Soil Types Crossed by the REX East Project

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Soil Types Crossed by the REX East Project

Methodology For Evaluating Soil Characteristics

The characteristics of the soils crossed by the proposed Rockies Express Pipeline-East (REX East) Project were identified using a group of computerized database products developed by the Natural Resources Conservation Service (NRCS) that provide information on soil characteristics and limitations for various uses. Rockies Express considered the use of this electronic database to be the only practical method for assessing the soils crossed by a project of this size.

Soil interpretations and tables for the pipeline route were developed using the State Soil Geographic (STATSGO) database. The STATSGO database is provided for commonly used Geographic Information Systems (GIS) programs at a scale of 1:250,000 and was compiled by combining geologically and topographically related soil series found in detailed county soil surveys (1:12,000 to 1:24,000 scale) into larger map units called Map Unit Identifiers (MUIDs). MUIDs are similar to the soil associations found in standard county soil surveys.

STATSGO attribute data contain physical and chemical properties and component soil-series attributes for hydric and prime farmland soils, as well as interpretative groupings for approximately 18,000 soil series recognized in the United States. Attribute data apply to the whole soil (e.g., hydric or prime farmland soils, estimated crop yields, soil classification, slope class) as well as layer data for soil horizons (e.g., particle size, available water-holding capacity, permeability). The soil attribute data can be used in conjunction with spatial data to describe the soils in a particular area or region. When combined with attribute data for the component soil series, the percentage of the MUID meeting desired interpretative criteria (e.g., percentage prime farmland, hydric soils, highly erodible land, and revegetation potential) can be determined and presented for any portion of the digitized area.

Rockies Express evaluated soils according to characteristics that could affect construction or increase the potential for soil impacts and grouped the soils based on its primary characteristics into eight interpretive groups. These interpretive groups include: highly erodible soils for (1) water and (2) wind; (3) prime farmland; (4) hydric soils; (5) compaction-prone soils; (6) presence of stones; (7) droughty soils; and (8) shallow bedrock soils (see Table 7A-1 Revised). The percentage of each MUID within a specific interpretative grouping was obtained by combining the percentages of all MUID component soil series that were placed in the interpretative group.

Highly Erodible and Highly Wind Erodible Soils

Highly erodible land (HEL) as designated by the NRCS includes both water and wind as agents of erosion; however, HEL is formally defined at a scale that precludes its inclusion in the STATSGO attribute database. Consequently, a conservative estimate of highly erodible soils along the proposed REX East Project pipeline route were identified based on three soil parameters present in the STATSGO database that are directly related to the susceptibility of a soil to erosion by water or wind: Land Capability Subclass (SCL), slope, and Wind Erodibility Group (WEG).

Soils in SCL 4E or higher have severe to extreme erosion limitations for agricultural use and are usually HEL. Soils with average slope greater than 9 percent are also susceptible to erosion and are usually HEL. A WEG is a grouping of soils that have similar surface-soil properties affecting their resistance to soil blowing, including texture, organic matter content, and aggregate stability. Soils in WEG 1 and 2 include sandy-textured soils with poor aggregation that are particularly

susceptible to wind erosion. Because management and construction mitigation techniques used to minimize wind erosion hazards are different from those used to minimize water erosion, Rockies Express developed a separate grouping for wind erosion based on the WEG.

A component soil series was considered to be generally highly erodible by water if: 1) the soil is in SCL 4E through 8E, or 2) the soil is in a slope class with a average slope of 9 percent or more (e.g., 6 to 12 percent slopes have a average slope greater than or equal to 9 percent and would be considered highly erodible). A component soil series was considered to be highly erodible by wind if it is in WEG 1 or 2. Because the Land Capability Classification does not discriminate between wind and water erosion, some overlap between these two interpretive groupings is expected. Occasionally, soils in WEG 3 and SCL 3E are considered HEL by the NRCS. These soils, however, were not considered highly erodible using the STATSGO data described above because including WEG 3 and SCL 3E in the groupings would inaccurately reflect a much larger number of non-highly erodible soils than highly erodible soils.

Prime Farmland and Hydric Soils

Both prime farmland and hydric soil designations are component soil-series attributes in the STATSGO database. Percentage and acreage of prime farmland and hydric soils along the REX East Project pipeline route were determined by a simple query of the database, and were summarized by MUID and state. Hydric soils may indicate the presence of wetlands or agricultural drain tiles.

