or vacuum trucks will be used to remove and dispose of any drilling fluids as needed.

In cases of inadvertent releases to open water or flooded wetlands, it may be impractical or impossible to contain the release. For releases in shallow water, the HDD contractor will install staked sediment barriers as described in the Keystone Construction Mitigation and Reclamation Plan. Removal by vacuum truck may be attempted if deemed appropriate. The decision to proceed with the drilling operation will be at the sole discretion of the Keystone representative after all practical methods to seal off the location of the discharge have been attempted. Keystone will notify the appropriate authorities for downstream water intakes of the existence and location of any plume that extends more than 1,000 yards from the worksite. Underwater releases are typically allowed to dissipate since, by design, the HDD contractor would seek to avoid placing equipment within the water body. Water sampling equipment will be available for use by site inspectors to evaluate turbidity levels.

7. Clean-up of Releases

The clean-up shall commence after the release is contained. Clean-up shall include removal of all visible drilling fluid located in accessible areas. Removal methods will vary based on the volume of the release and the site specific conditions. Removal equipment may include vacuum trucks, loader and track hoe buckets, small pumps, shovels and buckets. If the release occurs in a sensitive area, it may be necessary to pump the fluid into an upland area for additional containment and disposal. After removal of the released drilling fluid, the release area will be returned as close to the original condition as possible. It may be necessary to store the drilling fluid residue on-site prior to disposal. If so, the necessary storage methods will be utilized to avoid future releases.

8. Agency Notification Procedures

If an inadvertent release is discovered, steps will be taken to contain the release as described in Section 6. Notification procedures for Keystone construction management personnel and regulatory agencies are as follows:

a) When monitoring indicates that an in-stream release has occurred, the Keystone representative will immediately notify the appropriate Federal and State Agencies as soon as possible. The nature of the release will be described and corrective actions will be detailed. The notified agencies will determine whether the implementation of additional measures is required. If it is determined that the release can not be remedied without causing additional adverse impact to the environment, Keystone will request agency approval to continue drilling operations. This data will be provided as specified in the project specific notification protocol established for HDD installations.

b) If downstream migration is imminent and, if water quality will be affected, downstream users will be contacted by Keystone. Relevant contact information will be gathered prior to commencement of construction operations and maintained on site as part of the project specific notification protocol.

3-40

Data Request:

Identify conditions under which a dry crossing method (flume or dam and pump) would be substituted for an open cut wet crossing. Provide an assessment of impacts resulting from use of a dry crossing method, similar to that provided for the HDD and open cut wet methods.

Response:

The dry-ditch method will be used at crossings where the timing of construction does not adequately protect environmentally sensitive waterbodies, as determined by consultation with the appropriate regulatory authority.

Where a dry-ditch method is used, suspended solids will be introduced into the stream when the dam or flume(s) is installed and when the dam or flume(s) is removed at the completion of the crossing. When a dam is installed, the dam may have to be keyed into the bank on either side. During the trenching and installation of the pipe, a minimum amount of sediments will be introduced into the stream, and leakage through the dam is not uncommon.

To minimize impacts, equipment and materials required for the construction of dry-ditch crossings will be located at the construction site or readily available prior to commencing the work. A 10 foot vegetation barrier will be maintained on the banks until the trench is ready for excavation. Grades will be maintained to prevent silt from entering stream. Pipe will be ready for installation prior to excavating in the waterbody. Excavated material will be stockpiled no closer than 10 feet from the edge of the waterbody.

Response prepared by: Richard Gale, Trow

3-41

Data Request:

Based on drawing XL-03-ML-03-005, the proposed HDD exit point for the Cheyenne River crossing appears to be located within the floodplain of the river. Explain how the location for the exit point was determined and clarify whether the pipeline at this location would be subject to damage from stream scour. If so, describe proposed measures to minimize and mitigate for this potential impact.

Response:

The detailed design of the Cheyenne River crossing is still being developed. For the original design, the HDD exit point was determined based on topology maps. A site evaluation will be done to determine whether the location would be subject to damage from stream scour. The crossing design team is evaluating whether to retain the current exit location, incorporating measures to minimize and mitigate potential damage from stream scour, or to lengthen the HDD crossing such that the exit point is north of the defined flood plain.

If the current location for the exit point is maintained, the design will provide that the pipe will continue to have at least four feet of cover where the pipe is subject to potential scour. This evaluation will be based on evaluation of scour potential. The site evaluation will include consideration of the potential for the stream to migrate into the flood plain.

If an evaluation of the erosion potential indicates a historical tendency of river migration, the HDD design will be revised as necessary, which may include relocating the exit point such that it is outside the flood plain, which would result in a longer HDD crossing.

Response prepared by: Richard Gale, Trow

3-42

Data Request:

Section 5.4.1 indicates that pipeline burial depths at stream crossings would be based on site-specific channel and hydrologic investigations, where necessary. Explain how Keystone would determine if site-specific investigations are necessary to identify appropriate pipeline burial depths. In drainage crossings with a high potential for erosion and scour, identify and describe any additional measures that Keystone would implement, such as armoring, to protect the pipeline.

Response:

The detailed design for stream crossings is in progress. For each stream crossing, an initial review will be made of the hydrologic properties of the upstream watershed to determine peak flow conditions for the 100-year storm return frequency. Using these conservative assumptions and available stream data, a hydraulic evaluation will be made to determine the potential for scour. If scour potential is greater than 5 feet or erosion potential is indicated, site-specific hydraulic and hydrologic conditions at the stream crossing will be analyzed further.

The design of stream crossings determined to have a high potential for erosion and/or scour will be revised as appropriate. Design revisions may consist of an increase of pipe burial depth, increasing the design width of the pipeline crossing, or addition of cover protection. If required, selected cover protection will be based on site-specific conditions and the extent of erosion and scour potential.

Response prepared by: Richard Gale, Trow

3-43

Data Request:

Provide a table that identifies each wetland crossing along the pipeline route by milepost, within each pump station or valve site, within contractor or pipe yards, or along access roads. The table should identify wetland type and temporary and permanent impacts in acres.

Response:

Table 3-43a provides wetland location and type impacted by the Project. Table 3-43b provides the temporary and permanent acreage of wetland impacts.

Table 3-43a Wetlands Along Project Route by Milepost

County	Milepost Range[1]	Distance Crossed [1] (miles)	Wetlands Type
South Dakota			
Harding	292.0 - 292.0	<0.1	Palustrine Emergent Wetlands
Harding	297.3 - 297.3	<0.1	Palustrine Emergent Wetlands
Harding	318.0 - 318.1	0.2	Palustrine Emergent Wetlands
Harding	323.3 - 323.5	0.2	Palustrine Emergent Wetlands
Harding	328.5 - 328.6	<0.1	Palustrine Emergent Wetlands
Harding	329.0 - 329.1	0.1	Palustrine Emergent Wetlands
Harding	330.7 - 330.7	<0.1	Palustrine Emergent Wetlands
Harding	347.3 - 347.3	<0.1	Palustrine Emergent Wetlands
Butte	354.6 - 354.7	0.1	Palustrine Emergent Wetlands
Butte	357.2 - 357.3	<0.1	Palustrine Emergent Wetlands
Perkins	364.7 - 364.7	<0.1	Palustrine Emergent Wetlands
Meade	375.1 - 375.1	<0.1	Palustrine Emergent Wetlands
Meade	383.5 - 383.5	<0.1	Palustrine Emergent Wetlands

Response prepared by: Jon Schmidt, Trow

Table 3-43a Wetlands Along Project Route by Milepost

County	Milepost Range[1]	Distance Crossed [1] (miles)	Wetlands Type
Meade	404.2 - 404.2	<0.1	Palustrine Emergent Wetlands
Meade	408.0 - 408.0	<0.1	Palustrine Emergent Wetlands
Haakon	433.2 - 433.3	<0.1	Palustrine Emergent Wetlands
Haakon	443.6 - 443.7	<0.1	Palustrine Emergent Wetlands
Haakon	448.2 - 448.2	<0.1	Palustrine Emergent Wetlands
Haakon	451.9 - 452.0	<0.1	Palustrine Emergent Wetlands
Haakon	457.4 - 457.4	<0.1	Palustrine Emergent Wetlands
Haakon	480.6 - 480.7	<0.1	Palustrine Emergent Wetlands
Jones	517.2 - 517.2	<0.1	Palustrine Emergent Wetlands
Lyman	533.0 - 533.0	<0.1	Palustrine Emergent Wetlands
Tripp	537.0 - 537.0	<0.1	Palustrine Scrub-Shrub Wetlands
Tripp	541.5 - 541.5	<0.1	Palustrine Emergent Wetlands
Tripp	542.9 - 543.0	0.1	Palustrine Emergent Wetlands
Tripp	548.3 - 548.3	<0.1	Palustrine Emergent Wetlands
Tripp	549.4 - 549.5	<0.1	Palustrine Emergent Wetlands
Tripp	551.5 - 551.5	<0.1	Palustrine Emergent Wetlands
Tripp	553.0 - 553.1	0.1	Palustrine Emergent Wetlands
Tripp	560.2 - 560.2	<0.1	Palustrine Emergent Wetlands
Tripp	563.0 - 563.1	<0.1	Palustrine Emergent Wetlands
Tripp	572.5 - 572.5	<0.1	Palustrine Emergent Wetlands
Tripp	573.3 - 573.4	<0.1	Palustrine Emergent Wetlands
Tripp	574.0 - 574.2	<0.1	Palustrine Emergent Wetlands
Tripp	574.6 - 574.7	<0.1	Palustrine Emergent Wetlands
Tripp	576.3 - 576.3	<0.1	Palustrine Emergent Wetlands
Tripp	590.9 - 590.9	<0.1	Palustrine Emergent Wetlands

[1] Lands of same classification type crossed were grouped when located with less than 0.2 mile between. Distance crossed reflects the sum of the actual distance within the referenced mileposts.

Response prepared by: Jon Schmidt, Trow

Table 3-43b Wetlands Along Project Route by Acreage

County	Acreage	Wetlands Type
Temporary Easements and ATWS (60 foot temporary ROW plus ATWs if appropriate)		
Harding	3.6	Palustrine Emergent Wetlands
Butte	1.1	Palustrine Emergent Wetlands
Perkins	0.1	Palustrine Emergent Wetlands
Meade	0.5	Palustrine Emergent Wetlands
Haakon	0.7	Palustrine Emergent Wetlands
Jones	0.2	Palustrine Emergent Wetlands
Lyman	0.1	Palustrine Emergent Wetlands
Tripp	3.1	Palustrine Emergent Wetlands
Tripp	0.1	Palustrine Scrub-Shrub Wetlands
Temporary Sites		
Pipe Yards	0.0	---
Contractor Yards	0.0	---
Temporary Access Roads		
Temporary Access Roads	<0.1	Palustrine Emergent Wetlands
Permanent Easement (50 foot permanent ROW)		
Harding	3.1	Palustrine Emergent Wetlands
Butte	0.8	Palustrine Emergent Wetlands
Perkins	<0.1	Palustrine Emergent Wetlands
Meade	0.5	Palustrine Emergent Wetlands
Haakon	0.7	Palustrine Emergent Wetlands
Jones	0.1	Palustrine Emergent Wetlands
Lyman	0.1	Palustrine Emergent Wetlands
Tripp	2.5	Palustrine Emergent Wetlands
Tripp	0.2	Palustrine Scrub-Shrub Wetlands
Permanent Sites		

Response prepared by: Jon Schmidt, Trow

Table 3-43b Wetlands Along Project Route by Acreage

County	Acreage	Wetlands Type
Pump Stations	**0.0**	**---**
Valves Sites	**0.0**	**Valve Sites Included in Permanent Easement**
Permanent Access Roads		
Permanent Access Roads	**0.0**	**---**

Response prepared by: Jon Schmidt, Trow

3-44

Data Request:

Describe any site-specific measures, in addition to those described in the CMRP, that Keystone would implement during construction across South Fork Grand River and Ponca Creek to reduce impacts from total suspended solids.

Response:

The best management practices outlined in the CMR Plan will be used to reduce impacts from total suspended solids. There are no site-specific measures planned.

Response prepared by: Jon Schmidt, Trow

3-45

Data Request:

List the waters considered "impaired" by the South Dakota Department of Environment and Natural Resources. How will Keystone limit impacts to said impaired waters?

Response:

Streams considered impaired are provided in the attached table. Keystone will implement the best management practices outlined in the CMR Plan to limit impacts to all waterbodies, regardless of classification.

Waterbody Name	Designated Use	Use Support/ Attainment	Impairment
South Dakota – Steele City Segment			
South Fork Grand River	Warmwater semi permanent fish life propagation	Nonsupport	Total Suspended Solids
	Limited-contact recreation	Full Support	
	Fish/Wildlife Prop, Rec, Stock	Full Support	
	Irrigation	Nonsupport	Salinity
South Fork Moreau River	Warmwater marginal fish life propagation	Full Support	
	Limited-contact recreation	Full Support	
	Fish/Wildlife Prop, Rec, Stock	Full Support	
	Irrigation	Nonsupport	Specific Conductance
Cheyenne River	Warmwater permanent fish life propagation	Nonsupport	Total Suspended Solids
	Immersion recreation	Nonsupport	Fecal Coliform
	Limited-contact recreation	Full Support	
	Fish/Wildlife Prop, Rec, Stock	Full Support	
	Irrigation	Full Support	
White River	Warmwater semi permanent fish	Nonsupport	Total Suspended

Response prepared by: Jon Schmidt, Trow

Waterbody Name	Designated Use	Use Support/ Attainment	Impairment
	life propagation		Solids
	Limited-contact recreation	Nonsupport	Fecal Coliform
	Fish/Wildlife Prop, Rec, Stock	Full Support	
	Irrigation	Full Support	
Ponca Creek	Warmwater semi permanent fish life propagation	Nonsupport	Total Suspended Solids
	Limited-contact recreation	Nonsupport	Fecal Coliform
	Fish/Wildlife Prop, Rec, Stock	Full Support	
	Irrigation	Full Support	

3-46

Data Request:

Identify private or public water supply wells within 200 feet or 400 feet, respectively, of the proposed construction right-of-way by milepost and approximate distance and direction from the centerline. Identify the purpose of any identified wells (e.g., agricultural, stock, potable) and their completion depths, if available, and provide a citation for the source of this information. Identify any measures Keystone would implement to detect and mitigate impacts to well performance or water quality.

Response:

There are no private or public water supply wells within 200 or 400 feet, respectively, of the proposed construction ROW.

Since Keystone is not anticipating any blasting in South Dakota, Keystone does not expect that detection and mitigation measures will be necessary.

Response prepared by: Jon Schmidt, Trow

3-47

Data Request:

Provide a table (or revise table 13) that summarizes land use categories, by crossing length in miles and by percentage, for each county crossed by the pipeline route. In addition, revise table 13 to identify permanent (as well as construction-related) impacts on each land use category for the pipeline and pump stations.

Response:

Table 3-47.1 provides the mileage in each land use category crossed by the 2/15/09 centerline. **Table 3-47.2** provides the temporary construction and permanent acreage impacted in each land use category.

Table 3-47.1

LULC	COUNTY	PIPELINE [mi]		
		COUNTY LENGTH [mi]	LULC CROSSED [mi]	COUNTY LENGTH %
1. Land used primarily for row and non-row crops in rotation	**Harding**	71.4	5.6	7.8%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.7	4.7%
	Meade	52.9	10.5	19.9%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	21.1	35.8%
	Jones	40.1	16.6	41.4%
	Lyman	11.9	4.7	39.3%
	Tripp	59.7	25.1	41.9%
2. Irrigated lands	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%

Response prepared by: John Phillips, UEI

LULC	COUNTY	PIPELINE [mi]		
		COUNTY LENGTH	LULC CROSSED	COUNTY LENGTH
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%
3. Pasturelands and rangelands	**Harding**	71.4	65.4	91.6%
	Butte	3.8	3.8	100%
	Perkins	15.2	14.4	94.3%
	Meade	52.9	41.8	79%
	Pennington	0.2	0.2	100%
	Haakon	59.0	37.2	63.1%
	Jones	40.1	23	57.3%
	Lyman	11.9	7.1	59.7%
	Tripp	59.7	33.9	56.8%
4. Hay lands	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.2	0.4%
5.	**Harding**	71.4	0	0

LULC	COUNTY	PIPELINE [mi]		
		COUNTY LENGTH	LULC CROSSED	COUNTY LENGTH
Undisturbed native grasslands	**Butte**	3.8	0	0
	Perkins	15.2	0	0
	Meade	52.9	0	0
	Pennington	0.2	0	0
	Haakon	59.0	0	0
	Jones	40.1	0	0
	Lyman	11.9	0	0
	Tripp	59.7	0	0
6. Existing and potential extractive nonrenewable resources	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%
7. Other major industries	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%

LULC	COUNTY	PIPELINE [mi]		
		COUNTY LENGTH	LULC CROSSED	COUNTY LENGTH
8. Rural residences and farmsteads, family farms, and ranches	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%
9. Residential	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%
10. Public, commercial, and institutional use	**Harding**	71.4	0.4	0.5%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.1	0.9%
	Meade	52.9	0.5	1.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.7	1.2%
	Jones	40.1	0.4	1.0%
	Lyman	11.9	0.1	1.0%

LULC	COUNTY	PIPELINE [mi]		
		COUNTY LENGTH	LULC CROSSED	COUNTY LENGTH
	Tripp	59.7	0.6	1.0%
11. Municipal water supply and water sources for organized rural water systems	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%
12. Noise sensitive land uses	**Harding**	71.4	0.0	0.0%
	Butte	3.8	0.0	0.0%
	Perkins	15.2	0.0	0.0%
	Meade	52.9	0.0	0.0%
	Pennington	0.2	0.0	0.0%
	Haakon	59.0	0.0	0.0%
	Jones	40.1	0.0	0.0%
	Lyman	11.9	0.0	0.0%
	Tripp	59.7	0.0	0.0%

Second Table providing acreage impacted.

Table 3-47.1

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
1. Land used primarily for row and non-row crops in rotation	**Harding**	432.5	34.0	7.9%	12.4	0.0	0.0%	583.3	45.6	7.8%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	4.3	4.7%	----	----	----	123.3	5.3	4.3%
	Meade	320.6	63.9	19.9%	5.0	5.0	100.0%	429.6	81.0	18.8%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	127.9	35.8%	5.0	0.0	0.0%	468.9	162.4	34.6%
	Jones	242.8	100.5	41.4%	5.0	4.9	98.0%	319.9	129.4	40.4%
	Lyman	72.0	28.4	39.5%	----	----	----	92.2	35.5	38.6%
	Tripp	362.1	151.8	41.9%	12.9	7.6	58.9%	470.0	196.0	41.7%
2. Irrigated lands	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%

Response prepared by: John Phillips, UEI

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%
3. Pasturelands and rangelands	**Harding**	432.5	396.2	91.6%	12.4	12.4	100.0%	583.3	534.3	91.6%
	Butte	22.8	22.8	100.%	----	----	----	30.3	30.3	100%
	Perkins	92.4	86.8	93.9%	----	----	----	123.3	116	94.1%
	Meade	320.6	253.4	77.9%	5.0	0.0	0.0%	429.6	344	80.1%
	Pennington	1.3	1.3	100%	----	----	----	1.5	1.5	100%
	Haakon	357.3	225.5	100%	5.0	4.8	96.0%	468.9	300.8	64.2%
	Jones	242.8	139.7	63.1%	5.0	0.0	0.0%	319.9	186.4	58.3%
	Lyman	72.0	42.8	59.4%	----	----	----	92.2	55.5	60.2%
	Tripp	362.1	205.2	56.7%	12.9	5.2	40.3%	470.0	266	56.6%
4. Hay lands	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	1.8	0.4%
5. Undisturbed native grasslands	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	524.6	89.9%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	30.3	100.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	114.4	92.8%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	300.8	70.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	1.5	100.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	267.4	57.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	109.7	34.3%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	48.6	52.7%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	175.4	37.3%
6. Existing and potential extractive nonrenewable resources	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%
7. Other major industries	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%
8. Rural residences and farmsteads, family farms, and ranches	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.1	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
9. Residential	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1		0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%
10. Public, commercial, and institutional use	**Harding**	432.5	2.3	0.5%	12.4	0.0	0.3%	583.3	3.5	0.6%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	1.2	1.3%	----	----	----	123.3	2.0	1.6%
	Meade	320.6	3.3	1.0%	5.0	0.0	0.0%	429.6	4.6	1.1%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	3.9	1.1%	5.0	0.2	4.0%	468.9	5.7	1.2%
	Jones	242.8	2.5	1.0%	5.0	0.1	2.0%	319.9	4.1	1.3%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	1.1	1.2%
	Tripp	362.1	3.7	1.0%	12.9	0.1	0.8%	470.0	6.2	1.3%
11. Municipal	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%

LULC	COUNTY	Acreage Disturbed								
		PERMANENT						TEMPORARY		
		PIPELINE [ac]			PUMP STATIONS [ac]			PIPELINE [ac]		
		Total	Crossed	%	Total	Crossed	%	Total	Crossed	%
water supply and water sources for organized rural water systems	**Butte**	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1		0.0%	12.9	0.0	0.0%	470.0		0.0%
12. Noise sensitive land uses	**Harding**	432.5	0.0	0.0%	12.4	0.0	0.0%	583.3	0.0	0.0%
	Butte	22.8	0.0	0.0%	----	----	----	30.3	0.0	0.0%
	Perkins	92.4	0.0	0.0%	----	----	----	123.3	0.0	0.0%
	Meade	320.6	0.0	0.0%	5.0	0.0	0.0%	429.6	0.0	0.0%
	Pennington	1.3	0.0	0.0%	----	----	----	1.5	0.0	0.0%
	Haakon	357.3	0.0	0.0%	5.0	0.0	0.0%	468.9	0.0	0.0%
	Jones	242.8	0.0	0.0%	5.0	0.0	0.0%	319.9	0.0	0.0%
	Lyman	72.0	0.0	0.0%	----	----	----	92.2	0.0	0.0%
	Tripp	362.1	0.0	0.0%	12.9	0.0	0.0%	470.0	0.0	0.0%

3-48

Data Request:

Identify impacts on land uses resulting from construction of new access roads. If new access roads would be temporary, describe methods for restoring the land to pre-construction conditions.