Compaction-Prone Soils

Compaction-prone soils along the pipeline route were identified by querying the STATSGO database for component soil series that have both: 1) a surface texture of sandy clay loam or finer, and 2) a drainage class of somewhat poorly drained through very poorly drained.

Stony/Rocky Soils

Soils with significant quantities of stones in the surface were identified by querying the STATSGO database for component soil series that have either: 1) a very gravelly, extremely gravely, cobbley, stony, bouldery, or shaly modifier to the textural class of the surface layer, or 2) have a surface layer that contains greater than 5 percent (weight basis) stones larger than 3 inches.

Shallow Bedrock

Shallow-to-bedrock soils (shallow soils) were identified by querying the STATSGO database for component soil series that have a bedrock contact listed above 60 inches in depth.

Droughty Soils

Droughty soils along the REX East Project pipeline route were identified by querying the STATSGO database for component soil series that: 1) have a surface texture of sandy loam or coarser, and 2) are moderately well to excessively drained.

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
MISSOURI												
Audrain	0.0	1.9	1.9	MO023	0.3	--	0.9	0.6	0.5	<0.1	--	--
	1.9	6.5	4.6	MO022	--	--	4.5	2.2	2.0	--	--	--
	6.5	7.4	1.0	MO023	0.2	--	0.5	0.3	0.3	<0.1	--	--
	7.4	9.4	1.9	MO022	--	--	1.9	0.9	0.8	--	--	--
	9.4	9.8	0.5	MO023	<0.1	--	0.2	0.2	0.1	<0.1	--	--
	9.8	10.4	0.6	MO022	--	--	0.6	0.3	0.2	--	--	--
	10.4	11.3	0.8	MO023	0.1	--	0.4	0.3	0.2	<0.1	--	--
	11.3	15.8	4.6	MO022	--	--	4.5	2.2	2.0	--	--	--
Ralls	15.8	19.8	4.0	MO022	--	--	3.9	1.9	1.7	--	--	--
Pike	19.8	21.5	1.7	MO022	--	--	1.7	0.8	0.7	--	--	--
	21.5	27.9	6.4	MO023	1.1	--	3.2	2.0	1.8	<0.1	--	--
	27.9	28.5	0.6	MO022	--	--	0.6	0.3	0.3	--	--	--
	28.5	28.9	0.4	MO023	<0.1	--	0.2	0.1	0.1	<0.1	--	--
	28.9	36.8	7.9	MO025	5.8	--	0.9	<0.1	--	4.8	4.4	--
	36.8	42.2	5.4	MO021	2.3	--	1.0	--	--	0.2	<0.1	--
	42.2	42.9	0.7	MO027	--	--	0.7	0.5	0.4	--	--	--
	42.9	43.0	0.1	MOW	--	--	--	--	--	--	--	--
ILLINOIS					--	--	--	--	--	--	--	--
Pike	43.0	43.1	0.1	MOW	--	--	--	--	--	--	--	--
	43.1	43.3	0.2	ILW	--	--	--	--	--	--	--	--
	43.3	51.0	7.7	IL029	--	--	5.4	4.6	1.7	--	--	--
	51.0	51.5	0.5	IL032	0.2	--	0.3	--	--	--	--	--
	51.5	52.4	0.9	IL068	--	--	0.7	0.3	--	--	--	--
	52.4	54.4	2.0	IL032	0.8	--	1.0	--	--	--	--	--
	54.4	58.9	4.4	IL034	1.4	--	2.2	--	--	--	--	--
	58.9	61.3	2.4	IL068	--	--	2.0	0.8	--	--	--	--
	61.3	63.5	2.2	IL034	0.7	--	1.1	--	--	--	--	--
	63.5	64.5	1.0	IL068	--	--	0.8	0.3	--	--	--	--

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					Miles							
	64.5	70.9	6.4	IL034	2.1	--	3.1	--	--	--	--	--
	70.9	71.2	0.3	IL029	--	--	0.2	0.2	<0.1	--	--	--
Scott	71.2	71.5	0.2	IL029	--	--	0.2	0.1	<0.1	--	--	--
	71.5	72.2	0.8	IL068	--	--	0.6	0.3	--	--	--	--
	72.2	73.1	0.8	IL029	--	--	0.6	0.5	0.2	--	--	--
	73.1	75.0	1.9	IL068	--	--	1.6	0.6	--	--	--	--
	75.0	75.6	0.6	IL034	0.2	--	0.3	--	--	--	--	--
	75.6	76.3	0.8	IL068	--	--	0.6	0.2	--	--	--	--
	76.3	79.2	2.8	IL036	1.0	--	1.4	<0.1	<0.1	--	--	--
	79.2	84.5	5.4	IL036	1.9	--	2.6	<0.1	0.1	--	--	--
	84.5	84.9	0.3	IL072	<0.1	--	0.3	0.1	0.1	--	--	--
	84.9	86.0	1.1	IL036	0.4	--	0.5	<0.1	<0.1	--	--	--
	86.0	86.3	0.4	IL072	<0.1	--	0.3	0.1	0.1	--	--	--
Morgan	86.3	87.1	0.7	IL072	<0.1	--	0.7	0.3	0.3	--	--	--
	87.1	87.8	0.7	IL036	0.2	--	0.3	<0.1	<0.1	--	--	--
	87.8	88.4	0.6	IL072	<0.1	--	0.6	0.2	0.3	--	--	--
	88.4	90.1	1.7	IL003	--	--	1.6	0.5	<0.1	--	--	--
	90.1	91.4	1.2	IL036	0.4	--	0.6	<0.1	<0.1	--	--	--
	91.4	92.6	1.2	IL003	--	--	1.2	0.4	<0.1	--	--	--
	92.6	96.8	4.3	IL036	1.5	--	2.0	<0.1	<0.1	--	--	--
	96.8	98.5	1.7	IL072	<0.1	--	1.6	0.6	0.7	--	--	--
	98.5	99.9	1.3	IL036	0.5	--	0.6	<0.1	<0.1	--	--	--
	99.9	100.5	0.7	IL003	--	--	0.6	0.2	<0.1	--	--	--
	100.5	102.5	2.0	IL036	0.7	--	0.9	<0.1	<0.1	--	--	--
	102.5	104.2	1.7	IL072	<0.1	--	1.6	0.6	0.7	--	--	--
	104.2	105.5	1.3	IL003	--	--	1.2	0.4	<0.1	--	--	--
	105.5	106.4	1.0	IL072	<0.1	--	0.9	0.3	0.4	--	--	--
Sangamon	106.4	119.4	12.9	IL072	0.4	--	12.0	4.4	5.2	--	--	--
	119.4	121.5	2.2	IL036	0.8	--	1.0	<0.1	<0.1	--	--	--

TABLE 7A-1 Revised

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					Miles							
	121.5	125.5	3.9	IL072	0.1	--	3.7	1.3	1.6	--	--	--
	125.5	126.7	1.3	IL036	0.4	--	0.6	<0.1	<0.1	--	--	--
	126.7	131.7	5.0	IL072	0.2	--	4.7	1.7	2.0	--	--	--
	131.7	132.1	0.4	IL028	--	--	0.3	0.1	0.1	--	--	<0.1
Christian	132.1	133.4	1.2	IL028	--	--	0.9	0.4	0.4	--	--	<0.1
	133.4	134.2	0.8	IL036	0.3	--	0.4	<0.1	<0.1	--	--	--
	134.2	134.8	0.6	IL003	--	--	0.6	0.2	<0.1	--	--	--
Sangamon	134.8	135.4	0.6	IL003	--	--	0.5	0.2	<0.1	--	--	--
Christian	135.4	140.1	4.7	IL003	--	--	4.4	1.5	<0.1	--	--	--
	140.1	142.0	1.9	IL036	0.7	--	0.9	<0.1	<0.1	--	--	--
	142.0	151.1	9.1	IL003	--	--	8.5	2.9	0.2	--	--	--
Macon	151.1	151.5	0.4	IL003	--	--	0.4	0.1	<0.1	--	--	--
	151.5	153.2	1.6	IL036	0.6	--	0.8	<0.1	<0.1	--	--	--
	153.2	154.8	1.6	IL012	--	--	1.6	0.6	0.6	--	--	--
	154.8	155.8	1.0	IL073	<0.1	--	0.8	--	--	--	--	--
	155.8	156.7	0.9	IL010	--	--	0.9	0.4	0.4	--	--	--
	156.7	158.7	2.0	IL073	<0.1	--	1.6	--	--	--	--	--
	158.7	159.0	0.3	IL010	--	--	0.3	0.1	0.1	--	--	--
	159.0	160.7	1.7	IL010	--	--	1.7	0.7	0.7	--	--	--
	160.7	161.3	0.6	IL073	<0.1	--	0.5	--	--	--	--	--
	161.3	162.2	0.9	IL010	--	--	0.9	0.4	0.4	--	--	--
	162.2	163.3	1.1	IL073	<0.1	--	0.9	--	--	--	--	--
	163.3	164.1	0.8	IL010	--	--	0.8	0.3	0.3	--	--	--
	164.1	164.6	0.5	IL073	<0.1	--	0.4	--	--	--	--	--
	164.6	165.4	0.8	IL046	0.3	--	0.3	<0.1	<0.1	--	--	--
	165.4	168.0	2.6	IL010	--	--	2.6	1.0	1.0	--	--	--
	168.0	170.0	2.0	IL073	<0.1	--	1.6	--	--	--	--	--
	170.0	172.1	2.2	IL010	--	--	2.2	0.9	0.9	--	--	--
Moultrie	172.1	175.3	3.2	IL010	--	--	3.1	1.2	1.2	--	--	--