Response:

A permanent access road will be constructed to PS-15 in Harding County. This road will parallel the pipeline right-of-way in order to minimize the impact to land use.

There are no new access roads that would be temporary that would require restoration. All access roads will follow the footprint of existing farm, ranch, or other private roads.

Response prepared by: John Phillips, UEI

3-49

Data Request:

Section 5.7.1 of the application identifies one "possible residence within 500 feet of the centerline in Meade County." A review of Mapbook 1, however, identified two potential residences within 500 feet of the centerline in Meade County, one at milepost 375 and one at milepost 393. Provide the milepost of the possible residence identified in the application and explain why the second location was not counted as a possible residence.

Response:

The structures at approximate milepost 393 include a residence that is approximately 430 feet from the proposed pipeline. That is the residence referred to in Section 5.7.1 of the application.

In the assessment conducted for the submittal, the structures at approximately milepost 375 were determined to be outbuildings.

Response prepared by: Richard Gale, Trow

3-50

Data Request:

Describe how Keystone plans to accommodate cattle grazing during construction of the pipeline. Provide the maximum continuous length in which pipeline segments would be strung and welded in areas used for grazing. Identify measures that would be used to prevent cattle from entering open trenches.

Response:

The maximum continuous length the pipeline will be strung and welded in grazing areas is estimated to range from 3,600 – 5,000 feet per day. To accommodate cattle grazing and protection during construction several options can be utilized as follows:

1) relocation of the cattle to another area; or,
2) fencing the ditch-line and leaving walk-through gaps with plugs in the ditch for cattle to cross, until pipeline is lowered and ditch back-filled.

Response prepared by: Meera Kothari, Keystone

3-51

Data Request:

Provide an update on the status of cultural resources field surveys, including a table identifying any areas along the pipeline route (by milepost) or within other work areas where surveys remain incomplete. Indicate why the surveys have not been completed at these locations (e.g., lack of access permission by landowner) and provide the anticipated schedule of completion for these areas.

Response:

The non-surveyed areas in South Dakota as of July 1, 2009 are presented below in table format:

Survey Status Based on February 15, 2009 Centerline as of July 1, 2009.

MP Ingress	MP Egress	Survey Status	Reason for Non-Completion	Anticipated Survey Date
286.3	287.0	Not Surveyed	Survey Permission Pending	Prior to construction
287.3	287.6	Not Surveyed	Survey Permission Pending	Prior to construction
290.4	292.1	Not Surveyed	Survey Permission Pending	Prior to construction
293.3	298.4	Not Surveyed	Survey Permission Pending	Prior to construction
298.7	299.5	Not Surveyed	Survey Permission Pending	Prior to construction
299.9	315.3	Not Surveyed	Survey Permission Pending	Prior to construction
318.9	342.7	Not Surveyed	Survey Permission Pending	Prior to construction
387.0	388.2	Not Surveyed	Survey Permission Pending	Prior to construction
388.8	389.2	Not Surveyed	Survey Permission Pending	Prior to construction
420.9	421.0	Not Surveyed	Survey Permission Pending	Prior to construction

Response prepared by: Meera Kothari, Keystone

MP Ingress	MP Egress	Survey Status	Reason for Non-Completion	Anticipated Survey Date
286.3	287.0	Not Surveyed	Survey Permission Pending	Prior to construction
287.3	287.6	Not Surveyed	Survey Permission Pending	Prior to construction
290.4	292.1	Not Surveyed	Survey Permission Pending	Prior to construction
293.3	298.4	Not Surveyed	Survey Permission Pending	Prior to construction
298.7	299.5	Not Surveyed	Survey Permission Pending	Prior to construction
299.9	315.3	Not Surveyed	Survey Permission Pending	Prior to construction
318.9	342.7	Not Surveyed	Survey Permission Pending	Prior to construction
387.0	388.2	Not Surveyed	Survey Permission Pending	Prior to construction
388.8	389.2	Not Surveyed	Survey Permission Pending	Prior to construction
420.9	421.0	Not Surveyed	Survey Permission Pending	Prior to construction
425.1	426.0	Not Surveyed	Survey Permission Pending	Prior to construction
473.6	475.2	Not Surveyed	Survey Permission Pending	Prior to construction
491.7	492.4	Not Surveyed	Survey Permission Pending	Prior to construction
492.0	493.0	Not Surveyed	Survey Permission Pending	Prior to construction
493.3	493.9	Not Surveyed	Survey Permission Pending	Prior to construction
497.3	497.6	Not Surveyed	Survey Permission Pending	Prior to construction
500.0	501.1	Not Surveyed	Survey Permission Pending	Prior to construction
504.3	505.3	Not Surveyed	Survey Permission Pending	Prior to construction

Response prepared by: Meera Kothari, Keystone

Survey Status Based on April 20, 2009 Transmission Line Centerline as of July 1, 2009.

PS #	MP Ingress	MP Egress	Survey Status	Reason for Non-Completion	Anticipated Survey Date
PS-19A-2	13.6	14.8	Part Surveyed*	Survey Permission Pending	Prior to construction
	15.8	18.1	Part Surveyed*	Survey Permission Pending	Prior to construction

* A portion of the 300-foot survey corridor between these mileposts has not been surveyed.

Response prepared by: Meera Kothari, Keystone

3-51 (Continued)

Survey Status Based on March 31, 2009 Access Road Centerline as of July 1, 2009.

CAR #	MP Ingress	MP Egress	Survey Status	Reason for Non-Completion	Anticipated Survey Date
CAR-041	0.1	0.2	Not Surveyed	Survey Permission Pending	Prior to construction
	0.3	0.6	Part Surveyed*	Survey Permission Pending	Prior to construction
	0.6	1.7	Not Surveyed	Survey Permission Pending	Prior to construction
	1.7	2.0	Part Surveyed	Survey Permission Pending	Prior to construction
CAR-042	0.0	3.2	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-043	0.0	5.3	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-044	0.0	0.3	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-045	0.0	1.2	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-046	0.0	0.3	Part Surveyed*	Survey Permission Pending	Prior to construction
CAR-050	0.0	2.0	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-069	0.0	2.3	Not Surveyed	Survey Permission Pending	Prior to construction
CAR-082	0.0	0.2	Part Surveyed*	Survey Permission Pending	Prior to construction

* A portion of the 100-foot survey corridor between these mileposts has not been surveyed.

Response prepared by: Meera Kothari, Keystone

3-51 (Continued)

Survey Status Based on April 23, 2009 Pump Station Shapefile as of July 1, 2009.

Pump Station #	Survey Status	Reason for Non-Completion	Anticipated Survey Date
Buffalo (PS – 16)	Not Surveyed	Survey Permission Pending	Prior to construction
Harding (PS – 15)	Not Surveyed	Survey Permission Pending	Prior to construction

Survey Status Based on May 11, 2009 Contractor Yard and Pipe Yard Shapefile as of July 1, 2009.

Contractor or Pipe Yard	Survey Status	Reason for Non-Completion	Anticipated Survey Date
MURDO	Not Surveyed	Survey Permission Pending	Prior to construction
FAIRFAX	Not Surveyed	Survey Permission Pending	Prior to construction
BUFFALO	Not Surveyed	Survey Permission Pending	Prior to construction
FAITH	Not Surveyed	Survey Permission Pending	Prior to construction
PY-10	Not Surveyed	Survey Permission Pending	Prior to construction
PY-11	Not Surveyed	Survey Permission Pending	Prior to construction
PY-12	Not Surveyed	Survey Permission Pending	Prior to construction

Response prepared by: Meera Kothari, Keystone

3-51 (Continued)

Survey Status Based on March 31, 2009 Contractor Camp Shapefile as of July 1, 2009.

Contractor Camp	Survey Status	Reason for Non-Completion	Anticipated Survey Date
WINNER	Not Surveyed	Survey Permission Pending	Prior to construction
UNION CENTER	Not Surveyed	Survey Permission Pending	Prior to construction

Survey Status Based on February 15, 2009 Staging Areas Shapefile as of July 1, 2009.

Staging Area	Survey Status	Reason for Non-Completion	Anticipated Survey Date
SA - 05	Not Surveyed	Survey Permission Pending	Prior to construction

Response prepared by: Meera Kothari, Keystone

3-52

Data Request:

Provide an update on the status of consultations being conducted to assist the DOS in complying with Section 106 of the National Historic Preservation Act. When available, provide copies of the South Dakota Historical Society (SHPO) and the DOS review comments on the survey report(s).

Response:

The DOS is the lead federal agency for Section 106 consultation and is coordinating this effort for the EIS. Keystone does not yet have any correspondence between DOS and the SD SHPO or review comments on earlier field survey reports.

Response prepared by: Jon Schmidt, Trow

3-53

Data Request:

After surveys are complete, provide information regarding any historic properties that would be adversely affected by the project and also specify what treatment measures, if any, would be applied to these resources. Provide copies of any Treatment Plans prepared for the project, as well as documentation of SHPO approval.

Response:

The DOS is developing a Programmatic Agreement (PA) that will stipulate the requirements for report review and approval that includes the SD SHPO. DOS as a signatory party of the PA is working with applicable parties to determine site eligibility and impact. This information will be included in the EIS.

Response prepared by: Jon Schmidt, Trow

3-54

Data Request:

Provide a copy of the Unanticipated Discovery Plan referenced in section 6.4 of the application as well as the review comments from the SHPO and the DOS on this plan.

Response:

To date, we have not received any comments from the SHPO or DOS concerning this report. The Unanticipated Discovery Plan is attached.

Response prepared by: Scott Slessman, SWCA

Unanticipated Discovery Plan for Cultural Resources Along the Steele City Segment of Keystone XL Pipeline Project in South Dakota

Federal Agency

Department of State

Prepared for

AECOM Environment

Prepared by

SWCA Environmental Consultants

March 30, 2009

Unanticipated Discovery Plan for Cultural Resources Along the Steele City Segments of the Keystone XL Pipeline Project in South Dakota

Prepared for

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Lead Agency

Department of State

SWCA Cultural Resource Report Number 09-64

March 30, 2009

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LIST OF ATTACHMENTS

Attachment

A Keystone XL Pipeline Field Attachment: Plan for Unanticipated Historic Properties and Human Remains in South Dakota

1.0 INTRODUCTION

This Discovery Plan documents the procedures to be implemented in the event that cultural resources are discovered during construction of the Keystone XL Pipeline Project (hereafter referred to as the Project) in South Dakota. This plan contains standard procedures for handling cultural resource discoveries identified by the Project archaeologists in areas designated for open trench inspection (OTI) and monitoring, and by construction personnel or Environmental Inspectors. Procedures for the initial treatment of discoveries, the evaluation and treatment of discoveries, and the treatment of human remains are discussed in the following sections. As an attachment (Attachment A) to this document is a Plan for Unanticipated Historic Properties and Human Remains in South Dakota to be distributed among field personnel during the Project.

1.1 QUALIFICATION AND TRAINING OF ARCHAEOLOGICAL MONITORS AND CONSTRUCTION PERSONNEL

This section describes the qualification and training of archaeological monitors and construction personnel.

1.1.1 Archaeological Personnel

All lead archaeologists/field directors will be qualified based on the standards required under a Bureau of Land Management (BLM) Cultural Resource Use Permit. The lead archaeologists/field directors will be evaluated and listed on the permit for the Project before conducting and supervising field monitoring. When appropriate, additional safety training may be required. Archaeological monitors have the authority to halt construction at an archaeological discovery and, in some instances as described below, to authorize construction to resume.

1.1.2 Construction Personnel

All construction personnel will meet with Keystone representatives for training and orientation prior to the start of construction activity. The training will be developed by Keystone representatives and the participating archaeologists. New construction personnel added after construction begins will be trained before working on site. A list of trained personnel will be maintained by Keystone.

1.2 OPEN TRENCH INSPECTION AND MONITORING

This section details the OTI and monitoring plan to be used during the current Project. The OTI and monitoring plan includes the delineation of areas to be inspected, methods to be used during inspection and monitoring of the right-of-way (ROW), discovery recordation methods, and the criteria to be used for selecting any additional sites for testing and/or post-construction data recovery investigations based on inspection and monitoring results. The 75-foot-wide construction ROW will usually comprise a 25-foot-wide "spoil" side and a 50-foot-wide "working" side based on the pipeline centerline. An additional 25 feet of temporary workspace may be required for construction in areas with steep side and vertical slopes.

Keystone will retain a 50-foot-wide permanent ROW (25 feet on either side of the pipeline centerline) during the operation of the new pipeline.

Pipeline ROW construction will be observed by one or more archaeologists in the areas designated for monitoring at each location where machinery is actively involved in ground-disturbing activities. The archaeologist(s) will view the ground disturbance as it occurs to identify cultural remains exposed by construction equipment. In the event that cultural material (such as features or artifact concentrations) is observed during ROW preparation (see Section 1.2.1, Discovery Definition, below), construction will be temporarily suspended at that location to allow the archaeologist(s) to safely examine the exposed remains. Construction will not be stopped for exposed artifacts, except for artifact concentrations or to allow an archaeologist to assess whether other artifacts or features are associated with the exposed artifact(s). Once the discovery has been initially recorded, construction will be allowed to proceed. Discoveries will be recorded and evaluated following the methods presented in Sections 1.2.3 and 1.2.5. Construction will be allowed to proceed once the site has been recorded and all applicable protocol and/or guidelines have been followed.

Archaeological monitors will have the authority to temporarily halt construction in sensitive areas where monitoring stipulations are in place if weather conditions preclude adequate visibility of freshly exposed sediments. This could occur during heavy snowfall or blizzard conditions, during periods of extreme cold or wind, during periods when thawing causes accumulations of water in areas requiring inspection and documentation, and very early or late in the day from mid-November through mid-January.

1.2.1 Discovery Definition

Archaeological discoveries consist of evidence of human activity with the potential to yield data pertinent to the questions in the research design for the Project, and discoveries that are more than 50 years old with potential to yield data pertinent to regional history and prehistory. Prehistoric discoveries include, but are not limited to, features (small hearth features, housepit features, storage features, etc.), artifact concentrations, and activity areas. Occasional isolated prehistoric artifacts, non-human bone, or low numbers of artifacts or non-human bone with little potential to yield additional data will not be considered discoveries. Historical discoveries include, but are not limited to, features (historic hearths, trash deposits, structures, old canals, roads, etc.), artifact concentrations, and activity areas. Isolated historical artifacts, non-human bone, or low numbers of artifacts or non-human bone with little potential to yield additional data will not be considered discoveries. Archaeological discoveries are defined as simple or complex. Simple archaeological discoveries consist of isolated artifacts or isolated features with minimal artifacts or diagnostic characteristics. Complex discoveries are those which entail a significant amount of artifacts or features, or sensitive or unique remains such as housepits, bone beds, or human remains. All of the discoveries, regardless of eligibility, will be recorded on the daily log and a South Dakota State Archaeological Research Center form.

The archaeological monitor will be allowed field judgment to determine if the item or items encountered merit further investigation and thereby being defined as an archaeological

discovery. Once the monitor has determined the item is an archaeological discovery, methods for recordation will be followed, as stated in Sections 1.2.3 and 1.2.5.

1.2.2 Open Trench Inspection Locations

The entire pipeline length in South Dakota will be subject to OTI as stipulated by the BLM and the State Historic Preservation Offices (SHPOs).

1.2.3 Open Trench Inspection Methods

Archaeological inspection will only be required after trenching has been completed, except when human remains are encountered by construction personnel. If construction personnel identify what they believe to be human remains during trenching, procedures in Section 2.0 will be followed. If construction personnel identify discoveries within the trench, the steps to protect the discoveries and notification procedures in Section 1.4.2 will be followed.

At least one archaeologist will inspect the open trench at specified locations along pipeline route where a higher probability of encountering cultural materials exists. The laying of pipe and backfilling the trench will only be allowed after completion of the archaeological inspection. Inspection will consist of an examination of the trench walls and backdirt piles for evidence of artifacts, cultural features, stained occupation surfaces, concentrations of animal bone, or human remains. For safety reasons, examination of trench walls will generally be conducted from the ground surface. Trench backdirt will not be screened, but uncontrolled collection of artifacts may occur from backdirt piles, as may the collection of charcoal and/or stained sediment for possible radiocarbon dating.

Discoveries found during the OTI will be recorded and evaluated following the standards and procedures used for recording sites during the inventory phase of the Project. The initial treatment of any discovery will consist of recording the location of the remains within the ROW and within any previously recorded site boundary; recording summary data concerning the feature(s) and/or other remains (including dimensions, qualitative characteristics, and associated remains); photographing each exposed feature and the overall context of the exposed remains; and profiling trench walls containing cultural features or strata (where safe and prudent). When appropriate, the location around the discovered cultural remains will be tested to determine the extent of the cultural material.

In the event that the location around the discovery cannot be tested at the time due to safety issues or if the discovery is frozen due to winter weather and testing is not possible, the following OTI recording methods will be followed. The archaeological monitor will record the location of the cultural remains with a global positioning system (GPS) unit and also in relation to cadastral monuments or permanent structures. The monitor will place polyvinyl chloride stakes at the edge of, or on both sides of, the ROW to facilitate relocation of the cultural remains; the stakes will be marked in indelible ink with the distance to the cultural remains. The stakes will be minimally placed in line with the discovery and perpendicular to the trench for ease of relocation, and other stakes may be placed as necessary to facilitate relocating the cultural remains. If the discovery is not within the boundaries of a previously recorded site, a permanent datum will also be placed at the edge of the construction corridor. Monitors will take additional necessary steps to ensure that the cultural remains in the trench

can be relocated. This may include (but is not limited to) insertion of pins above the feature in the trench profile wall to facilitate relocation from above, burial of pins above the feature for relocation via metal detection, and other techniques designed to enable the relocation of the feature after construction is complete. The discovery will be tested as soon as the ground has naturally thawed.

A monitor will also be present during trench refill in areas where cultural remains were located to ensure that the cultural remains are not further disturbed. If additional resources are exposed during the backfilling of the trench within the trench walls, the monitor will follow the procedures outlined above. If additional resources are exposed within the ROW during the backfilling of the trench, the monitor will follow the monitoring methods outlined in Section 1.2.5.

Following construction, additional testing may be necessary to define the discovery and any activity areas, if present. The discovery will be fully recorded according to approved standards. The feature(s) will then be excavated and a sample or all feature fill will be collected for laboratory analysis including pollen studies, flotation, and carbon dating as appropriate. Feature plans and profiles will be drawn. Features will be photographed. Uncollected feature fill will be screened using 0.25-inch mesh. If necessary, additional horizontal exposure of sediments/deposits around the feature may be investigated to evaluate the feature context. Such exposure will follow the standard excavation procedures described in the forthcoming treatment plan for the Project. Testing can include, but is not limited to, excavation of controlled units over and around the feature area, placement of additional test units and/or auger probes, or exploratory mechanical trenching. Testing will be designed to identify the nature and extent of the discovery and any associated activity area(s) or other features, if present. Based on these data, and through consultation with the relevant agency(ies), a decision will be made regarding whether additional data recovery of the discovery is necessary. If so, procedures described in Section 1.5 will apply.

1.2.4 Monitoring Locations

Site locations to be monitored will be specified in the forthcoming treatment plan for the Project. Monitoring will occur at specified locations during ground-disturbing activities. For the purposes of this document, ground-disturbing activities are defined as any activities that have moderate to high potential to expose buried cultural resources. These include, but are not limited to, blading, grading, stripping, and trenching activities. They can also include transiting of sites by heavy tracked vehicles if no other activities will occur subsequent to transiting. In general, any activity that has the potential to disturb more than 2 inches of sediment over an area more than 3 feet square will be considered ground-disturbing. Certain activities within sites will not require monitoring. These consist of activities with low potential to expose cultural resources or for which monitoring would not identify disturbed or exposed cultural activities.

1.2.5 Monitoring Methods

Discoveries found during ROW monitoring will be handled in much the same way as those found during OTI. When a discovery is encountered by an archaeological monitor, the construction activity that resulted in the exposure of the discovery will be immediately halted, followed as soon as possible by the cessation of all other ground-disturbing activity in the immediate vicinity of the discovery. Cessation of ground-disturbing activity will encompass a sufficient area to protect the discovery itself and provide a buffer zone for adequate and safe investigation of the discovery and any other features or artifacts that may be associated with the discovery. Vehicle traffic within the vicinity may need to be limited or halted until the discovery is inspected. If construction personnel identify discoveries, the steps to protect the discoveries and notification procedures in Section 1.4.2 will be followed.