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					Miles							
	175.3	176.6	1.3	IL073	<0.1	--	1.0	--	--	--	--	--
	176.6	178.4	1.8	IL010	--	--	1.7	0.7	0.7	--	--	--
	178.4	179.0	0.6	IL073	<0.1	--	0.5	--	--	--	--	--
	179.0	187.5	8.5	IL010	--	--	8.4	3.3	3.3	--	--	--
Douglas	187.5	187.6	0.1	IL010	--	--	<0.1	<0.1	<0.1	--	--	--
	187.6	188.8	1.3	IL044	<0.1	--	1.1	0.2	0.2	--	--	--
	188.8	192.3	3.5	IL010	--	--	3.4	1.4	1.4	--	--	--
	192.3	193.8	1.5	IL044	<0.1	--	1.4	0.3	0.2	--	--	--
	193.8	197.9	4.1	IL010	--	--	4.0	1.6	1.6	--	--	--
	197.9	198.9	1.0	IL021	--	--	0.9	0.6	<0.1	--	--	--
	198.9	202.3	3.4	IL010	--	--	3.4	1.3	1.3	--	--	--
	202.3	204.4	2.1	IL044	<0.1	--	1.9	0.4	0.3	--	--	--
	204.4	205.6	1.2	IL010	--	--	1.2	0.5	0.5	--	--	--
	205.6	206.6	1.0	IL021	--	--	0.9	0.6	<0.1	--	--	--
	206.6	207.2	0.6	IL010	--	--	0.6	0.2	0.2	--	--	--
	207.2	210.9	3.7	IL021	--	--	3.6	2.4	0.3	--	--	--
	210.9	212.3	1.5	IL010	--	--	1.4	0.6	0.6	--	--	--
	212.3	214.4	2.1	IL044	<0.1	--	1.9	0.4	0.3	--	--	--
	214.4	214.7	0.3	IL010	--	--	0.3	0.1	0.1	--	--	--
Edgar	214.7	228.2	13.5	IL010	--	--	13.4	5.3	5.3	--	--	--
	228.2	229.5	1.3	IL042	0.1	--	1.2	0.3	0.2	--	--	--
	229.5	230.4	0.9	IL010	--	--	0.9	0.3	0.3	--	--	--
	230.4	232.3	1.9	IL010	--	--	1.9	0.7	0.7	--	--	--
	232.3	234.4	2.1	IL042	0.2	--	1.9	0.4	0.3	--	--	--
	234.4	235.0	0.6	IL010	--	--	0.6	0.2	0.2	--	--	--
	235.0	237.8	2.8	IL042	0.3	--	2.5	0.6	0.3	--	--	--
	237.8	238.1	0.3	IL003	--	--	0.3	<0.1	<0.1	--	--	--
	238.1	238.2	0.1	IN045	--	--	<0.1	<0.1	<0.1	--	--	--
INDIANA					--	--	--	--	--	--	--	--

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					Miles							
Vermillion	238.2	240.7	2.5	IN045	--	--	2.3	0.8	<0.1	--	--	--
	240.7	242.8	2.1	IN039	0.7	--	1.4	--	--	--	0.1	--
	242.8	246.6	3.8	IN041	1.6	--	1.5	0.2	0.2	--	--	--
	246.6	247.3	0.7	IN029	--	--	0.5	0.2	0.2	--	--	<0.1
Parke	247.3	247.9	0.7	IN029	--	--	0.5	0.2	0.2	--	--	<0.1
	247.9	250.8	2.8	IN026	0.1	0.1	2.5	0.4	--	--	--	0.1
	250.8	254.0	3.2	IN063	1.7	--	1.5	<0.1	--	--	--	--
	254.0	255.4	1.4	IN064	<0.1	--	1.4	0.4	--	--	--	--
	255.4	256.3	0.9	IN063	0.5	--	0.4	<0.1	--	--	--	--
	256.3	256.7	0.4	IN064	<0.1	--	0.4	0.1	--	--	--	--
	256.7	257.0	0.3	IN063	0.2	--	0.2	<0.1	--	--	--	--
	257.0	257.8	0.8	IN064	<0.1	--	0.8	0.2	--	--	--	--
	257.8	259.9	2.0	IN063	1.1	--	0.9	<0.1	--	--	--	--
	259.9	260.7	0.8	IN029	--	--	0.5	0.3	0.2	--	--	<0.1
	260.7	262.5	1.9	IN063	1.0	--	0.9	<0.1	--	--	--	--
	262.5	265.9	3.4	IN057	--	--	3.4	0.6	--	--	--	--
	265.9	267.5	1.5	IN041	0.6	--	0.6	<0.1	<0.1	--	--	--
	267.5	267.9	0.4	IN029	--	--	0.3	0.2	0.1	--	--	<0.1
Putnam	267.9	268.4	0.5	IN029	--	--	0.3	0.2	0.1	--	--	<0.1
	268.4	269.4	1.1	IN041	0.4	--	0.4	<0.1	<0.1	--	--	--
	269.4	270.4	1.0	IN029	--	--	0.7	0.3	0.3	--	--	<0.1
	270.4	271.9	1.4	IN041	0.6	--	0.6	<0.1	<0.1	--	--	--
	271.9	279.7	7.8	IN039	2.7	--	5.1	--	--	--	0.5	--
	279.7	280.9	1.2	IN040	0.2	--	1.0	0.1	<0.1	--	--	--
	280.9	282.4	1.4	IN029	--	--	1.0	0.5	0.4	--	--	<0.1
	282.4	282.8	0.4	IN041	0.2	--	0.2	<0.1	<0.1	--	--	--
	282.8	286.9	4.1	IN039	1.4	--	2.6	--	--	--	0.2	--
Hendricks	286.9	286.9	0.1	IN039	<0.1	--	<0.1	--	--	--	<0.1	--
	286.9	290.0	3.1	IN037	0.3	--	2.8	0.6	0.4	--	--	--