The nature of the ROW blading is such that it can cause damage to exposed resources. Therefore, excavation of features will be required in order to collect information contained in them. To protect the discovery during recording, fencing will be placed 100 feet (30 meters [m]) to either side of the discovery. The discovery will be fully recorded according to approved standards. The feature(s) will then be excavated and a sample or all feature fill will be collected for laboratory analysis including pollen studies, flotation, and carbon dating as appropriate. Feature plans and profiles will be drawn. Features will be photographed. Uncollected feature fill will be screened using 0.25-inch mesh. If necessary, additional horizontal exposure of sediments/deposits around the feature may be investigated to evaluate the feature context. Such exposure will follow the standard excavation procedures described in the forthcoming treatment plan for the Project. In the event that the location around the discovery is frozen due to winter weather and testing is not possible, the OTI recording methods (see Section 1.2.3) will be followed. The discovery will be tested at a later time, as soon as the ground is thawed.

After completion of site recording and evaluative testing, discoveries will be evaluated in terms of their potential to provide additional information through post-construction data recovery. Through consultation with the relevant agency(ies), a determination will be made regarding the need for post-construction data recovery. If no post-construction data recovery is needed, the discovery will be reported as part of the overall Project OTI/Monitoring report. If post-construction data recovery is merited, procedures described in Section 1.5 will be followed.

1.3 AGENCY NOTIFICATION AND REPORTING

Archaeological monitors will maintain detailed daily logs. Information to be recorded in the logs will include areas inspected during the day, the nature of the areas inspected, any cultural remains identified during inspection, the subsequent treatment of those remains, photograph logs if applicable, and a record of any relevant communications with regulatory personnel and/or representatives of Keystone.

For simple discoveries, the cultural resource supervisor will notify the appropriate federal agency representative and Keystone representatives by e-mail. This e-mail will be sent out each Monday morning and will report the results of the inspection during the previous week, including areas inspected and results of inspection in each area. The Department of State, the

appropriate federal agency representative, and Keystone representatives will be contacted immediately upon discovery of complex discoveries. If the find is on federal land, the appropriate federal agency representative will be contacted. As the lead federal agency, the Department of State will be copied on weekly logs and complex discoveries made along the entire length of the pipeline. A final inspection report summarizing the results of the OTI and monitoring, including management recommendations, will be submitted within 180 days after completion of the inspection.

1.4 PROCEDURES FOR ADDRESSING DISCOVERIES IDENTIFIED BY CONSTRUCTION PERSONNEL

This section describes the procedures to be used for unanticipated cultural resources discoveries by construction personnel for OTI or monitoring.

1.4.1 Training and Orientation

Prior to the start of a construction activity, Keystone personnel directly involved with construction will be informed of the stipulations provided in this plan. Those stipulations will cover:

- definition of a discovery and examples of discoveries;
- the steps outlined below regarding the protection of discoveries until such time as they can be properly evaluated by a qualified professional archaeologist;
- the need to treat any human skeletal remains that are encountered with dignity and respect;
- the steps outlined below concerning the notification of the appropriate Keystone personnel;
- the necessity of reporting discoveries in a timely manner and complying with the other stipulations provided in this plan; and
- penalties for failure to report discoveries or to comply with the procedures outlined in this plan.

1.4.2 Steps to Protect the Discovery

Figure 1 summarizes the procedures to follow for discoveries identified by construction personnel. When a discovery is encountered, the construction activity that resulted in the exposure of the discovery will be immediately halted, followed as soon as possible by the cessation of all other ground-disturbing activity in the immediate vicinity of the discovery. Cessation of ground-disturbing activity will encompass a sufficient area to protect the discovery itself and provide a buffer zone for adequate and safe investigation of the discovery and any other features or artifacts that may be associated with the discovery. A barricade (typically a fence) will be placed around the discovery. The barricade should be sufficiently large to protect the discovery and any known or potential cultural materials associated with the discovery. A general guideline for the barricade will be to provide a buffer of at least 100 feet (30 m) around the discovery along the length of the pipeline. This barricaded area can be larger or smaller for the width of the ROW in order to protect the discovery adequately

without unnecessary hindrance to construction. Vehicle traffic within the vicinity may need to be limited or halted until the discovery is inspected. After all construction activity in the immediate vicinity of the discovery has been halted, the Construction Supervisor (or designated substitute) will be notified. The supervisor or substitute will immediately notify the Construction Inspector or Environmental Inspector, who will then contact an archaeological monitor who will determine the nature of the discovery. If the archaeologist determines that the discovery is non-cultural, Keystone will be notified and the halted construction activity can resume. If the archaeologist determines that the find is cultural, the procedures outlined in Sections 1.2.3 and 1.2.5 for the treatment of discoveries will be implemented.

During verification and initial evaluation of the discovery, the archaeologist will have the authority to probe and skim-shovel the discovery. If the discovery is something other than human remains but still is archaeological remains, the procedures outlined in Sections 1.2.3 and 1.2.5 will be followed. If human remains are discovered, the procedures outlined in Section 2.0 will be followed.

All discoveries will be reported to the cultural resource contractor (SWCA Environmental Consultants), the Project's environmental consultant (AECOM Environment), and the Department of State, regardless of landowner. Discoveries found on land managed by the State of South Dakota will be reported to the respective landowner.

Table 1 lists the contacts to be notified in the event of an unanticipated discovery of cultural material.

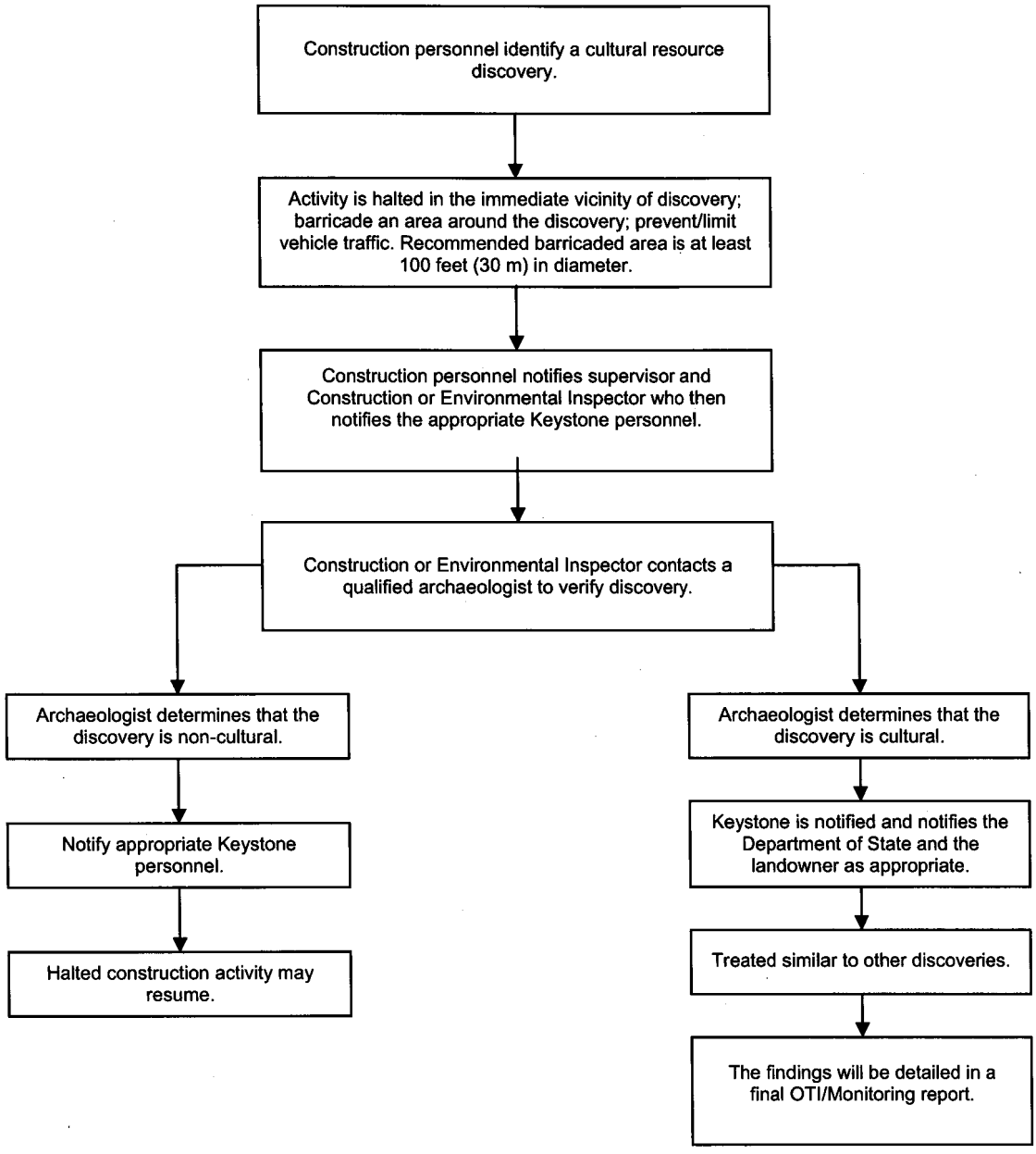


Figure 1. Procedures for Addressing Cultural Resource Discoveries by Construction Personnel.

Table 1. South Dakota Contact Information.

Name	Title/Agency	Phone	Fax	Address	E-Mail
Erin Salisbury	Project Manager, SWCA Environmental Consultants	970-946-8698	303-487-1245	295 Interlocken Boulevard, Suite 300 Broomfield, CO 80021	esalisbury@swca.com
Jim Haug	State Archaeologist, SHPO Director, South Dakota Archaeological Research Center	605-394-1936	605-394-1941	South Dakota Archaeological Research Center PO Box 1257 Rapid City, SD 57709	Jim.Haug@state.sd.us
Chris Nelson	Western Region Archaeological Specialist, SHPO	605-773-3103	605-773-6041	South Dakota State Historical Society 900 Governors Drive Pierre, SD 57501	ChrisB.Nelson@state.sd.us

1.5 CRITERIA FOR SELECTING LOCATIONS FOR POST-CONSTRUCTION DATA RECOVERY INVESTIGATIONS AND GENERAL SCOPE OF ADDITIONAL DATA RECOVERY INVESTIGATIONS

Evaluation of the significance of discoveries will be based on their potential to address research topics and to answer the research questions presented in the research design for the Project. If a newly recorded discovery is judged to have the potential to yield relevant data to address the issues in the research design, it will be recommended as eligible or potentially eligible for the National Register of Historic Places (NRHP). If a significant discovery is part of a previously recorded site, it will be considered a contributing portion of an eligible or potentially eligible site. Only NRHP eligible or contributing discoveries will be subject to additional data recovery investigations; the number and location of discoveries where further work will occur and the extent and nature of the work will be detailed in a final OTI and/or Monitoring report, to be prepared within one year following completion of monitoring and OTI. Discoveries that are judged not to have the potential to yield data relevant to the research design will be considered not eligible or noncontributing and will not be subject to additional investigations.

Data recovery investigations necessitated by adverse impacts to significant discoveries made during Project construction will be limited to a maximum of 250 m^2 of deposits per site, unless exceptional discoveries necessitate a greater level of work. Data recovery will be limited to the Project's area of potential effect (APE). If few sites or components are identified which would complement the preceding data recovery investigations (i.e., those recommended as eligible or contributing), then less additional data recovery work will be conducted, including possibly no additional investigations.

The OTI/Monitoring report will contain recommendations concerning the justification for data recovery investigations at each relevant site, and recommendations concerning the nature and scope of any data recovery investigations at each relevant site. The OTI/Monitoring report will be submitted to the Department of State, and the relevant land managing agencies, after the conclusion of the OTI phase. The report will include a site-specific treatment plan and research design that will propose specific research goals and data needs for each site.

Data recovery motivated by discoveries made during the OTI will be targeted at specific components that possess the characteristics of significance relative to the research topics and domains. Where those components are deeply buried, the overlying deposits will be mechanically stripped following exploratory manual excavations designed to ascertain that components with similar characteristics are not present in the overlying deposits. Data recovered from additional data recovery investigations will be integrated into the final report with the data recovered as a result of the preconstruction data recovery investigations (as described in the forthcoming treatment plan for the Project). Additional data recovery investigations will only be referenced in the final OTI report.

2.0 TREATMENT OF HUMAN REMAINS

If human remains are encountered during construction, the following will immediately occur:

- Appropriate measures will be taken to protect the discovery from further disturbance until it has been fully evaluated and the appropriate treatment of the discovery has been completed.
- Keystone will begin the official notification process by promptly contacting the Department of State and the landowner as appropriate. If human remains are discovered on federal lands and they are determined to be aboriginal, the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations will apply. In this case, construction activities in the vicinity of the burial will cease for a minimum of 30 days.

Figure 2 summarizes the procedures for the treatment of the unanticipated discovery of human remains in South Dakota.

2.1 STEPS TO PROTECT HUMAN REMAINS

If any potential human remains are discovered, the construction activity that resulted in the exposure of the discovery will be immediately halted, followed by the cessation of all construction-related activity with a minimum of 100 feet (30 m) of the discovery. A buffer area no less than 100 feet (30 m) in radius from the discovery will be delineated by a temporary fence. The width of the buffer may be adjusted depending on the size of the discovery. Construction personnel and vehicles will promptly vacate the buffer zone. Vehicle traffic within the buffer zone will be limited to that necessary to remove vehicles and equipment from the buffer zone. Care will be taken to prevent any disturbance of the potential human remains during removal of vehicles and equipment. Construction personnel involved in such a discovery will immediately notify a supervisor (or designated substitute), who will immediately notify the appropriate Keystone contact. A qualified archaeologist will be responsible for determining if the remains are human. Upon being notified by the archaeologist of the presence of human remains, Keystone personnel will determine landownership status. The Keystone Environmental Specialist will begin the official notification process by promptly contacting the appropriate county sheriff's office, the Department of State, and the appropriate landowner if on federal, state, or private lands. The appropriate county sheriff's office will be requested to contact the county coroner.

After all construction activity has been halted and the appropriate personnel have been notified, steps will be taken to ensure that no further disturbance occurs to the human remains discovery.

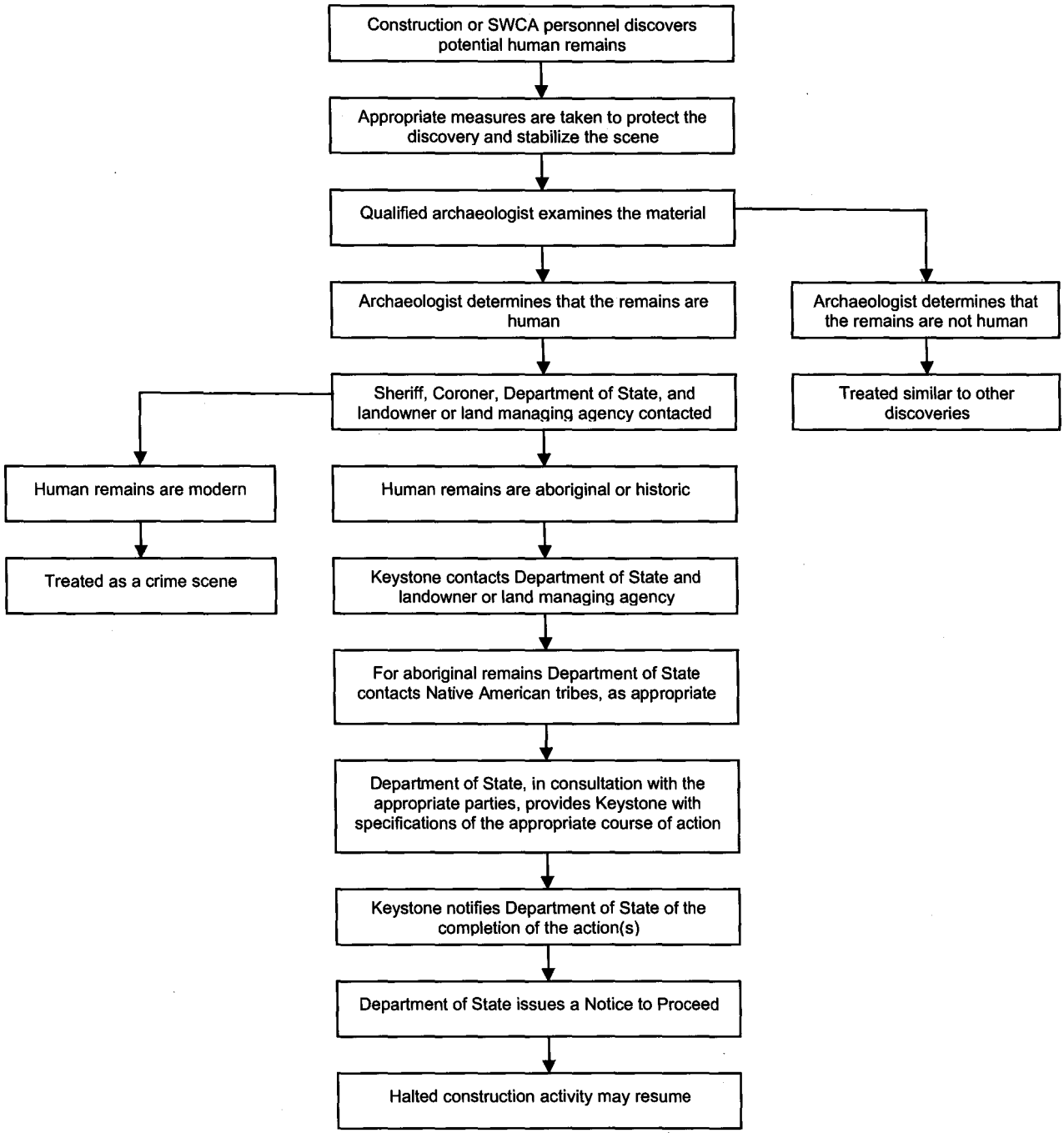


Figure 2. Procedures for the Treatment of Unanticipated Discovery of Human Remains in South Dakota.

The steps to protect the human remains discovery will include:

- ensuring that no ground-disturbing activity resumes within the buffer zone of the discovery; and
- preventing vehicle traffic through that portion of the area of the undertaking beyond that necessary to remove vehicles and equipment already within the area.

The measures to protect the remains and any associated artifacts will remain in effect until Keystone has received notice from the Department of State to proceed with the construction activity in the buffer zone.

2.2 NOTIFICATION PROCEDURES

Upon being notified by the investigating archaeologist of the presence of human remains, the respective Sheriff and County Coroner will be notified by Keystone. Keystone will also contact the relevant agencies and landowners as follows (Table 2):

BLM land – Department of State and BLM

State land – Department of State and SHPO

Private land – Department of State and Landowner

Keystone will notify the Department of State by telephone, followed by written confirmation by fax or e-mail. The notification will include a brief description of the discovery and its location and a clear, explicit statement that the discovery is situated on federal, state, or private lands (as appropriate). The County Sheriff's office and County Coroner initially have jurisdiction with regard to any discovered human remains. If they determine that the remains are not modern or do not reflect a crime scene and/or if they otherwise relinquish their jurisdiction over the remains, then the BLM assumes responsibility for remains on BLM lands and the state assumes responsibility for remains on state/private lands.

Table 2. South Dakota Contact Information for Human Remains Discoveries during Construction of the Keystone XL Pipeline.

Name	Title/Agency	Phone	Fax	Address	E-Mail
Primary: Erin Salisbury	Project Manager, SWCA Environmental Consultants	970-946-8698	303-487-1245	295 Interlocken Boulevard, Suite 300 Broomfield, CO 80021	esalisbury@swca.com
Secondary: Scott Slessman	Principal Investigator, SWCA Environmental Consultants	303-518-4033	303-487-1245	295 Interlocken Boulevard, Suite 300 Broomfield, CO 80021	sslessman@swca.com
Jim Haug	State Archaeologist, SHPO Director, South Dakota State Archaeological Research Center	605-394-1936	605-394-1941	South Dakota State Archaeological Research Center PO Box 1257 Rapid City, SD 57709	Jim.Haug@state.sd.us
Paige Hoskinson Olson	Review and Compliance Coordinator, South Dakota State Historical Society	605-773-6004	605-773-6041	South Dakota State Historical Society 900 Governors Drive Pierre, SD 57501	Paige.HoskinsonOlson@state.sd.us
Jason Haug	Director of Historic Preservation	605-773-6296	605-773-6041	South Dakota State Historical Society 900 Governors Drive Pierre, SD 57501	Jason.Haug@state.sd.us
Chris Nelson	Western Region Archaeological Specialist, SHPO	605-773-3103	605-773-6041	South Dakota State Historical Society 900 Governors Drive Pierre, SD 57501	ChrisB.Nelson@state.sd.us
Fred Lamphere	Butte County Sheriff	605-892-3324	605-723-3327	Butte County Sheriff's Office 839 5th Avenue Belle Fourche, SD 57717	Fred.Lamphere@buttesd.org
Larry Hanes	Haakon County Sheriff	605-859-2741	605-859-2730	Haakon County Sheriff's Office 140 S. Howard Phillip, SD 57567	haakonso@gwtc.net

Name	Title/Agency	Phone	Fax	Address	E-Mail
William Clarkson	Harding County Sheriff	605-375-3414	605-375-3415	Harding County Sheriff's Office 410 Ramsland Street Buffalo, SD 57720	hcso@sdplains.com
Arlo Madsen	Jackson County Sheriff	605-837-2285	605-837-2439	Jackson County Sheriff's Office 700 Main Street Kadoka, SD 57543	
Fred Koester	Jones County Sheriff	605-669-7111	605-669-7109	Jones County Sheriff's Office 104 E. 4th Street Murdo, SD 57559	jonescoso@cji.net
Ron Merwin	Meade County Sheriff	605-347-2681	605-347-6824	Meade County Sheriff's Office 1400 Main Street Sturgis, SD 57785	
Dustin Baxter	Mellette County Sheriff	605-259-3362	605-259-3069	Mellette County Sheriff's Office 321 E. 4th Street White River, SD 57579	Dustin.Baxter@state.sd.us
Don Holloway	Pennington County Sheriff	605-394-6113	605-355-3595	Pennington County Sheriff's Office 300 Kansas City Street Rapid City, SD 57701	
Kelly Serr	Perkins County Sheriff	605-244-5243	605-244-5611	Perkins County Sheriff's Office 100 E. Main Bison, SD 57620	perkinscoso@sdplains.com
Clifford Schroeder	Tripp County Sheriff	605-842-3600	605-842-3621	Tripp County Sheriff's Office 200 E. 3rd Winner, SD 57580	tcso@gwtc.net

2.3 TREATMENT OF HUMAN REMAINS IN SOUTH DAKOTA

Upon being notified by the investigating archaeologist of the presence of human remains, the respective County Sheriff and County Coroner will be notified by the archaeological monitor, as well as the lead agency, the South Dakota SHPO, Keystone, and the private landowner, if applicable (Table 2).

The County Sheriff's office and County Coroner have initial jurisdiction regarding any discovered human remains. The County Sheriff and County Coroner may determine that the remains are not modern, do not reflect a crime scene, and/or may otherwise relinquish their jurisdiction over the remains.

Upon receiving notice that the County Sheriff's office and County Coroner have relinquished jurisdiction over the discovery, Keystone will notify the lead agency, the South Dakota SHPO, and private landowner (if applicable) by telephone, followed by written confirmation by fax or certified mail. The notification will include a brief description of the discovery, its location, and an explicit statement that the discovery is situated on federal, state, or private lands (as appropriate). In cases of discoveries of human remains on private land, Keystone will advise the landowner that Native American tribe(s) with an identifiable interest in the discovery may request to inspect the burial and make recommendations concerning the disposition of the remains within 48 hours of being notified. The South Dakota SHPO may offer to mediate consultation with the landowner.

A forensic expert may be required to determine whether the remains are Native American or Euro-American. If the remains are found to be Native American and the discovery is on private or state lands, SHPO will initiate the notification and consultation process involving the appropriate tribe(s) and/or private landowner. If the remains are found to be Native American and the discovery is on BLM or other federally managed lands, the BLM/lead federal agency will initiate the notification and consultation process involving the appropriate tribe(s) and/or private landowner (BLM 2004). Additionally, if the remains are found to be Native American, the Department of State will comply with all applicable provisions of NAGPRA. The South Dakota SHPO will also determine the appropriate course of action for any non-Native American human remains, and this may include excavation.

After the appropriate course of action has been determined, the Department of State, in consultation with the South Dakota SHPO, will provide Keystone with written notification of its decision, including specific details of any actions that Keystone must complete before written authorization to proceed with construction is granted. Keystone will provide written notification to the Department of State upon completion of any such actions. That notification will include a statement of the nature, scope, and outcomes of the actions completed. After Keystone has successfully fulfilled any such responsibilities, the Department of State will provide Keystone with authorization to proceed with the halted construction activity, provided that the remains are not within an NRHP-eligible archaeological site requiring additional investigations. If the discovery is within an NRHP-eligible site, the procedures outlined in Section 2.0 above may apply. The authorization will include a statement of any stipulations that will apply during or after the resumption of construction. Keystone will provide written documentation to the Department of State after any such stipulations have been fulfilled.

In all cases of human remains to which the County Sheriff and County Coroner have relinquished jurisdiction, the remains will be held temporarily by the Department of State until their final disposition is determined.

3.0 REFERENCES CITED

Bureau of Land Management (BLM)

2004 *Tribal Consultation Under Cultural Resource Authorities: Bureau of Land Management Handbook H-8120.* United States Department of the Interior, Bureau of Land Management.

ATTACHMENT A

Keystone XL Pipeline Field Attachment: Plan for Unanticipated Historic Properties and Human Remains in South Dakota

KEYSTONE XL PIPELINE FIELD ATTACHMENT:

PLAN FOR UNANTICIPATED HISTORIC PROPERTIES AND HUMAN REMAINS IN SOUTH DAKOTA

A. INTRODUCTION

In compliance with provisions of the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act (NAGPRA), and the provisions of applicable South Dakota state laws, TransCanada Keystone Pipeline, LP (Keystone) has established the following procedures to be used in the event that previously unreported historic properties or human remains are found during construction of the Keystone XL Pipeline Project (the Project).

The procedures differ depending on whether suspected human remains or other significant cultural materials are encountered.

B. IF CULTURAL MATERIALS ARE DISCOVERED BY CONSTRUCTION PERSONNEL

Contractor must stop work immediately to protect the integrity of the find as stipulated in the contract General Conditions, Article (to be determined) (Figure A).

If the discovery to be protected is close to construction operations and sensitive to disturbance, the location will be marked and barricaded as stipulated in the contract General Conditions, Article (to be determined).

Contractor will not resume work until clearance is granted by the Keystone Environmental Inspector, as stipulated in the contract (to be determined).

Contractor will notify the on-site Construction Inspector or Environmental Inspector, who will notify the Archaeological Consultant (SWCA Environmental Consultants) to inspect the location of the find and evaluate its significance. The Keystone Environmental Specialist will also be notified.

Keystone Environmental Inspector:

[To Be Determined]

Archaeological Consultant:
Erin Salisbury (Project Manager)
SWCA Environmental Consultants
295 Interlocken Blvd., Suite 300
Broomfield, CO 80021
Office telephone: 303-487-1183
Fax: 303-487-1245
E-mail: esalisbury@swca.com

Keystone Environmental Specialist:
[to be determined]

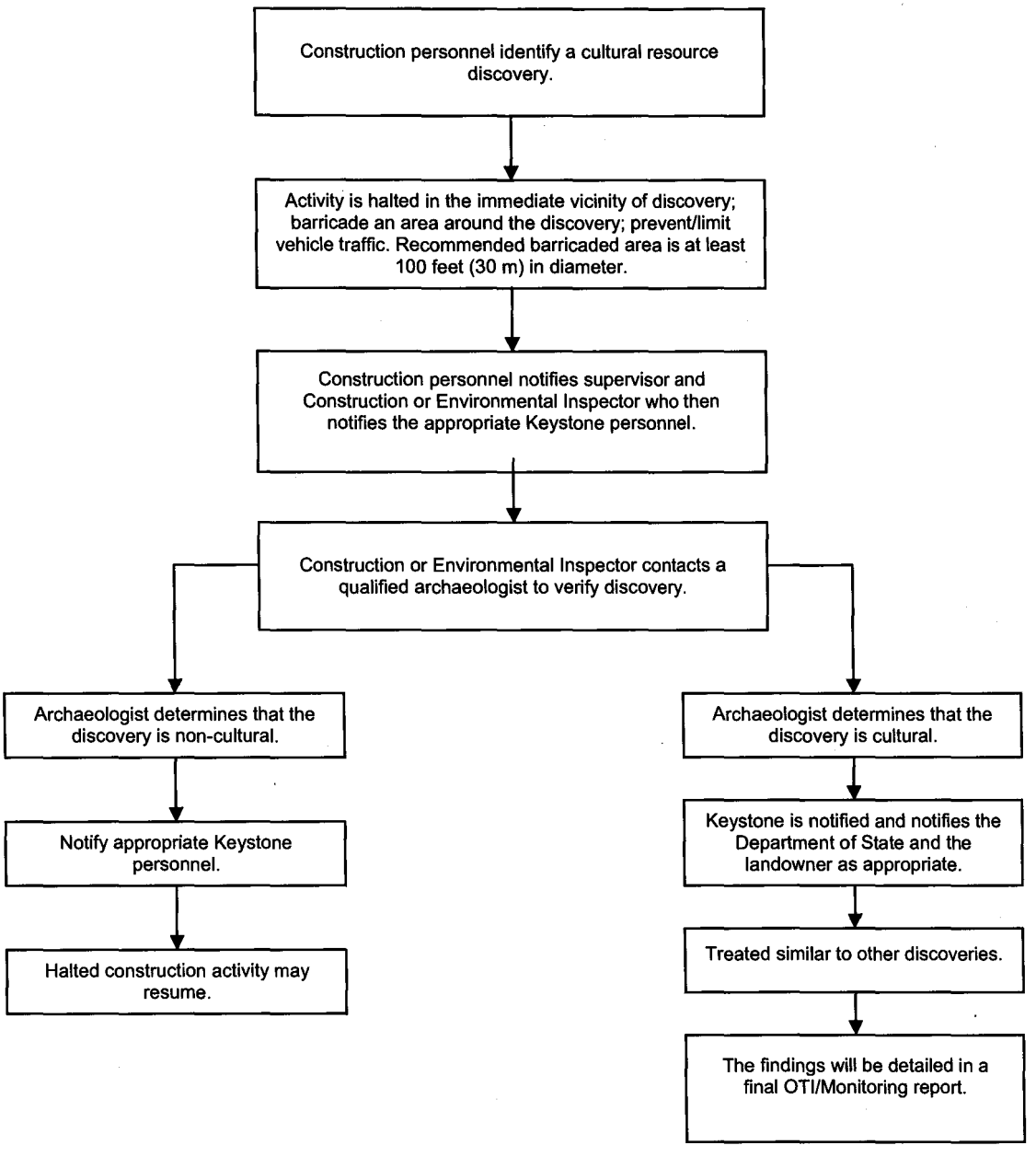


Figure A. Procedures for Addressing Cultural Resource Discoveries by Construction Personnel.

The Archaeological Consultant will promptly travel to the site, evaluate the find, and immediately notify the Environmental Specialist by telephone regarding the significance of the find. If the Archaeological Consultant determines that the discovery is non-cultural, the Construction Inspector or Environmental Inspector will be notified that construction can resume.

If the Archaeological Consultant determines that the find represents a simple find that is not potentially significant, then the Archaeological Consultant will document the find on a South Dakota State Archaeological Research Center for and inform the Construction Inspector or Environmental Inspector that construction can resume. If the Archaeological Consultant determines that the find represents a potentially significant find of cultural materials, the procedures in Section C of this plan will be followed, including immediate cessation of activity within the area. The Archaeological Consultant will notify the relevant agency officer depending on landownership of any complex discoveries, by telephone no more than 48 hours after the discovery, with written follow-up within 36 hours. The Archaeological Consultant, in consultation with the Department of State, will determine site eligibility and identify treatment options. If the Archaeological Consultant determines that the discovery constitutes human remains, the procedures described in Section D of this plan will be followed.

C. IF POTENTIALLY SIGNIFICANT CULTURAL MATERIALS ARE DISCOVERED

The Keystone Environmental Specialist or Archaeological Consultant will promptly notify the Department of State of the find.

The Keystone Environmental Specialist or Archaeological Consultant will also promptly notify the SHPO of the find if the discovery is made on state land.

South Dakota SHPO Contact:

Jim Haug
State Archaeologist
State Historic Preservation Office
South Dakota State Archaeological Research Center
PO Box 1257
Rapid City, SD. 57709
Phone: 605-394-1936
Fax: 605-394-1941
E-mail: Jim.Haug@state.sd.us

The Environmental Specialist or Archaeological Consultant will request input from the Department of State and other parties regarding appropriate measures to avoid additional damage. These steps include:

- Immediate cessation of activity within a sufficient area to protect the discovery itself and provide a buffer zone for adequate and safe investigation of the discovery and any other features or artifacts that may be associated with the discovery.

- A barricade (typically a temporary fence) around the discovery will be erected. The barricade should be sufficiently large to protect the discovery and any known or potential cultural materials associated with the discovery. A general guideline for the barricade will be to provide a buffer of at least 100 feet (30 m) around the discovery, but this barricaded area can be larger or smaller in order to protect the discovery adequately without unnecessary hindrance to construction.
- Discoveries will be recorded and evaluated according to standards and procedures used for recording sites during the Class III inventory phase of the Project.
  - Initial treatment of discovery will include recording location of the remains within the right-of-way and within any previously recorded site boundary; recording summary data concerning the discovery (e.g., dimensions, qualitative characteristics, associated remains); photographing discovery; profiling trench walls containing cultural features and overall context of exposed discovery; profiling trench walls containing cultural features or strata (where safe and prudent).
  - Discoveries made during right-of-way monitoring may require excavation; all feature fill will be collected for laboratory analysis (e.g., pollen studies, flotation, carbon dating); feature plans and profiles drawn; features photographed; uncollected feature fill to be screened using 0.25-inch mesh.
- Discovery report describing each identified and evaluated site to be submitted to Keystone, the Department of State
- If find determined eligible for National Register of Historic Places nomination, a Supplementary Historic Preservation Treatment Plan will be prepared.

If the find is determined to be isolated, a simple discovery, or completely disturbed by construction activities, then the Environmental Specialist will consult with the Department of State and other parties, and will request approval to resume construction, subject to any further mitigation that may be required.

D. IF HUMAN REMAINS ARE DISCOVERED

Keystone will treat all human interments in accordance with federal and state law as it applies to private, state, and public lands in South Dakota.

The Keystone on-site Environmental Inspector will take appropriate measures to protect the discovery from further disturbance. Upon being notified by the Archaeological Consultant of the presence of human remains, Keystone personnel will determine landownership status. Keystone will begin the official notification process by promptly contacting the appropriate federal, state, or private landowner (if applicable) (Figure B). The measures to protect the human remains and any associated artifacts will remain in effect until they have been fully evaluated and the appropriate treatment of the discovery (if applicable) has been completed and Keystone has received formal notice to proceed with the construction activity.

The Keystone Environmental Specialist or the Archaeological Consultant will also notify the appropriate county sheriff's office. The appropriate county sheriff's office will be requested to

contact the county coroner. The county sheriff's office and county coroner have jurisdiction with regard to any discovered human remains (Table A). If they determine that the remains are not modern or do not reflect a crime scene and/or if they otherwise relinquish their jurisdiction over the remains, Keystone will consult with the appropriate parties regarding additional steps to be followed.

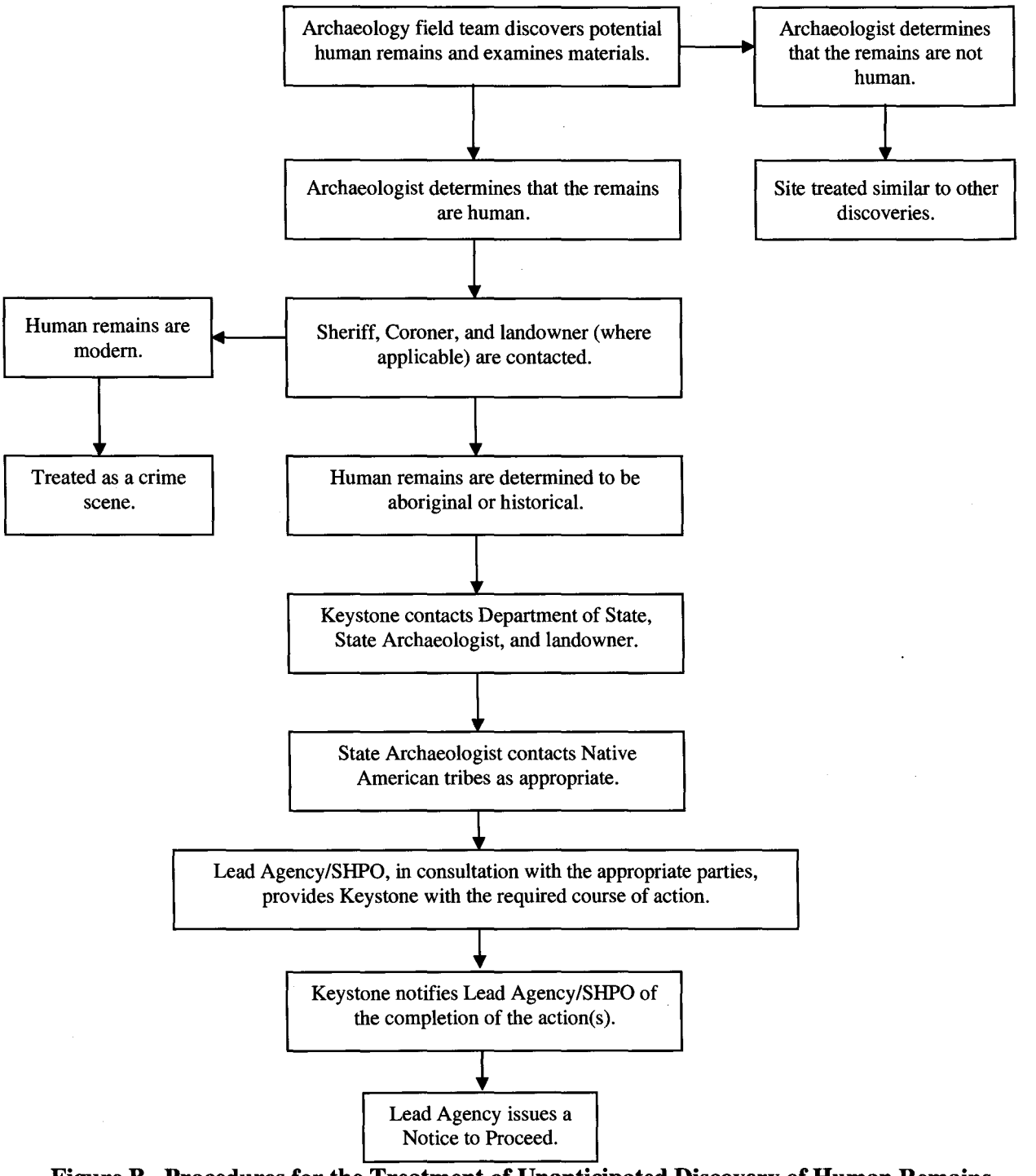


Figure B. Procedures for the Treatment of Unanticipated Discovery of Human Remains in South Dakota.

The Keystone Environmental Specialist or Archaeological Consultant will promptly notify the Department of State of the find.

The Keystone Environmental Specialist or Archaeological Consultant will also promptly notify the SHPO of the find if the discovery is made on state land.

South Dakota SHPO Contact:

Jim Haug
State Archaeologist
State Historic Preservation Office
South Dakota State Archaeological Research Center
PO Box 1257
Rapid City, SD 57709
Phone: 605-394-1936
Fax: 605-394-1941
E-mail: Jim.Haug@state.sd.us

Regardless of land status, if the human remains are modern, the sheriff or coroner will assume responsibility. Human remains will be treated in accordance with procedures agreed upon by the Department of State and SHPO for state and private land, and with applicable federal law for finds on all lands (such as the Native American Graves Protection and Repatriation Act).

If the human remains appear to be prehistoric or historic Native American and are on federal land, the BLM will meet the requirements of NAGPRA for all Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony on a case-by-case basis in accordance with 43CFR10.

Table A. South Dakota Sheriff and Coroner Contact Information for Human Remains Discoveries during Construction of the Keystone XL Pipeline.

Name	Title/Agency	Phone	Fax	Address	E-Mail
Fred Lamphere	Butte County Sheriff	605-892-3324	605-723-3327	Butte County Sheriff's Office 839 5th Avenue Belle Fourche, SD 57717	Fred.Lamphere@buttesd.org
Larry Hanes	Haakon County Sheriff	605-859-2741	605-859-2730	Haakon County Sheriff's Office 140 S. Howard Phillip, SD 57567	haakonso@gwtc.net
William Clarkson	Harding County Sheriff	605-375-3414	605-375-3415	Harding County Sheriff's Office 410 Ramsland Street Buffalo, SD 57720	hcso@sdplains.com
Arlo Madsen	Jackson County Sheriff	605-837-2285	605-837-2439	Jackson County Sheriff's Office 700 Main Street Kadoka, SD 57543	
Fred Koester	Jones County Sheriff	605-669-7111	605-669-7109	Jones County Sheriff's Office 104 E. 4th Street Murdo, SD 57559	jonescoso@cji.net
Ron Merwin	Meade County Sheriff	605-347-2681	605-347-6824	Meade County Sheriff's Office 1400 Main Street Sturgis, SD 57785	
Dustin Baxter	Mellette County Sheriff	605-259-3362	605-259-3069	Mellette County Sheriff's Office 321 E. 4th Street White River, SD 57579	Dustin.Baxter@state.sd.us

3-55

Data Request:

Provide the distance to the closest noise sensitive areas (NSA) from each Horizontal Directional Drilling (HDD) entry and exit location. For NSAs located within 0.5 mile of the HDD operations, calculate the noise levels attributable to the HDD operations at the NSA and the estimated noise increase at the NSA. Provide the near field noise data and calculations used to estimate the noise levels at the NSA.

Response:

The following table sets forth the nearest structures to HDD entry and exit points in South Dakota:

HDD	# Structures	Closest Structure to Entry	Closest Structure to Exit
Little Missouri River HDD (Harding County)	1	2,357.44 ft	816.32 ft
Cheyenne River HDD (Meade/Pennington/Haakon County)	1	N/A	1,828.75 ft
White River HDD (Lyman/Tripp County)	5	1,378.93 ft	2,280.29 ft

This list of structures may have sheds, hunting trailers, or other structure not used for habitation. Surveys have not been completed to determine whether these structures are habitable.

Due to the short-term nature of HDD operations, there are currently no requirements to measure noise levels at HDDs.