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					Miles							
	290.0	293.7	3.7	IN039	1.3	--	2.4	--	--	--	0.2	--
	293.7	293.7	0.0	IN040	<0.1	--	<0.1	<0.1	<0.1	--	--	--
	293.7	294.5	0.8	IN026	<0.1	<0.1	0.7	0.1	--	--	--	<0.1
	294.5	295.8	1.3	IN040	0.3	--	1.1	0.1	<0.1	--	--	--
	295.8	298.3	2.5	IN013	--	<0.1	2.4	1.0	--	--	--	--
	298.3	301.1	2.8	IN040	0.5	--	2.2	0.2	<0.1	--	--	--
	301.1	302.6	1.6	IN040	0.3	--	1.3	0.1	<0.1	--	--	--
	302.6	304.3	1.7	IN026	<0.1	<0.1	1.5	0.3	--	--	--	<0.1
Morgan	304.3	305.3	1.0	IN026	<0.1	<0.1	0.9	0.1	--	--	--	<0.1
	305.3	306.9	1.6	IN040	0.3	--	1.3	0.1	<0.1	--	--	--
	306.9	311.8	4.9	IN029	--	--	3.4	1.7	1.5	--	--	<0.1
	311.8	312.1	0.2	IN040	<0.1	--	0.2	<0.1	<0.1	--	--	--
	312.1	312.2	0.1		--	--	<0.1	<0.1	<0.1	--	--	<0.1
	312.2	312.6	0.4		<0.1	--	0.3	<0.1	<0.1	--	--	--
	312.6	314.4	1.9	IN013	--	<0.1	1.8	0.7	--	--	--	--
	314.4	314.9	0.5	IN040	<0.1	--	0.4	<0.1	<0.1	--	--	--
	314.9	315.8	0.8	IN029	--	--	0.6	0.3	0.3	--	--	<0.1
	315.8	316.4	0.6	IN088	0.2	0.2	0.3	<0.1	--	--	--	0.2
	316.4	318.1	1.8	IN040	0.3	--	1.4	0.2	<0.1	--	--	--
	318.1	318.9	0.8	IN013	--	<0.1	0.8	0.3	--	--	--	--
Johnson	318.9	320.9	2.0	IN013	--	<0.1	2.0	0.8	--	--	--	--
	320.9	324.0	3.1	IN040	0.6	--	2.4	0.3	<0.1	--	--	--
	324.0	325.3	1.3	IN013	--	<0.1	1.3	0.5	--	--	--	--
	325.3	326.6	1.3	IN040	0.2	--	1.0	0.1	<0.1	--	--	--
	326.6	327.3	0.7	IN013	--	<0.1	0.7	0.3	--	--	--	--
	327.3	330.2	2.9	IN040	0.6	--	2.3	0.3	<0.1	--	--	--
	330.2	330.3	0.0	IN003	--	<0.1	<0.1	<0.1	<0.1	--	--	--
	330.3	331.9	1.7	IN029	--	--	1.2	0.6	0.5	--	--	<0.1
	331.9	332.6	0.7	IN040	0.1	--	0.5	<0.1	<0.1	--	--	--

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	332.6	333.4	0.8	IN013	--	<0.1	0.8	0.3	--	--	--	--
	333.4	335.7	2.2	IN040	0.4	--	1.8	0.2	<0.1	--	--	--
	335.7	336.3	0.6	IN029	--	--	0.4	0.2	0.2	--	--	<0.1
	336.3	336.6	0.3	IN003	--	<0.1	0.3	0.2	<0.1	--	--	--
	336.6	336.7	0.1	IN029	--	--	<0.1	<0.1	<0.1	--	--	<0.1
	336.7	337.1	0.5	IN003	--	<0.1	0.5	0.3	<0.1	--	--	--
	337.1	338.0	0.9	IN029	--	--	0.6	0.3	0.3	--	--	<0.1
	338.0	338.7	0.7	IN026	<0.1	<0.1	0.6	<0.1	--	--	--	<0.1
	338.7	339.2	0.6	IN040	0.1	--	0.4	<0.1	<0.1	--	--	--
Shelby	339.2	339.3	0.1	IN040	<0.1	--	<0.1	<0.1	<0.1	--	--	--
	339.3	340.6	1.2	IN026	<0.1	<0.1	1.1	0.2	--	--	--	<0.1
	340.6	341.6	1.0	IN029	--	--	0.7	0.4	0.3	--	--	<0.1
	341.6	341.9	0.3	IN026	<0.1	<0.1	0.3	<0.1	--	--	--	<0.1
	341.9	342.7	0.8	IN040	0.2	--	0.6	<0.1	<0.1	--	--	--
	342.7	344.0	1.2	IN086	0.9	--	0.3	--	--	--	0.1	--
	344.0	344.9	0.9	IN040	0.2	--	0.7	<0.1	<0.1	--	--	--
	344.9	345.7	0.8	IN026	<0.1	<0.1	0.7	0.1	--	--	--	<0.1
	345.7	349.4	3.8	IN078	0.3	0.1	3.4	1.7	<0.1	--	<0.1	<0.1
	349.4	349.7	0.3	IN013	--	<0.1	0.3	0.1	--	--	--	--
	349.7	350.6	0.9	IN078	<0.1	<0.1	0.8	0.4	<0.1	--	<0.1	<0.1
	350.6	356.1	5.4	IN013	--	<0.1	5.4	2.2	--	--	--	--
	356.1	357.6	1.6	IN040	0.3	--	1.3	0.1	<0.1	--	--	--
	357.6	358.7	1.0	IN013	--	<0.1	1.0	0.4	--	--	--	--
Decatur	358.7	362.7	4.0	IN013	--	<0.1	3.9	1.6	--	--	--	--
	362.7	362.7	0.1	IN040	<0.1	--	<0.1	<0.1	<0.1	--	--	--
	362.7	364.8	2.1	IN029	--	--	1.4	0.7	0.6	--	--	<0.1
	364.8	365.5	0.7	IN039	0.2	--	0.4	--	--	--	<0.1	--
	365.5	366.2	0.7	IN037	<0.1	--	0.6	0.1	<0.1	--	--	--
	366.2	367.0	0.8	IN039	0.3	--	0.5	--	--	--	<0.1	--