Response prepared by: Richard Gale, Trow

3-56

Data Request:

If the noise levels attributable to an HDD operation exceed a nighttime sound level (Ln) of 55 dBA at the closest NSA, identify and describe any mitigation measures that Keystone would implement to reduce the Ln to less than 55 dBA.

Response:

Keystone does not anticipate using any mitigative measures for noise attenuation for the short-term HDD construction operations.

Response prepared by: Neil Lewis, TransCanada

3-57

Data Request:

Table 17 of the application provides a list of the pump station sites and the distance to the closest NSA. For NSAs located within 0.5 mile (i.e., at pump stations 19 and 20), calculate the noise levels attributable to the pump station operations at the NSA. Provide the near field noise data and calculations used to estimate the noise levels at the NSA.

Response:

Keystone has not estimated noise levels for future pump station operations. If required by the PUC order, Keystone will conduct the necessary studies to determine the measures needed (if any) to meet a 55 dBA guideline at NSAs prior to operation.

Response prepared by: Jon Schmidt, Trow

3-58

Data Request:

If the noise levels attributable to pump station operations exceed a day night sound level (Ldn) of 55 dBA, identify and describe any mitigation measures Keystone would implement to reduce the Ldn to less than 55 dBA.

Response:

Keystone will consider appropriate site-specific noise mitigation measures if required by the SD PUC Order.

Response prepared by: Neil Lewis, Keystone

3-59

Data Request:

Provide an assessment of noise impacts that would result from the future installation of additional pumps at the pump stations (as described in section 2.1.2 of the application).

Response:

See response to 3-57.

Response prepared by: Neil Lewis, Keystone

3-60

Data Request:

Revise table 6 to show vegetation communities crossed in South Dakota in miles by county, and identify temporary and permanent impacts on vegetation communities (including riparian communities) in acres along the pipeline right-of-way, within the pump station sites, within contractor or pipe yards, and along access roads.

Response:

Table 3-60a Vegetative Communities Crossed by the Project Centerline [1]

State	County	Vegetative Communities Crossed (miles)								
		Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
South Dakota	Harding	5.9	0.4	63.2	0.0	0.0	0.0	0.5	0.1	70.1
	Butte	0.0	0.0	3.6	0.0	0.0	0.0	0.1	0.0	3.7
	Perkins	0.4	0.2	14.5	0.0	0.0	0.0	0.0	0.0	15.1
	Meade	9.1	0.5	39.9	0.2	0.0	0.0	0.1	0.1	50.0
	Pennington	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2
	Haakon	18.8	0.7	38.6	0.2	0.1	0.1	0.1	0.2	58.8
	Jones	16.5	0.4	22.6	0.0	0.0	0.0	0.0	0.0	39.5
	Lyman	4.7	0.1	7.0	0.0	0.0	0.0	0.0	0.0	11.8
	Tripp	24.5	0.6	33.2	0.3	0.1		0.4	0.0	59.1
	TOTAL	**80.0**	**2.9**	**222.7**	**0.7**	**0.3**	**0.1**	**1.3**	**0.4**	**308.3**

Response prepared by: Richard Gale, Trow

3-60 (Continued)

Table 3-60b

Vegetative Communities Crossed by the Project Permanent ROW [1]

TYPE	COUNTY	FEATURE	FEATURE ID	Vegetative Communities Crossed (acres)								
				Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
PERMANENT	Harding	PERMANENT EASEMENT	-	36.0	2.4	383.3	0.0	0.0	0.0	3.1	0.5	425.3
	Butte		-	0.0	0.0	21.8	0.0	0.0	0.0	0.8	0.0	22.6
	Perkins		-	2.4	1.3	87.5	0.0	0.0	0.0	0.0	0.0	91.2
	Meade		-	70.0	3.3	241.8	1.1	0.1	0.0	0.5	0.6	317.4
	Pennington		-	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
	Haakon		-	114.2	4.0	234.2	1.1	0.4	0.0	0.7	1.0	355.7
	Jones		-	100.1	2.3	136.8	0.1	0.0	0.0	0.1	0.0	239.5
	Lyman		-	28.4	0.7	42.2	0.2	0.0	0.0	0.1	0.0	71.7
	Tripp		-	148.6	3.8	201.5	1.6	0.0	0.0	2.5	0.2	358.0
	TOTAL PERMANENT EASEMENTS			**499.8**	**17.8**	**1349.6**	**4.1**	**0.5**	**0.0**	**8.0**	**2.2**	**1881.9**
	Harding	PUMP STATION	PS-15	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	7.4
			PS-16	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	5.0
	Meade		PS-17	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Haakon		PS-18	0.0	0.2	4.8	0.0	0.0	0.0	0.0	0.0	5.0
	Jones		PS-19	5.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	6.5
	Tripp		PS-20	1.5	0.0	5.6	0.0	0.0	0.0	0.0	0.0	7.2
			PS-21	0.1	0.0	5.0	0.0	0.0	0.0	0.0	0.0	5.0

Response prepared by: Richard Gale, Trow

TYPE	COUNTY	FEATURE	FEATURE ID	Vegetative Communities Crossed (acres)								
				Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
	TOTAL PS			12.4	0.9	27.7	0.0	0.0	0.0	0.0	0.0	41.1
	Harding	CAR	CAR-090	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
	TOTAL PERMANENT CAR			0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
	TOTAL PERMANENT ROW			512.2	27.7	1377.3	4.1	0.5	0.0	8.0	2.2	1932.0

Response prepared by: Richard Gale, Trow

Table 3-60c

Vegetative Communities Crossed by the Project Temporary ROW [1]

TYPE	COUNTY	FEATURE	FEATURE ID	Vegetative Communities Crossed (acres)								
				Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
TEMPORARY	Harding	TEMPORARY EASEMENT	-	48.6	3.6	518.1	0.0	0.0	0.0	3.6	0.7	574.7
	Butte		-	0.0	0.0	29.0	0.0	0.0	0.0	1.1	0.0	30.1
	Perkins		-	2.9	2.1	2.5	0.0	0.0	0.0	0.1	0.0	7.6
	Meade		-	88.8	4.7	328.8	1.6	0.1	0.0	0.5	1.0	425.6
	Pennington		-	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7
	Haakon		-	145.3	5.9	311.1	1.6	0.5	0.0	0.7	1.6	466.7
	Jones		-	129.6	3.8	182.1	0.3	0.0	0.0	0.2	0.0	315.9
	Lyman		-	35.5	1.1	54.8	0.2	0.0	0.0	0.1	0.0	91.8
	Tripp		-	152.0	6.2	262.4	2.4	0.0	0.0	3.0	0.2	426.1
	TOTAL TEMP EASEMENTS			602.7	27.4	1689.6	6.0	0.7	0.0	9.3	3.4	2339.2
	Harding	TEMP CAR	CAR-041	7.2	0.0	2.4	0.0	0.0	0.0	0.0	0.0	9.7
			CAR-043		0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.5
			CAR-044	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.2
			CAR-045	1.9	0.0	2.7	0.0	0.0	0.0	0.0	0.0	4.5
			CAR-069	4.7	0.0	3.7	0.0	0.0	0.0	0.0	0.0	8.4
	Meade		CAR-077	0.0	3.3	1.7	0.0	0.0	0.0	0.0	0.0	5.0
			CAR-078	0.0	6.0	3.8	0.0	0.0	0.0	0.0	0.0	9.7

Response prepared by: Richard Gale, Trow

TYPE	COUNTY	FEATURE	FEATURE ID	Vegetative Communities Crossed (acres)								
				Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
	Perkins		CAR-046	0.0	1.3	0.2	0.0	0.0	0.0	0.0	0.0	1.4
			CAR-047	0.0	9.0	2.7	0.0	0.0	0.0	0.0	0.0	11.7
			CAR-048	0.0	5.9	4.1	0.0	0.0	0.0	0.0	0.0	9.9
			CAR-049	0.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	1.1
	Haakon		CAR-052	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2
			CAR-079	0.2	1.2	1.6	0.0	0.0	0.0	0.0	0.0	3.0
	Lyman		CAR-080	0.0	4.4	1.6	0.0	0.0	0.0	0.0	0.0	6.0
	Tripp		CAR-081	0.0	3.3	3.1	0.0	0.0	0.0	0.0	0.0	6.4
			CAR-082	0.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.9
			CAR-091	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
	TOTAL TEMPORARY CAR			14.9	36.0	28.8	0.0	0.0	0.0	0.1	0.0	79.8
	Harding	CONTRACTOR YARDS	BUFFALO	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.1
	Meade		FAITH	0.0	0.0	30.3	0.0	0.0	0.0	0.0	0.0	30.3
	Haakon		PHILIP	0.0	0.0	29.7	0.0	0.0	0.0	0.0	0.0	29.7
	Jones		MURDO	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.1
	Gregory		FAIRFAX	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.1
	TOTAL CONTRACTOR YARDS			90.3	0.0	60.1	0.0	0.0	0.0	0.0	0.0	150.3
	Harding	PIPE YARDS	PY-10	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0
			PY-11	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
			PY-12	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0

TYPE	COUNTY	FEATURE	FEATURE ID	Vegetative Communities Crossed (acres)								
				Agriculture	Previously Disturbed	Grassland/ Rangeland	Upland Forest	Riverine/Open Water	Wetlands: Palustrine Forested	Wetlands: Palustrine Emergent	Wetlands: Scrub-Shrub	Total[2]
	Meade		PY-13	0.0	0.0	29.1	0.0	0.6	0.0	0.0	0.0	29.7
			PY-14	0.0	0.0	26.9	0.0	0.0	0.0	0.0	0.0	26.9
	Haakon		PY-15	29.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	30.0
			PY-16	30.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.4
	Jones		PY-17	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.1
			PY-18	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
	Tripp		PY-19	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0
			PY-20	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0
	TOTAL PIPE YARDS			149.8	0.7	176.0	0.0	0.6	0.0	0.0	0.0	327.1
	TOTAL TEMPORARY ROW			857.7	64.0	1954.4	6.1	1.3	0.0	9.4	3.4	2896.3

[1] Delineations were based on field surveys wherever possible. Where surveys were not conducted, a combination of national data coverage (e.g., NWI) and aerial interpretation was used. Off ROW locations do not reflect environmental survey results.

[2] Discrepancies in totals are due to rounding;; off ROW locations do not reflect environmental survey results.

Response prepared by: Richard Gale, Trow

3-61

Data Request:

What is the crossing length of the pipeline route (in feet), and the temporary and permanent impact (in acres), for the Sand Hills dune prairie community?

Response:

The pipeline centerline crosses approximately 11.1 miles (58,608 feet) of areas with sand hills soils (not labeled as sand hills dune prairie community in South Dakota, only Nebraska).

County	From MP	To MP	Distance Crossed (miles)
South Dakota			
Tripp County	570.2	572.8	2.6
	574.7	575.6	0.9
	576.5	578.7	2.2
	582.8	588.2	5.4

Areas with temporary impacts to sand hills soils are outlined below.

County	TYPE	FACILITY	Area Crossed (acres)
South Dakota			
Tripp County	Permanent	Easement	66.8
	Temporary	Easements and ATWS	83.7
		Pipe yards	30.0

Response prepared by: Richard Gale, Trow

3-62

Data Request:

Describe any vegetation maintenance to be conducted on the permanent right-of-way between horizontal directional drilling (HDD) entry and exit points, including activities that may be required by the U.S. Department of Transportation. Describe the width and frequency of any necessary vegetation clearing in these areas.

Response:

At this time, Keystone does not plan to cut or maintain a cleared right-of-way between HDD entry and exit locations.

Response prepared by: Jon Schmidt, Trow

3-63

Data Request:

Provide an update on noxious weed surveys conducted in 2008 and 2009. Provide an estimate of miles of the pipeline route that would likely require site-specific pre-construction weed control measures such as treatment with herbicides, full right-of-way topsoil segregation, or equipment wash stations to prevent the spread of noxious weeds to adjacent areas.

Response:

Table 3-63.1 provides a summary of noxious and/or invasive weed populations that were documented in South Dakota during field surveys conducted in 2008 and 2009.

Table 3-63.1 Noxious and Invasive Weed Species Documented During Field Surveys

Common Name	Scientific Name	Milepost Enter	Milepost Exit	Total Miles
Saltcedar	*Tamarix Ramosissima*	415.19	415.29	0.10
Giant Knotweed	*Polygonum Sachalinense*	425.95	426.06	0.11
Giant Knotweed	*Polygonum Sachalinense*	426.06	426.55	0.49
Canada Thistle	*Cirsium Arvense*	429.49	429.54	0.05
Giant Knotweed	*Polygonum Sachalinense*	429.65	429.78	0.13
Canada Thistle	*Cirsium Arvense*	451.95	451.97	0.02
Crested Wheatgrass	*Agropyron Cristatum*	446.07	447.24	0.17
Crested Wheatgrass	*Agropyron Cristatum*	447.24	447.39	0.15
Unk Wheat Grass	*Unk Wheat Grass*	447.51	448.30	0.79
Smooth Brome	*Bromus Inermis*	448.24	448.26	0.02
Canada Thistle	*Canada Thistle*	450.71	450.76	0.05
Canada Thistle	*Canada Thistle*	457.33	457.37	0.04
Giant Knotweed	*Polygonum Sachalinense*	467.01	467.05	0.04

Response prepared by: Scott Patti, AECOM

Table 3-63.1 Noxious and Invasive Weed Species Documented During Field Surveys

Common Name	Scientific Name	Milepost Enter	Milepost Exit	Total Miles
Common Crupina	*Crupina Vulgaris*	467.54	467.86	0.32
Canada Thistle	*Cirsium Arvense*	497.19	497.24	0.05
Canada Thistle	*Cirsium Arvense*	499.90	499.99	0.09
Plumless Nodding Thistle	*Carduus Nutans*	519.86	519.94	0.08
Field Bindweed	*Convolvulus Arvensis*	532.55	532.57	0.02
Canada Thistle	*Canada Thistle*	533.43	533.47	0.04
Canada Thistle	*Canada Thistle*	533.54	533.67	0.13
Canada Thistle	*Canada Thistle*	533.82	533.95	0.13
Canada Thistle	*Canada Thistle*	536.14	536.34	0.20
Field Bindweed	*Convolvulus Arvensis*	552.59	553.01	0.42
Canada Thistle	*Cirsium Arvense*	553.04	553.16	0.12
Canada Thistle	*Cirsium Arvense*	553.63	553.63	<0.01
Canada Thistle	*Cirsium Arvense*	559.58	559.90	0.02
Canada Thistle	*Cirsium Arvense*	560.15	560.37	0.22
Diffuse Knapweed	*Centaurea Diffusa*	564.84	565.19	0.35
Bull Thistle	*Cirsium Vulgare (Savi) Ten.*	573.81	573.95	0.14
Bull Thistle	*Cirsium Vulgare (Savi) Ten.*	574.16	574.16	<0.01
Bull Thistle	*Cirsium Vulgare (Savi) Ten.*	574.52	574.52	<0.01
Giant Knotweed	*Polygonum Sachalinense*	574.81	574.81	<0.01

A conference call was conducted by AECOM on February 18th, 2009, with representatives of relevant weed district offices to discuss noxious weed mitigation in their respective counties. The conference call was conducted in order to address questions and/or concerns that the local weed coordinators have in regard to construction of the Keystone XL Project.

Response prepared by: Scott Patti, AECOM

3-63 (Continued)

In summary, 6 of 8 weed districts and the state coordinator crossed by the Project in the state of South Dakota agreed on the following mitigation measures to control the spread of noxious and/or invasive weed species during construction:

- Maps showing the locations of noxious weed populations;
- Pre-treatment of small noxious weed populations (but also try to manage large noxious populations to the extent practical);
- Segregate topsoil in areas where noxious weed populations exist; and
- Clear and spray weeds before seed set.

All South Dakota weed districts would prefer to have Keystone spray noxious weed populations within the disturbance area due to lack of funding among weed districts. Representatives of each weed district also recommended the use of certified weed-free straw and seed during construction and reclamation activities on the right-of-way.

Response prepared by: Scott Patti, AECOM

3-64

Data Request:

Table 8 provides seasonal timing restrictions that apply to activities within specified buffer distances from greater sage grouse, sharp-tailed grouse, and greater prairie chicken leks. Has Keystone determined through field surveys, consultations, or other means whether any leks are present within the buffer distances of project activities in South Dakota? If yes, provide details.

Response:

Lek surveys were completed in the spring of 2009. Surveys have to be repeated prior to construction to determine if they are permanent lekking grounds or a one time use.

In South Dakota, a greater sage grouse lek and one sharp-tailed grouse lek were noted near the pipeline route in Harding County. Consultations with SD Game, Fish, and Parks will continue to determine what, if any, measures can be implemented on private property for these two leks.

Response prepared by: Jon Schmidt, Trow

3-65

Data Request:

Provide a more detailed description of the mitigation measures to be implemented to reduce impacts on avian species due to construction of new power lines. Because the power lines would be permitted and constructed by local providers (and not by Keystone), explain the basis for Keystone's statements that these measures would be implemented.

Response:

See revised SD PUC Application.

Response prepared by: Pat Farmer, Westech

3-66

Data Request:

Provide an assessment of impacts on avian species resulting from construction of antennae masts at pump stations or valve sites. Identify any measures Keystone would implement to minimize or mitigate these impacts.

Response:

See response to DR 3-8.

The U.S. Fish and Wildlife Service (FWS) has developed guidelines for siting, construction and operation of communication towers in order to reduce the potential danger to birds, but these guidelines are primarily intended for structures taller than 199 feet (the minimum height requiring aviation safety lights) and most are not applicable to the structures proposed for the Keystone XL facilities. However, the proposed structures do comply with the guidelines that recommend that structures be un-guyed, use bird-friendly lighting (Keystone structures will not have light) and have a minimal "footprint" effect on wildlife habitat at the site.

The proposed structures are not expected to significantly impact birds. For example, in a finding dated April 20, 2008, available at http://www.fws.gov/verobeach/images/pdfLibrary/Cell_Towers_Clearance%20Letter_amended.pdf , the FWS stated, "We have determined the following activities are not likely to increase risk to any federally listed species or have significant adverse impacts on migratory birds:

(1) The construction of lattice or monopole design communication towers less than 200 feet in total height that do not contain guy wires."

Consequently no other mitigation measures are proposed for this project.

Response prepared by: Pat Farmer, Westech

3-67

Data Request:

Identify any impacts on terrestrial or aquatic ecosystems resulting from construction of new access roads or upgrades to existing roads.

Response:

See responses 3-12 and 3-48. Impacts from access road use during construction as well as the one permanent access road required for pump station operations is described in 2.7, 2.14, and section 4 of the CMR Plan in Exhibit B of the SD PUC Application.

Response prepared by: Jon Schmidt, Trow

3-68

Data Request:

Provide an update on the status and outcome of the western prairie fringed orchid surveys that Keystone anticipated conducting between June 15 and July 15, 2009. If the surveys have been fully or partially completed, state whether any western prairie fringed orchids were identified within any areas anticipated to be disturbed by the project and, if so, what avoidance or mitigation measures are being considered in coordination with the U.S. Fish and Wildlife Service (USFWS). If the surveys have not been completed, explain why not, how many areas remain to be surveyed, and the schedule for conducting the remaining surveys.

Response:

Surveys to identify suitable habitat and species occurrence for the federally threatened western prairie fringed orchid occurred along the Keystone XL Project (Project) construction right-of-way (ROW) from June 24 to June 29, 2009. Eleven sites totaling approximately 20 miles of habitat were initially selected for surveys along the proposed ROW in Tripp County, South Dakota. Appropriate survey locations were determined through agency correspondence, Natural Heritage Program species occurrence data, historical species records, land use data, and biological field survey data emphasizing wetlands and waterbodies and general habitat descriptions collected along the proposed route in 2008 and 2009. Field surveys were conducted at all 11 sites. Additionally, surveys were conducted during the western prairie fringed orchid flowering period (mid-June to late July) and the known range (along the Project route south of Highway 18 in Tripp County, South Dakota) to locate individual occurrence of the orchid. No western prairie fringed orchids were observed along the proposed ROW in Tripp County, South Dakota. Moderate to High quality habitat for the orchid was identified at 5 of the 11 sites.

The Pierre, South Dakota U.S. Fish and Wildlife Service (USFWS) Ecological Field Office recommends multiple year surveys due to the sporadic flowering events of the orchid. Therefore, based on agency concurrence with the 2009 survey results, additional presence/absence surveys are planned prior to construction at the 5 sites containing suitable habitat and any additional re-routes south of Highway 18 in Tripp County, South Dakota. If the preconstruction surveys identify the western prairie fringed orchid within

Response prepared by: Scott Patti, AECOM

3-68 (Continued)

the Project ROW, Keystone will consult with the USFWS to determine appropriate conservation measures. Conservation measures for identified populations could include:

- reducing the width of the construction ROW in areas where populations have been identified, to the extent possible;
- restoring habitat by using an approved seed mix provided by the NRCS or appropriate state agency; or
- collecting seed to repopulate the ROW or an appropriate offsite location, or for creation of a nursery population until viable natural populations have become established.

Conservation measures for populations of western prairie fringed orchid will be developed on a site-specific basis in consultation with the USFWS, if warranted.

Response prepared by: Scott Patti, AECOM

3-69

Data Request:

Table 4 in section 5.2 of the application states that "Keystone will implement mitigation measures identified within the USFWS-approved Biological Assessment." Provide an update on the status of the Biological Assessment and on Section 7 (Endangered Species Act) consultations with the USFWS. When available, provide a copy of the Biological Assessment, including effect determinations (no effect, may affect, not likely to adversely affect, may adversely affect, likely to adversely affect) for all federally listed species identified in the application.

Response:

The DOS has a draft Biological Assessment (BA) that they are discussing with the USFWS. Keystone is not aware of any decisions on species impacts or mitigative measures at this time. It is expected that the DEIS will contain a record of that decision making process.

Response prepared by: Jon Schmidt, Trow

3-70

Data Request:

Section 5.5.3.2 and table 10 mention the whooping crane as a federally and state-listed species that could potentially be present as a migrant in the project area, but does not identify any survey requirements or mitigation measures discussed with the USFWS or South Dakota Game, Fish, and Parks (SDGFP) related to this species. Describe measures that are being discussed with these agencies and/or that would be implemented to avoid or minimize impacts on the whooping crane or suitable habitat, and identify any actions that would be taken if a whooping crane is encountered during construction.

Response:

There is no critical habitat for the Whooping Crane in the project area.

The Whooping Crane is a rare species in the project area, a migrant (does not nest in the area), and has broad habitat requirements. As such, Keystone does not believe there will be any impact to the species, nor will there be requirements if a crane alights near the construction right-of-way.

The USFWS recognizes that Keystone will not be permitting the transmission lines but will add recommendations to the EIS process that those lines be buried and or marked appropriately. Regarding powerline construction, the USFWS recommends developing a separate MOU, similar to the Keystone Project, for the whooping crane.

Response prepared by: Jon Schmidt, Trow

3-71

Data Request:

Section 5.5.3.2 states that the USFWS and SDGFP would require off-site mitigation for the American burying beetle. Would any additional measures be implemented to avoid or minimize impacts on this species during construction in southern Tripp County? If so, please describe those measures.

Response:

No additional measures are required. The Pierre, South Dakota USFWS Field Office and SDGFP do not recommend trap and relocate procedures in South Dakota. According to the USFWS, recommended conservation measures for American burying beetle impacts include setting up a compensatory mitigation plan for potential impacts to the American burying beetles in Tripp County

Response prepared by: Jon Schmidt, Trow

3-72

Data Request:

Section 5.5.3.4 indicates Keystone, in coordination with federal and state agencies, is developing species-specific mitigation measures to reduce impacts on threatened and endangered species. To the extent not addressed in response to other questions in this data request, provide an update describing mitigation measures identified to date for each of the federally and state-listed species identified in table 10, excluding those that are identified as having been eliminated from detailed analysis.

Response:

Keystone understands that DOS has started consultation discussions with the USFWS regarding the draft BA. Keystone expects that mitigative measures related to federal species will be forthcoming in the DEIS.

State-listed species on state land will be discussed with state agencies when Keystone gets closer to construction for the Steele City Segment of the project.

Response prepared by: Jon Schmidt, Trow

3-73

Data Request:

In the event of an HDD failure at the Cheyenne or White Rivers, identify any special construction or mitigation measures that would be implemented to minimize impacts on the sturgeon chub resulting from an alternate crossing method.

Response:

Keystone will be required to develop and obtain approval for an alternative crossing method if the HDD should fail. Keystone expects that such a plan would become part of the USACE permitting that would be required to open cut those rivers. At this time, Keystone does not contemplate that such a contingency will be required.

Response prepared by: Richard Gale, Trow

3-74

Data Request:

If riprap or bank stabilization measures would be used in waterbodies containing sensitive species, provide an assessment of impacts on these species.

Response:

Riprap and sediment and erosion control blanket material will be used as bank stabilization measures.

Most of the streams crossed by the Keystone project with suspected presence of sensitive species will be crossed using the HDD method. For any streams where sensitive species have been identified prior to construction, and which will not be crossed using the HDD method, Keystone will work with the relevant agencies on the crossing and restoration procedures and, therefore, cannot say at this time whether riprap will be used in those particular streams.

Response prepared by: John Phillips, UEI

3-75

Data Request:

Clarify whether any in-stream construction activities would occur during the spawning season for recreationally or commercially important fishery species.

Response:

Keystone does not anticipate the need to construct outside spawning windows in any stream crossings in SD. There currently is no such regulatory requirement and doing so would be a schedule constraint that is detrimental to Keystone's schedule.

Response prepared by: Jon Schmidt, Trow

3-76

Data Request:

Section 5.6.2.1 of the application states that blockage of non-spawning-related fish movement for limited periods of less than 7 days should not affect fish growth and behavior, and that delays of less than 3 days would not adversely affect spawning migrations. Section 5.4.1 states that open-cut crossings of larger waterbodies could require 7 to 10 days to complete. Identify which waterbody crossings are anticipated to potentially require 7 to 10 days and discuss potential impacts on fish from disruption of movement in these cases.

Response:

At this time, Keystone does not anticipate taking more than seven days to complete any of the open cut water body crossings in South Dakota.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-77

Data Request:

Provide an assessment of impacts on ecologically sensitive HCAs resulting from construction and operation of the pipeline.

Response:

Impacts during construction and potential impacts during operation are detailed in the application. Types of ecological sensitivities are identified and procedures have been developed to minimize impacts and/or mitigate damages. In particular, see Sections 2.2.6, 2.3.2.3, 5, and 7.1 as well as Exhibit B Construction, Mitigation, and Reclamation (CMR) Plan.

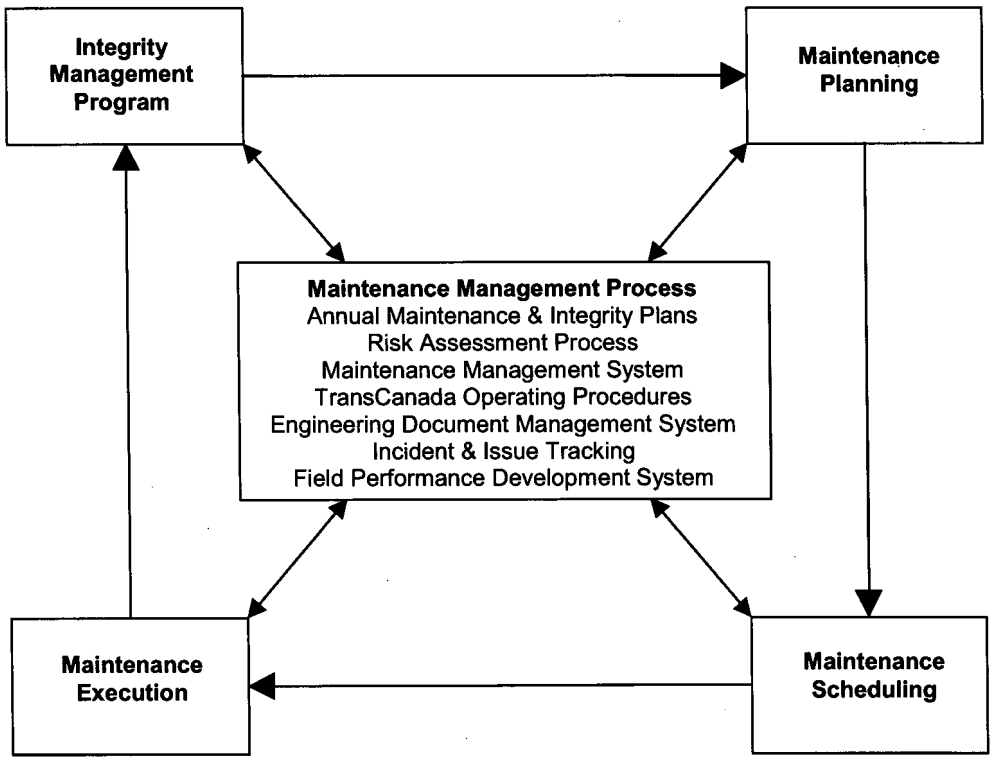
Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-78

Data Request:

Page 103, 4th paragraph under the "Integrity Management" section of the Application to the SDPUC references a diagram. This diagram is not included. Please provide a copy of referenced diagram.

Response:



Maintenance Management Process

Response prepared by: Meera Kothari, Keystone

3-79

Data Request:

What is the status of TransCanada's written Liquid Integrity Management Program.

a. Has the Plan been through a third-party review?

Response:

The liquid integrity management plan (IMP) for the Keystone XL pipeline is currently under development.

Response prepared by: Meera Kothari, Keystone

3-80

Data Request:

For the pipelines that TransCanada owns or operates, over the last five (5) years, how many failures or incidents have occurred?

a. Please describe the root cause of each failure or incident.

Response:

TransCanada owns and operates 36,500 miles of pipelines across North America. All failures that have occurred over the last five years were on older vintage pipelines. The Keystone XL pipeline will be constructed using modern construction practices and coated with fusion bond epoxy which has eliminated external corrosion and Stress Corrosion Cracking as a cause of pipeline failures. In addition, Keystone XL will have internal corrosion and third party damage prevention programs in place as part of its integrity management plan.

Country	Asset Type	Failure Type	Cause	Number of Incidents	Year
USA	No Incidents Occurred to date				2009
USA	Natural Gas	Leak	Internal Corrosion (2)	2	2008
USA	Natural Gas	Leak Leak	Construction Defect (1) Third Party Damage (1)	2	2007
USA	No Incidents Occurred				2006
USA	No Incidents Occurred				2005
USA	No Incidents Occurred				2004

Response prepared by: Meera Kothari, Keystone

Country	Asset Type	Failure Type	Cause	Number of Incidents	Year
Canada	Natural Gas	Leak Leak	External Corrosion (1) Weather/Outside Force (1)	2	2009
Canada	Natural Gas	Leak	External Corrosion (1)	1	2008
Canada	Natural Gas	Leak	SCC (2)	2	2007
Canada	Natural Gas	Leak Leak (1)/Rupture (2)	SCC (1) Construction Defect (3)	4	2006
Canada	Natural Gas	Rupture Leak	SCC (1) Construction Defect (1)	2	2005
Canada	Natural Gas	Leak	External Corrosion (3)	3	2004

Response prepared by: Meera Kothari, Keystone

3-81

Data Request:

Has TransCanada received any Notices of Probable Violation related to their Integrity Management Program (liquids or gas)?

a. If so, please describe the nature of each violation.

Response:

Keystone has not received any Notices of Probable Violation related to its Integrity Management Program for liquid or gas.

Response prepared by: Meera Kothari, Keystone

3-82a

Data Request:

How many miles of pipeline have the potential to affect an HCA (but not pass directly through an HCA)?

Response:

There were identified 5.9 miles of pipeline segments that have the potential to affect a HCA (but not pass directly through an HCA)

Table 3-82a HCA Areas Crossed by the Project CL [1]

CL SEGMENT	MP		Length	
	from	to	[ft]	[mi]
1	284.776	285.036	1373	0.260
2	285.923	286.121	1044	0.198
4	289.062	290.042	5176	0.980
6	290.334	290.950	3254	0.616
7	291.557	293.686	11243	2.129
8	294.635	296.135	7920	1.500
10	296.463	297.804	7083	1.341
11	420.125	423.844	19637	3.719
12	423.844	424.055	1113	0.211
14	424.055	426.056	10565	2.001
16	426.056	426.417	1909	0.361
17	428.538	429.280	3918	0.742
18	595.751	596.773	5394	1.022

[1] From all HCA type, only ecological sensitive areas are crossed by project CL.

Response prepared by: Meera Kothari, Keystone

3-82b

Data Request:

How many miles of pipe either pass through or has the ability to affect a High Population Area?

Response:

No HPA (High Population Areas) are affected by project CL.

Response prepared by: Meera Kothari, Keystone

3-82c

See confidential filing.

Response prepared by: Meera Kothari, Keystone

3-83

Data Request:

Describe how TransCanada has considered / evaluated farm drain tiles and the possibility of a release in the field following the drain tile into a waterway or HCA.

Response:

A preliminary analysis has identified HCA's that are intersected by or within a conservative buffer distance from the proposed route. This analysis will be supplemented with consideration of smaller features such as farm drain tiles and other pathways during final route survey and the post-construction as-built survey. It is unlikely that such features will add to the list of currently identified HCA's since current buffer distances are so conservative and drain tiles are infrequent. Additionally, in accordance with pertinent regulations, the HCA impact analysis will be reviewed and updated (if necessary) at least annually as part of the operations and maintenance protocols.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-84

Data Request:

Has TransCanada included any sort of "buffer" when identifying pipeline segments that could affect an HCA?

Response:

Yes. Conservative buffers of 1 to 5 miles were used in the initial analyses. Buffer distances are based on worst case spill scenarios and increased when location-specific terrain features dictated.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-85

Data Request:

Section 12 of Ms. Kothari's written testimony references "advanced in-line inspection and mitigation technologies". Please explain how these "advanced" technologies differ from typical in-line inspection and mitigation techniques.

Response:

The term advanced referred to the use of high resolution in-line inspection technologies.

Response prepared by: Meera Kothari, Keystone

3-86

Data Request:

Describe in detail the methodology for determining which pipeline segments have the ability to affect an HCA.

Response:

Pipeline segments that could potentially affect HCAs were identified using a two-step approach. In the first step, HCAs were screened to determine which areas were within a reasonable proximity to the pipeline's centerline and also had a viable physical pathway to transport a spill to the HCA. The second step of the process was to identify those specific segments of the pipeline where, if a spill were to occur, crude oil could potentially reach areas of a HCA or HCA buffer area that contribute to the purpose of the HCA. This step incorporated features that could enhance or inhibit the transport of crude oil, including the terrain surrounding the pipeline as well as the physical characteristics of the crude oil transported.

Maximum spill volume scenarios were used in determination of potential impact to an HCA. These scenarios are generated from worst-case discharge potential, defined as the largest volume based on the maximum release time, maximum shut down response time, maximum flow rate, and the largest line drainage volume after shut down of the line section within the response zone.

Response prepared by: Kent Muhlbauer, WKM Consultancy LLC

3-87

Data Request:

What is the design life for the cathodic protection system?

Response:

The design life for the cathodic protection systems is approximately 25 years. Maintenance of these systems and periodic replacement of the ground bed during the operation of the pipeline in accordance with applicable codes, standards and industry practices will extend the life of the CP systems indefinitely.

Response prepared by: Meera Kothari, Keystone

3-88

Data Request:

How many rectifier/ground bed locations will be in the state of South Dakota?

What is the average soil resistivity at each of these locations?

Response:

Keystone anticipates using 7 deep well anode groundbeds and locating these facilities within the fenced pump station sites. If any intermediate deep well anode groundbeds are required, Keystone anticipates locating them within fenced mainline valve sites.

Soil resistivity has not yet been determined.

Response prepared by: Meera Kothari, Keystone

3-89

Data Request:

Provide the criteria for cathodic protection that will be used for this pipeline and related appurtenances.

Response:

The criteria for cathodic protection that will be used for this pipeline will correspond with the requirements of 49 CFR Part 195 Subpart H and NACE recommended practice RP 0169. Keystone's Integrity Management Plan will ensure the requirements for the criteria are met

Response prepared by: Meera Kothari, Keystone

3-90

Data Request:

Describe how any points of electrical isolation will be protected from electrical surges or lightning.

Response:

There will be no points of electrical isolation, as Keystone will not electrically isolate pump stations from the pipeline.

Response prepared by: Meera Kothari, Keystone

3-91

Data Request:

For areas of cohabitation with AC power lines, has modeling been performed to determine the:

a. Affect on safety to personnel and public as a result of induced AC?
   i. What safety precautions will be taken to prevent electrical shock to employees and the general public?
b. Affect on the pipeline during an electrical fault situation?

ii. What is the minimum distance the pipeline will be from the power line towers?

Response:

a) There are no AC power lines currently identified as areas of cohabitation. In the event of routing variations that lead to cohabitation with AC power lines, mitigation analysis will be performed as part of the detailed engineering design and mitigation techniques will be implemented as necessary.
b) There are no AC power lines currently identified as areas of cohabitation with the pipeline. In the event of future routing changes that result in cohabitation of the pipeline with AC power lines, mitigation analysis will be performed as part of the detailed engineering design to address safety concerns related to induced AC in the pipeline, and mitigation techniques will be implemented as necessary.

Response prepared by: Meera Kothari, Keystone

3-92

Data Request:

Confirm the mileage of pipeline rights-of-way through the State of South Dakota that will co-locate with another foreign pipeline system.

a. Where applicable indicate the type (gas, liquid, etc) of product contained in the foreign pipeline.

Response:

The pipeline rights-of-way through the State of South Dakota will not co-locate with another foreign pipeline system.

Response prepared by: Richard Gale, Trow

3-93

Data Request:

Provide detail of, if any, the measurements that will be obtained during pipeline construction that relate to 195, Subpart H (e.g. pipe-to-soil readings, induced AC readings, coating holiday testing, etc.)

Response:

Measurements that will be obtained during pipeline construction relating to 49 CFR Part 195 Subpart H include:

- Part 195.561 – The external coating will be checked for holidays using visual inspection and electronically using a holiday detector ("jeep").
- Part 195.563 – Measurements will be taken to determine soil resistivities to enable design of the cathodic protection system.
- Part 195.575 – Keystone will electrically interconnect and cathodically protect its pipeline and aboveground facilities as a single unit and therefore, measurements related to isolation equipment are not required.
- Part 195.577 – Electrical measurements will be taken to identify any HVAC or HVDC interference currents, and interference with any close paralleling pipelines.

During operations, monthly rectifier readings to check for voltage, current and resistance will be performed consistent with Part 195.573 (c). An annual test lead survey will also be performed to check system performance, and an annual equipment and maintenance check will be conducted on the rectifiers consistent with Part 195.573 (a).

Response prepared by: Richard Gale, Trow

3-94

Data Request:

Will electrical ground at motorized valves and pump station facilities be electrically independent from the pipeline or protected in common with the pipeline cathodic protection system?

Response:

The electrical ground at motorized valves and pump station facilities will be protected in common with the pipeline cathodic protection system.

Response prepared by: Meera Kothari, Keystone

3-95

Data Request:

Describe what measures will be taken or designed into this pipeline facility to monitor the pipeline and appurtenances for internal corrosion during its operation.

Response:

The pipeline will be designed to minimize any horizontal dead legs lengths which could be accumulation points for liquids and a potential for internal corrosion and commodities will be batched within the pipeline in a turbulent flow regime.

Chemical corrosion inhibitors, biocides, corrosion coupons or probes and pipeline cleaning tools will be used on an as required basis along with smart in-line inspection to detect and monitor internal corrosion.

In addition, Keystone XL will specify by tariff a 0.5% limit on sediment and water for commodities to be transported. This specification is half the typical US transportation practice of 1% S&W and increases the commodity quality and reduces the likelihood of internal corrosion. Commodity samples will be collected from all batches upon receipt and delivery to verify tariff compliance.

Response prepared by: Meera Kothari, Keystone

3-96

Data Request:

Describe how TransCanada will address atmospheric corrosion especially at locations of soil-to-air interfaces.

Response:

Soil to air interface locations are coated with corrosion resistant coating such as liquid epoxy (similar characteristics to fusion bond epoxy) to 18" above ground for piping coming above grade and then over-coated with additional corrosion resistant paint. Piping that is above ground at valve sites and pump stations is coated with corrosion resistant paint. Piping is also visually inspected periodically.

Response prepared by: Meera Kothari, Keystone

3-97

Data Request:

Provide a complete plan of action for your post-installation assessment of pipe condition including: coating and cathodic protection assessment and procedures for the identification and remediation of stray current interference.

Response:

Prior to the pipeline being backed filled, final inspection and holiday repair is conducted during the lowering process. Pipe coating condition post installation is conducted via smart in-line inspection as per frequencies determined in accordance with 49 CFR 195 and as per the Integrity Management Program requirements.

During annual corrosion control surveys, the cathodic protection system effectiveness is determined and adjusted accordingly. In addition, during the annual corrosion control surveys, the pipeline is monitored for the presence of interference currents, stray currents, telluric currents, or any other extraneous currents which could be detrimental to the integrity of the pipeline. Any remediation activities are implemented as necessary as part of the operational maintenance activities.

All procedures for the identification and remediation of stray currents are done in accordance with 49 CFR 195, NACE recommended practices and TransCanada's specifications.

Response prepared by: Meera Kothari, Keystone

3-98

Data Request:

Describe how TransCanada is working to identify existing and future wind generation (AC) systems along the pipeline route. Please provide a summary of what construction and mitigation techniques will be used to minimize any potential effects from these types of systems.

Response:

Keystone has been checking land titles for existing wind generation sites along the pipeline route. For future wind generation sites Keystone has relied upon conversations with electric utilities and potential wind generation developers. Keystone understands that the current proposed Keystone XL route or potential transmission line rights of way do not co-locate with existing wind generation systems. At this time Keystone is not aware of any future wind generation sites adjacent to the pipeline or transmission line rights of way. If a wind generator was close to the pipeline, construction and mitigation techniques would be addressed in a similar manner to power lines which is addressed in the response to DR 3-91.

Response prepared by: Alan Lietz, Keystone

3-99

Data Request:

Who is the manufacturer of the proposed SCADA system and what major US crude oil pipeline operating companies currently use this SCADA system?

Response:

The SCADA system that will be used on the Keystone XL pipeline is manufactured by Telvent a division of Abengoa. Telvent indicates that their SCADA system is used on 24 crude oil pipelines in North America and 16 of those are in the USA. The Telvent SCADA is known as the industry standard for pipeline control. In the USA, some of the recognizable names of companies who use Telvent SCADA on crude oil pipelines are: Exxon; Nustar; Chevron; Buckeye; CITCO; Colonial; ConocoPhillips; and Explorer.

Response prepared by: Don Scott/John Hayes, TransCanada

3-100

Data Request:

Is the fully redundant backup Operations Control Center (OCC) located in a separate location than the primary OCC? What is the expected recovery time to get the backup OCC operational in the event of a catastrophic incident at the OCC?

Response:

The backup Operations Control Centre (OCC) exists in a separate location approximately 35 kms (22 miles) distance from the primary OCC. The backup OCC is a duplicate system of the main OCC. The backup OCC is a "hot" standby system. In the event that the primary OCC becomes unusable, the backup OCC can be fully manned and operational in 1 hour.

Response prepared by: Don Scott/John Hayes, Keystone

3-101

Data Request:

Describe the automatic features in the SCADA system to prevent overpressure of the pipeline.

Response:

Automatic features that control line pressure and prevent overpressure exist both with the SCADA system (the software runs in the OCC) and within control logic at the stations (i.e. local control). The design of the Keystone XL pipeline control system is not yet finalized so this response is based upon the control system that will be implemented on the Keystone pipeline. It is expected that the control algorithms used on Keystone XL will be the same as those used on Keystone.

The highest allowable station discharge pressure is fixed at the maximum allowable operating pressure of the pipeline. If there were to be any discharge pressure excursion that tried to exceed this limit, SCADA or local control would reduce pump speed to produce a lower discharge pressure or throttle the excess pressure by use of the pressure control valve. If the action does not produce sufficient pressure reduction, the system automatically shuts down a pump or pumps.

In addition, at the SCADA level there exists a control algorithm called suction based discharge pressure reduction (SBDPR). SBDPR considers the relationship between station discharge pressure and the suction pressure at the downstream station. If this relationship falls outside established limits (e.g. suction pressure at the downstream station is higher than allowed) the SCADA system sends a command to reduce the discharge pressure at the upstream station. The pressure is reduced by either reducing the speed of a pump or reducing the pressure by use of the station pressure control valve. If the pressure does not reduce sufficiently, the SCADA system automatically commands a shutdown of a pump or pumps until the pressure is acceptable.

At a local level (i.e. at the station) a flow based discharge pressure reduction (FBDPR) algorithm exists to reduce discharge pressure based upon a relationship between flow (as measured by the flow meter at the station) and discharge pressure. If the relationship between flow and discharge pressure is outside of the established boundary, discharge pressure is reduced by use of pump speed control or shutdown of a pump unit or units.

See also response to question 3-102.

Response prepared by: Don Scott/John Hayes, Keystone

3-102

Data Request:

Describe the automatic features installed at the local pump stations in the event of a communication failure.

a. Does the station control valve control the line pressure to prevent over pressure?
b. If there is a failure of the station control valve will pumps automatically shut down to prevent the overpressure of the mainline?

Response:

Loss of communication to a station or comm out means that pressure, temperature, flow and status from the pump station is unknown. In this case, local control and SCADA work together to prevent any possibility of pipeline overpressure.

At the station (i.e. local level) after a brief wait period, the station discharge is reduced to global safe limits. Global safe limits means that the station discharge pressure value is set to prevent pipeline overpressure regardless of the operation of the rest of the pipeline. When global safe limits are implemented, the discharge pressure is reduced at the station by reducing the speed of a pump unit or by use of the pressure control valve to throttle the excess pressure. The SCADA system also reduces the discharge pressure of the immediately upstream station to its global safe limits.

a) Line pressure is controlled by speed control of pumps and by use of pressure control valve. The speed control, the primary over pressure protection, uses a variable frequency drive (VFD) to control speed of pumps. When the speed of the pump is reduced, the discharge pressure is reduced.

b) If the pressure control valve (PCV) were to become inoperative, the SCADA system would announce a system fault. All of the pressure limits described above and in the response to question 3-101, would still be operative and would prevent overpressure. In the case where the station design does not include a PCV and uses the VFD for all discharge pressure control, pumps would be shutdown if the VFD control was not able to achieve the necessary reduced pressure.

Response prepared by: Don Scott/John Hayes, Keystone

3-103

Data Request:

At maximum flow rate what is the station discharge pressure in South Dakota at each pump station and the maximum line pressure at the discharge pressure of the pump station?

Response:

At the maximum flow rate, the discharge pressure at each pump station in South Dakota during normal operations will not exceed 1440 psig. The line pressure at the discharge of each pump station in South Dakota during normal operations will not exceed 1440 psig.

Response prepared by: Meera Kothari, Keystone

3-104

Data Request:

With no tankage on the pipeline, what is the maximum surge pressure at maximum capacity when a mainline valve closes and when a mainline pump station unexpectedly shuts down?

Response:

The maximum line pressure will not exceed 110 percent of the proposed MOP (maximum operating pressure)of the pipeline during surges or other variations from normal operations as described in section 49 CFR 195.406. The Keystone XL pipeline will be outfitted with Pressure Control and Over-Pressure Protection Systems which provide two independent levels of protection for the pipeline and associated facilities. No surge pressure is experienced when a valve closes as the automated valves are outfitted with speed control. The Pressure Control System will keep the pump station discharge pressures within acceptable boundaries under MOP by modulating one pump speed at each pump station, complemented with protective logic that takes corrective action when pump station discharge pressures move outside of acceptable boundaries. The Pressure Control System is designed to be reliable and failsafe. In addition, the Over-Pressure Protection System provides a second level of protection from an over-pressure condition (up to 110% of MOP in accordance with 49 CFR 195) derived from sudden events such as a single station outage or system-wide shut-down.

Response prepared by: Meera Kothari, Keystone

3-105

Data Request:

Is the leak detection system used by TransCanada a widely recognized system and what other major crude oil pipeline companies use this technology?

Response:

Keystone XL pipeline will use 4 types of software based leak detection systems. These are:

- SCADA Monitoring by the OCC Operator (Pipeline Controller). Pipeline Controllers utilize the SCADA system on a 24 hours per day basis to operate the line and to review the status of the line. The SCADA system provides overview and detailed displays. From these displays the Pipeline Controllers are able to see anomalies that may indicate a leak during the operation of the pipeline. This approach is used on all pipeline systems with SCADA.

- Volume Balance Based Leak Detection. This computer implemented system will be a part of Telvent PLM (liquid management system) and will alarm when limits are exceeded. The system performs a volume balance at set time intervals and monitors the mainline from the outgoing meter at Hardisty to the Keystone delivery meters at Hartford and Patoka. This system is utilized on most pipelines that have implemented a Telvent SCADA system. See response to 3-99 for the pipeline companies who use Telvent's SCADA.

- Computational Pipeline Monitoring/Computerized Leak Detection System. This leak detection system is a sophisticated real time transient model (RTTM) leak detection and utilizes Telvent's Simsuite Real Time Transient Model (RTTM) and batch tracking. US pipelines that use this Telvent RTTM include: ConocoPhillips; Marathon; and Pacific pipelines. It is a widely recognized system.

- Non Real-Time Computer Based Accumulated gain/(loss) volume trending. This is an inventory calculation that looks at various areas of the Keystone XL pipeline and provides non real-time (i.e. 2+ hour) volume and inventory calculations. Most pipeline companies utilize this type of volume balance to find inventory shortages that may indicate small leaks.

Response prepared by: Don Scott, Keystone

3-106

Data Request:

TransCanada can detect immediately leaks of 25-30 percent of the pipeline flow rate. How many minutes will it take TransCanada to recognize the release and shut down the pipeline? Please take into consideration the delays from the communication system.

Response:

A large leak (greater than 25 to 30% of the pipeline flow rate) will cause an immediate impairment to the hydraulic function of the pipeline. This anomaly is immediately recognizable to the Pipeline Controller in the monitoring of SCADA information (see SCADA Monitoring by the OCC Operator or Pipeline Controller in the response to question 3-105).

A realistic recognition time estimate would be: the maximum time for the pressure wave to travel to the station sensors would be 30 seconds; then the pressure changes would be displayed on the SCADA screens. It is prudent to expect that it will take two SCADA scans (20 seconds maximum) for the anomaly to be will be fully evident to the Pipeline Controller. So, from the initiation of the large leak until it is recognized by the Pipeline Controller: approximately 50 seconds. However, for purposes of estimating worst case spill volume, Keystone has assumed an additional 10 minute period, which is the maximum period that the operator is allotted to verify the condition and begin to shut down the affected pipe segment. This 10 minute period is a highly conservative assumption as in most cases a leak of 25 to 30% of pipeline flow volume will be verified almost immediately.

Response prepared by: Don Scott, Keystone

3-107

Data Request:

TransCanada indicates their computer leak detection model can break down the system into smaller segments to detect leaks of 1.5 to 2 percent of total flow. How is this done? Will TransCanada have flow meters along the pipeline, where will they be located and what is their accuracy, and what frequency will the meters be checked for accuracy?

a. How many hours will it take TransCanada to recognize a release of 1.5 to 2 percent of total flow and how many barrels would be released

Response:

The RTTM (computer model leak detection system) breaks the pipeline down into leak sections that are from station to station. The location of the flow meters defines the beginning and end of each leak section. Flow meters are located at each pump station. The meters proposed will be 8 path chordal ultrasonic meters. The manufacturer has stated that the accuracy of the meters will be 0.5%. These meters are extremely robust because they have no moving parts. Calibration will not be necessary to maintain this accuracy. If a meter were to lose accuracy it would be repaired. The output of the meters is constantly checked within the RTTM leak detection system. If the accuracy drifts the leak detection system will indicate a problem.

a) The RTTM leak detection thresholds for Keystone XL have not yet been determined. It is expected that they will be approximately the same as those on the Keystone pipeline. A calculation by the industry standard method, API 1149, indicates that a 2% leak will alarm the RTTM in 20 minutes and a 1.5% leak will alarm in about 30 minutes. In 20 minutes, a leak of 2% of flow would be 27.78 bbls. In 30 minutes, a leak of 1.5% of flow would be 31.25 bbls.

Response prepared by: Don Scott, Keystone

3-108

Data Request:

TransCanada indicates it has the ability to look at accumulated gains and losses to identify low rates of seepage releases below 1.5 to 2 percent of the volume. How long will it take TransCanada to determine there is a small seepage from the pipeline and how many barrels could be released over this time period at maximum flow rate? Could there be an impact to the ground water or highly sensitive areas?

Response:

The leak detection method that will be used to look for accumulated gains and loses is described in the response to question 3-105. It is described as: Non Real-Time Computer Based Accumulated gain/(loss) volume trending. This is an inventory calculation that looks at various areas of the KXL pipeline and provides non real-time (i.e. 2+ hours) volume and inventory calculations. Most pipeline companies utilize this type of volume balance to find inventory shortages that may indicate small leaks.

It is not possible to accurately predict the performance of this leak detection method. However, as described the minimum time for calculation will be 2 hours (as proposed). Also, as described in the response to question 3-107, the RTTM leak detection has a predicted threshold of 2% in 20 minutes. The performance of the accumulated gain/loss method will certainly be less than the RTTM over longer periods of time. A rough estimate is that the accumulated gain/loss system will indicate 0.5% loss over 24 hours. At the pipeline rate of 1,000,000 bbls/day, this loss is 5000 bbls.

Impact to ground water or highly sensitive areas will depend upon the location of a leak.

Response Prepared: Don Scott, Keystone

3-109

Data Request:

The historical volumes reported by PHMSA of releases detected over a 24 hour period averaged 527 barrels. Is this a good comparison showing large diameter large volume pipelines or does it include many smaller low volume pipelines that would askew the results?

Response:

The PHMSA database (PRIMIS) used in the historical volumes analysis contains incident data on all hazardous liquid pipelines. A subset of crude oil pipeline records was used to determine the historical releases value over a 24 hour period.

a. Provide additional information as to the maximum release, pipe size, operating pressures and volumes moving on the pipeline to be sure this statement corresponds to similar size, pressure and volume pipelines

The PHMSA PRIMIS database can be found on the PHMSA webpage at:

http://www.phmsa.dot.gov/pipeline/library/data-stats

Response Prepared: Meera Kothari, Keystone

3-110

Data Request:

What type of communications will be at the pump stations, leased lines or satellite? What provisions will TransCanada make in the event of loss of communications?'

Response:

Satellite will be the primary means of communications. This will be backed up by telephone line automatic dial back service.

Response Prepared: Don Scott, Keystone

3-111

Data Request:

TransCanada is considering radio links between the pump stations and the mainline valve sites. What is the reliability of this communications and will there be any provisions in the event of radio communications failure? Is there a potential the valve can close unexpectedly? If so, what will the maximum surge pressure be in this event?

Response:

TransCanada is considering the use of point to point licensed data radio operating in the 900 Mhz range. This technology is highly reliable and its use is common practice in the oil and gas pipeline industry. In the event of failure of any single radio path, up to 3 valve sites could be affected until such time as the path is restored. There is no relationship between the failure of the communications system and the closing of the valve. The valve is designed to fail in its last position (i.e. stay in current position) for all anticipated failures, including communication failure. Further, the valve travel speed is designed such that should a valve be closed and not detected, the maximum surge would be 110% of MOP.

Response prepared by: Alan Lietz, Keystone

3-112

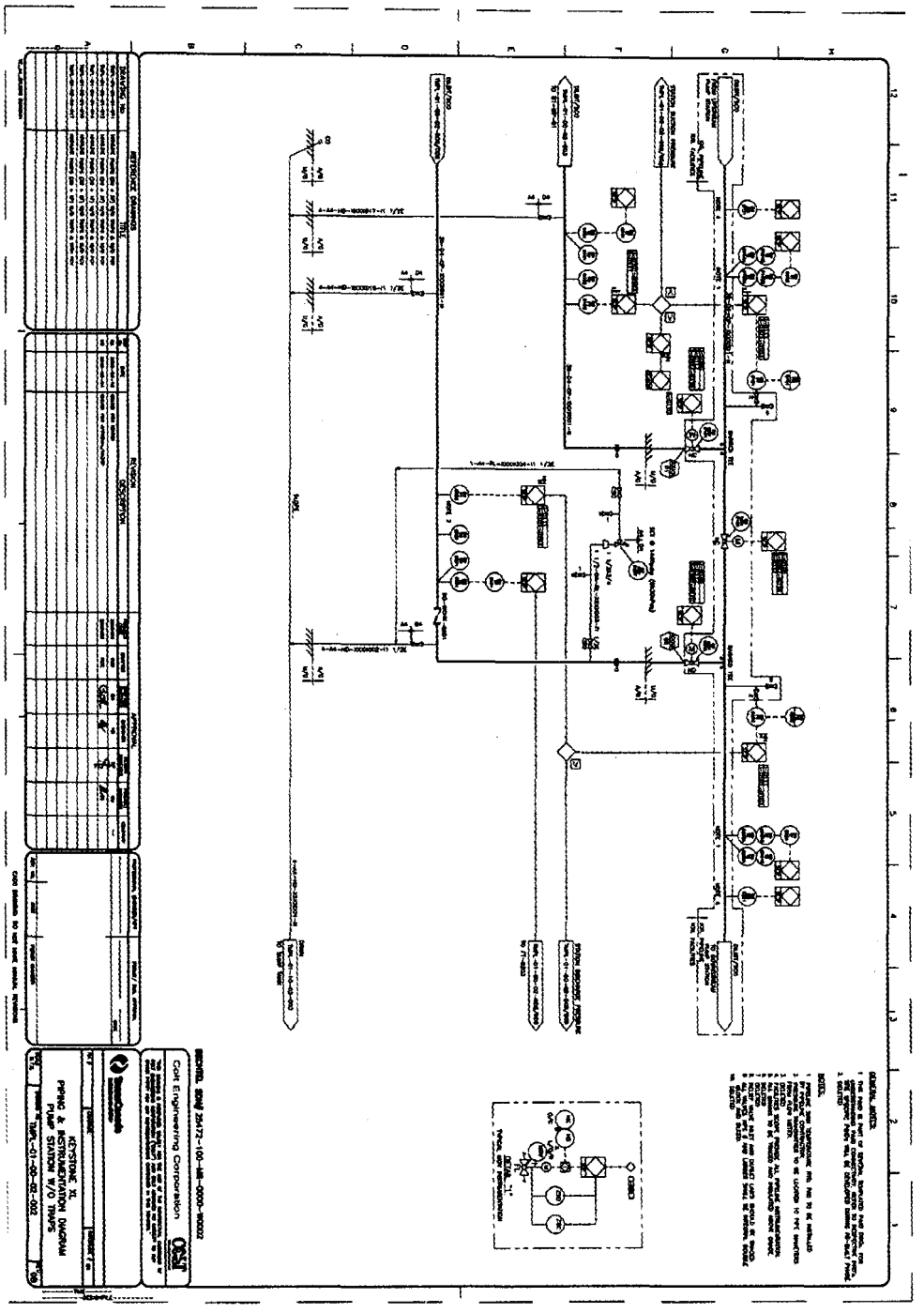
Data Request:

Provide a Piping and Instrumentation Diagram (P&ID) for the pump station and pump station with pig trap for review.

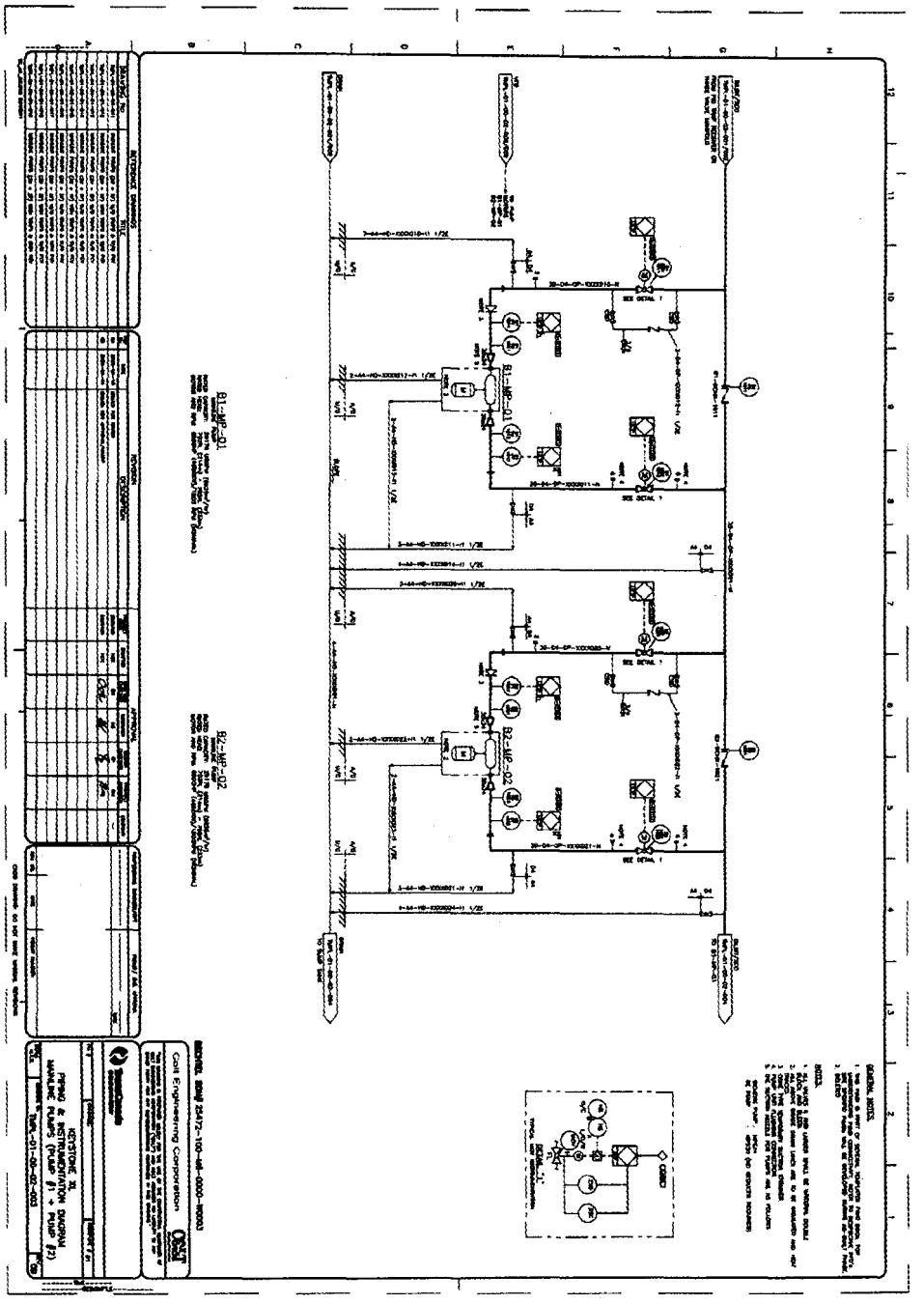
Response:

See attached drawings.

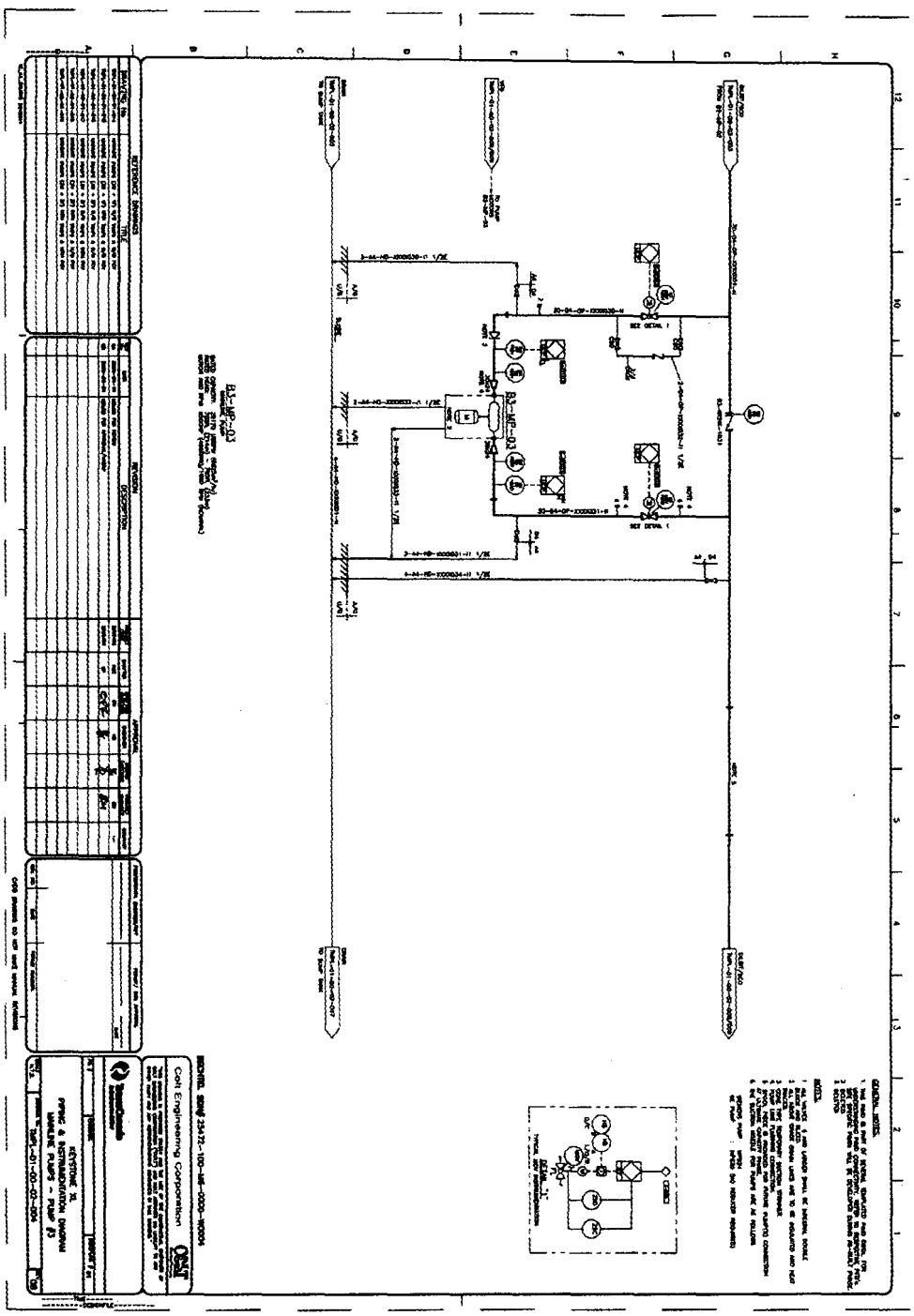
Response prepared by: Alan Lietz, Keystone

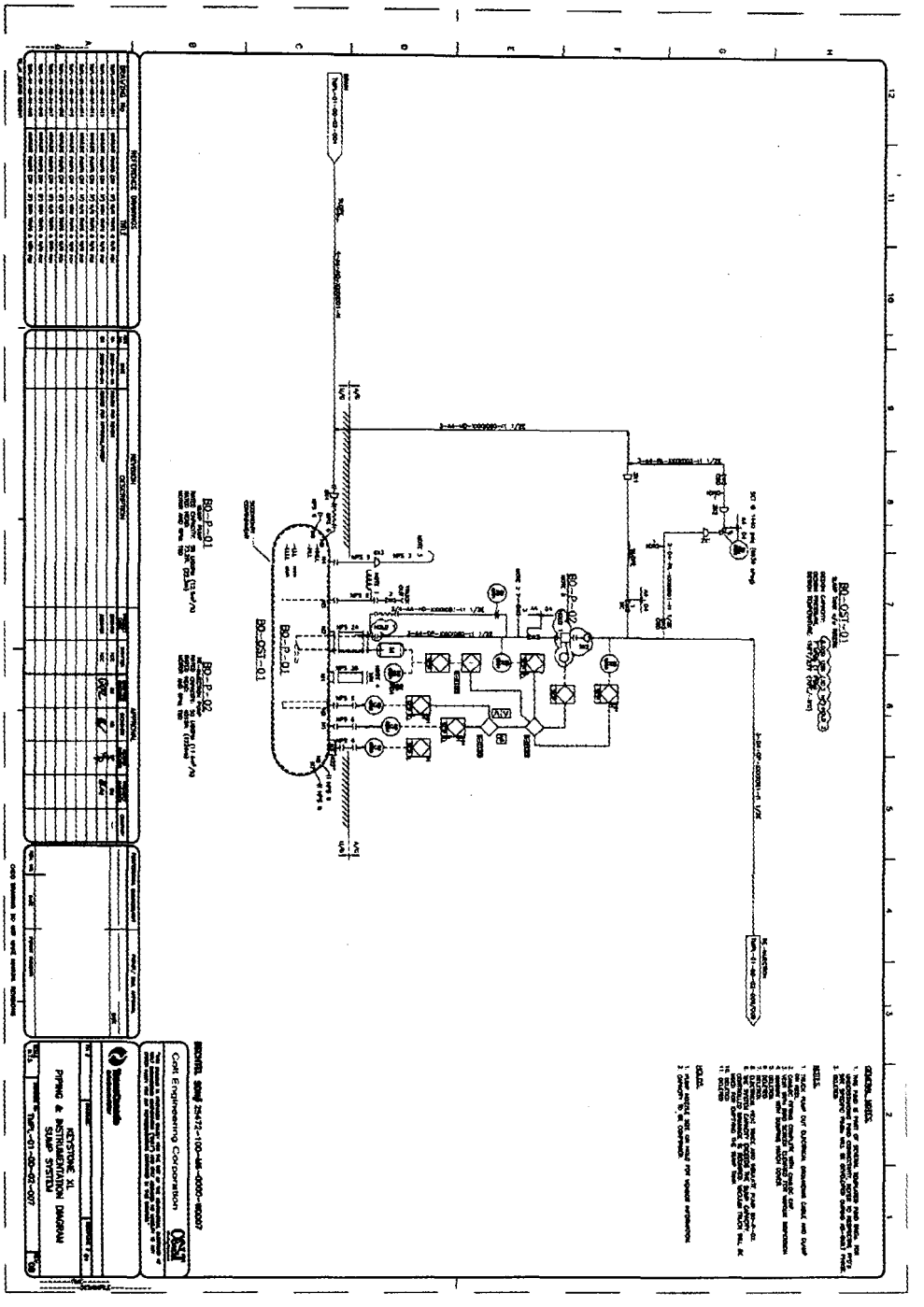


Response prepared by: Alan Lietz, Keystone

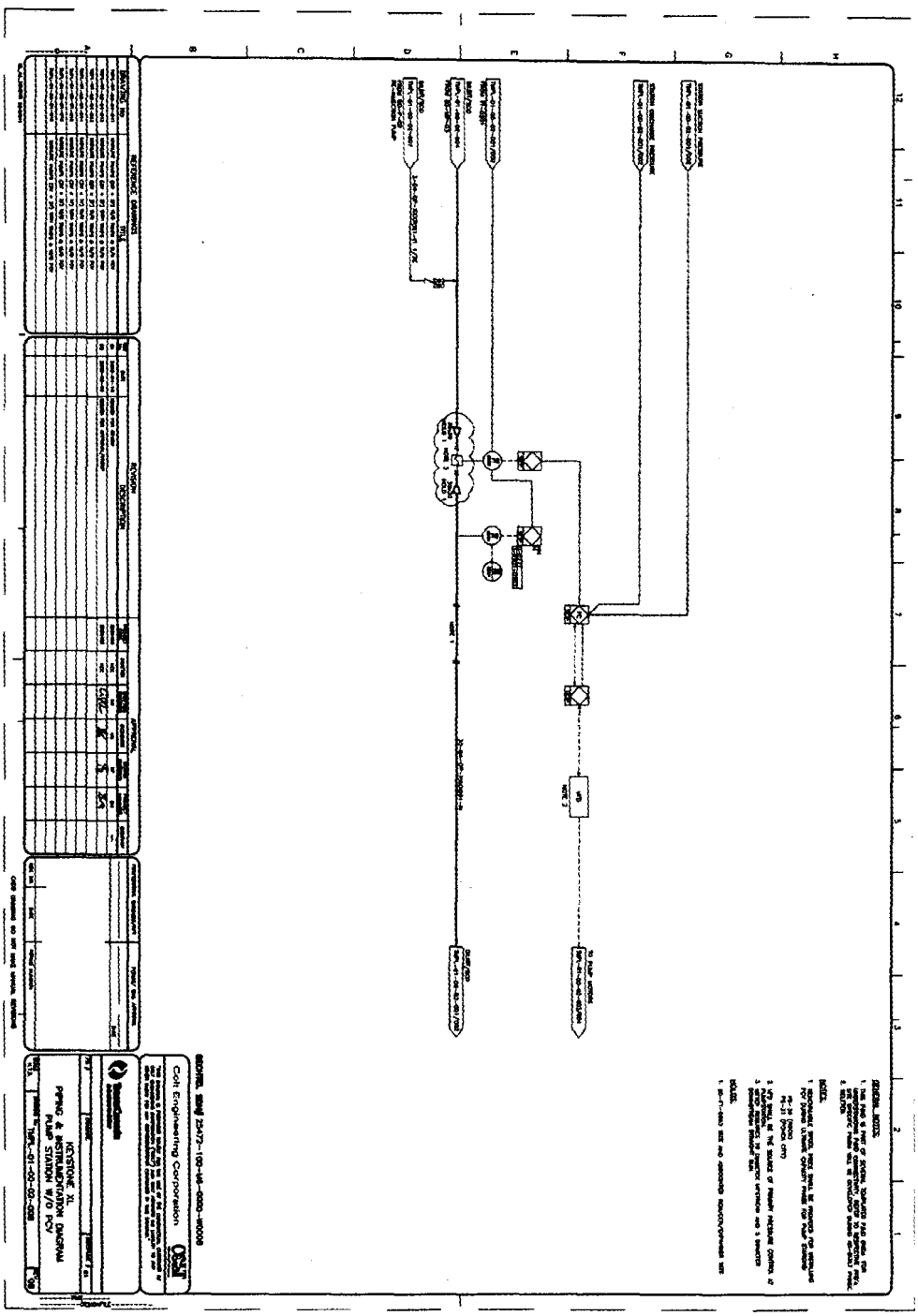


Response prepared by: Alan Lietz, Keystone





Response prepared by: Alan Lietz, Keystone



Response prepared by: Alan Lietz, Keystone

3-113

Data Request:

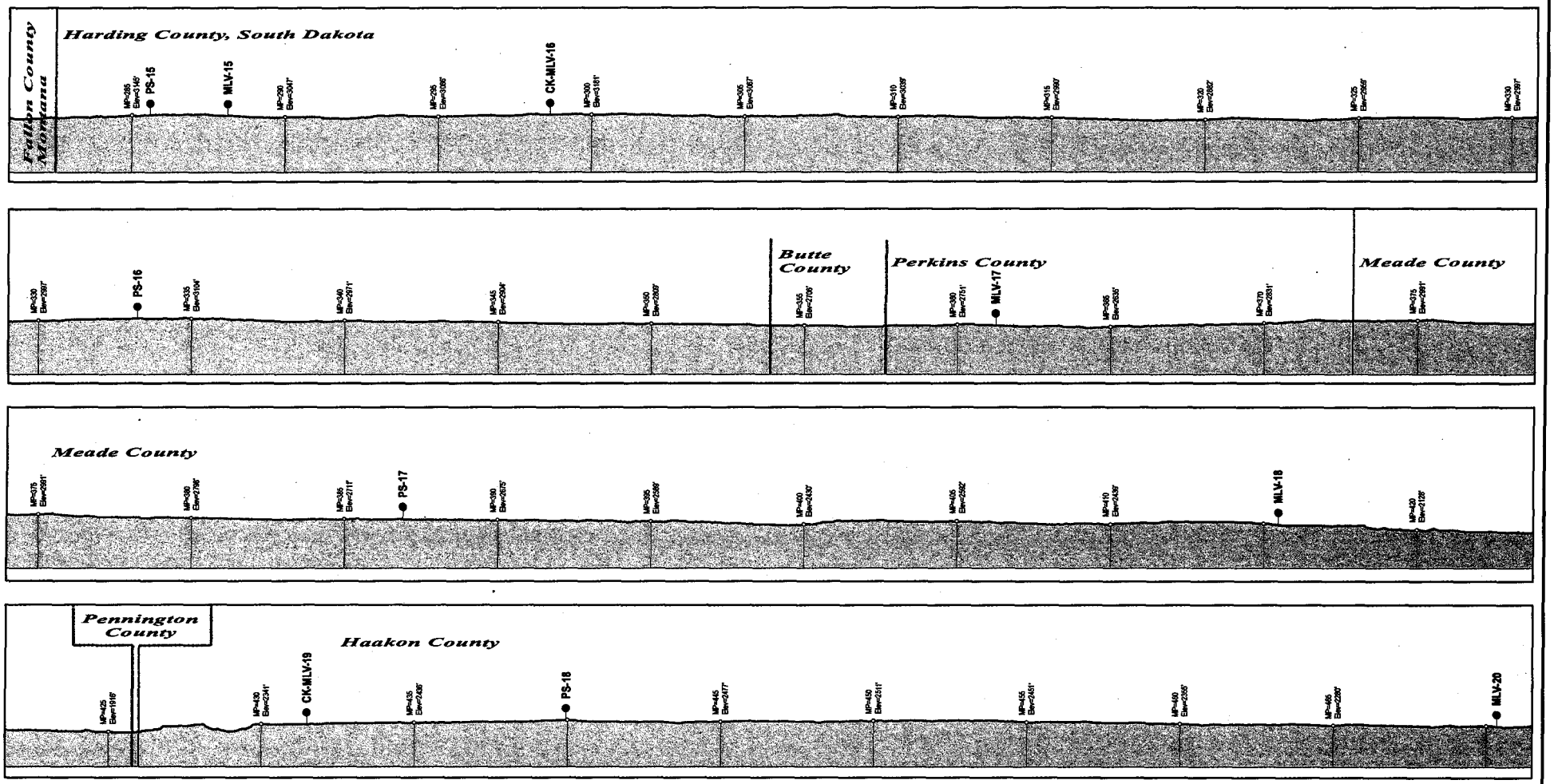
Provide an elevation profile of the pipeline through South Dakota showing the location of the pump stations and the mainline block valves.

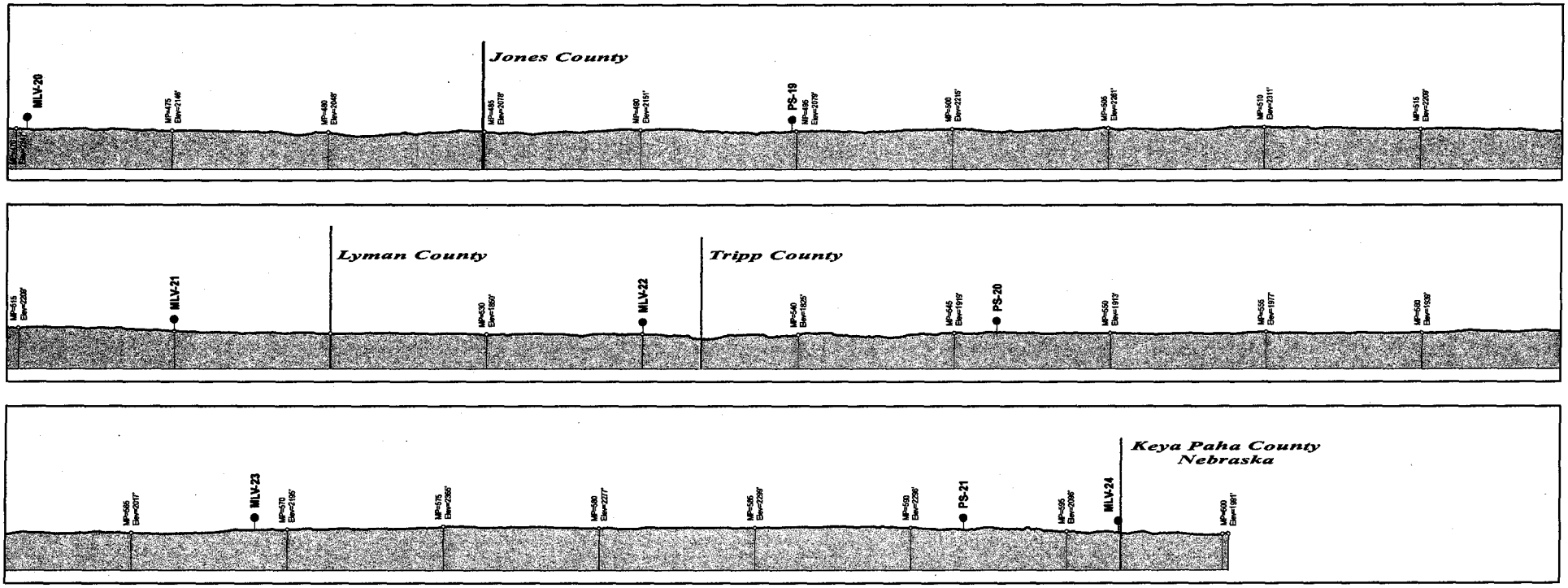
Response:

See attached figure.

Response prepared by: Alan Lietz, Keystone

South Dakota PUC Data Request No. 3
Answer # 113




Jones County
MLV-20
MP=475 Elev=2149'
MP=480 Elev=2049'
MP=485 Elev=2078'
MP=490 Elev=2161'
PS-19
MP=495 Elev=2079'
MP=500 Elev=2215'
MP=505 Elev=2281'
MP=510 Elev=2311'
MP=515 Elev=2209'
Lyman County
Tripp County
MP=515 Elev=2209'
MLV-21
MP=530 Elev=1807'
MLV-22
MP=540 Elev=1825'
MP=545 Elev=1919'
PS-20
MP=550 Elev=1910'
MP=555 Elev=1977'
MP=560 Elev=1938'
Keya Paha County
Nebraska
MP=565 Elev=2017'
MLV-23
MP=570 Elev=2185'
MP=575 Elev=2365'
MP=580 Elev=2277'
MP=585 Elev=2299'
MP=590 Elev=2296'
PS-21
MP=595 Elev=2096'
MLV-24
MP=600 Elev=1991'
0
2.5
5
10 Miles

3-114

Data Request:

Provide detailed information for selecting the location of each mainline block valve and each check valve outside of the pump stations in South Dakota. Provide distances to HCA's, streams, waterbodies and environmentally sensitive areas.

Response:

Locations selected of each intermediate mainline block valve outside of the pump station was based on the following criteria and in accordance with 49 CFR 195.260:

1. minimizing spill volume within a pipeline segment
2. minimizing spill volume for protection of HCA's
3. upstream of major river crossings
4. isolation of pipeline segment for maintenance purposes
5. proximity to access roads for maintenance
6. suitability for power service into the site

Locations selected of each intermediate check valve outside of the pump station was based on the requirements in 49 CFR 195.260 (e). See Table 3-114 (following page).

3-114 (Continued)

Table 3-114

BLOCK VALVE	SHORTEST DISTANCE TO [mi]					COUNTY
	HCA				WATER BODIES	
	DW	ECO	OPA	HPA		
MLV-15	24.5	0.9	20.0	>50mi	0.05 [1]	Harding
CK-MLV-16	15.6	0.8	16.3	>50mi	0.8 [3]	Harding
MLV-17	28.5	15.9	33.1	>50mi	0.1 [2]	Perkins
MLV-18	17.9	4.6	28.3	>50mi	0.6 [1]	Meade
CK-MLV-19	25.5	0.5	31.8	>50mi	1.4 [3]	Haakon
MLV-20	12.4	6.6	8.2	>50mi	0.2 [2]	Haakon
MLV-21	10.0	6.3	7.1	>50mi	0.4 [1]	Jones
MLV-22	17.6	0.5	13.9	>50mi	0.7 [1]	Lyman
MLV-23	1.2	2.7	3.6	>50mi	2.7 [3]	Tripp

Waterbody Type:
[1] Ephemeral
[2] Man-made
[3] Intermittent

Response prepared by: Meera Kothari, Keystone

3-115

Data Request:

What is the maximum volume of oil release that can occur on a line rupture in South Dakota based on the maximum flow rate, time to shut down the occurrence and the drain down of the pipeline due to elevation profile.

Response:

The worse case discharge in accordance with the requirements for calculations outlined in 49 CFR 194 for the purpose of emergency resource and equipment planning is 66,596 barrels. This calculation is based on an ultimate pipeline design flow rate of 1,000,000 barrels and an emergency pump and valve combined shut down time of 12 minutes.

Response prepared by: Meera Kothari, Keystone

3-116

Data Request:

Will pressure transmitters be included at mainline block valves? Will the valves close automatically in the event of a loss of pressure or will the valves only be closed by the operator at the control center?

Response:
Pressure transmitters will be installed on motor operated mainline block valves. Motor operated valves will close on command from the operations control center. Swing check valves will close automatically in the event of a pressure loss.

Response prepared by: Meera Kothari, Keystone