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	367.0	371.5	4.5	IN039	1.6	--	2.9	--	--	--	0.3	--
	371.5	372.8	1.3	IN037	0.1	--	1.1	0.3	0.2	--	--	--
	372.8	373.4	0.6	IN039	0.2	--	0.4	--	--	--	<0.1	--
	373.4	374.4	1.1	IN037	0.1	--	1.0	0.2	0.1	--	--	--
	374.4	375.7	1.3	IN039	0.4	--	0.8	--	--	--	<0.1	--
	375.7	376.9	1.2	IN083	0.7	--	0.5	--	--	<0.1	<0.1	--
Franklin	376.9	380.5	3.6	IN083	2.2	--	1.4	--	--	<0.1	0.3	--
	380.5	383.0	2.6	IN089	2.5	--	--	--	--	1.4	1.8	--
	383.0	384.1	1.0	IN083	0.6	--	0.4	--	--	<0.1	<0.1	--
	384.1	384.4	0.3	IN084	<0.1	--	0.3	0.1	--	--	<0.1	--
	384.4	385.6	1.2	IN083	0.7	--	0.5	--	--	<0.1	<0.1	--
	385.6	388.2	2.6	IN089	2.5	--	--	--	--	1.4	1.8	--
	388.2	390.7	2.5	IN083	1.5	--	1.0	--	--	<0.1	0.2	--
	390.7	392.4	1.7	IN089	1.7	--	--	--	--	1.0	1.2	--
	392.4	394.6	2.2	IN029	--	--	1.5	0.8	0.7	--	--	<0.1
	394.6	396.7	2.1	IN026	0.1	<0.1	1.8	0.3	--	--	--	<0.1
	396.7	398.2	1.5	IN089	1.5	--	--	--	--	0.8	1.1	--
	398.2	398.4	0.1	IN026	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1
	398.4	399.1	0.8	IN089	0.7	--	--	--	--	0.4	0.5	--
	399.1	404.7	5.6	IN039	1.9	--	3.6	--	--	--	0.3	--
OHIO					--	--	--	--	--	--	--	--
Butler	404.7	404.7	0.0	IN039	<0.1	--	<0.1	--	--	--	<0.1	--
	404.7	421.4	16.7	OH040	5.9	--	10.9	--	--	--	1.0	--
	421.4	422.4	1.0	OH030	--	--	0.7	0.4	0.3	--	--	<0.1
	422.4	425.9	3.5	OH028	0.8	--	2.5	0.4	<0.1	--	--	--
	425.9	426.6	0.7	OH040	0.2	--	0.4	--	--	--	<0.1	--
	426.6	427.7	1.1	OH028	0.3	--	0.8	0.1	<0.1	--	--	--
	427.7	428.9	1.2	OH040	0.4	--	0.8	--	--	--	<0.1	--
	428.9	430.7	1.7	OH030	--	--	1.2	0.6	0.5	--	--	<0.1

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	430.7	432.8	2.2	OH040	0.8	--	1.4	--	--	--	0.1	--
	432.8	434.4	1.6	OH015	--	--	1.6	1.2	1.0	--	--	--
	434.4	434.6	0.1	OH040	<0.1	--	<0.1	--	--	--	<0.1	--
	434.6	436.6	2.1	OH015	--	--	2.1	1.6	1.2	--	--	--
Warren	436.6	437.9	1.3	OH015	--	--	1.3	1.0	0.8	--	--	--
	437.9	438.5	0.6	OH040	0.2	--	0.4	--	--	--	<0.1	--
	438.5	439.3	0.8	OH040	0.3	--	0.5	--	--	--	<0.1	--
	439.3	440.5	1.2	OH038	0.1	--	1.0	0.2	0.1	--	--	--
	440.5	440.7	0.2	OH040	<0.1	--	0.1	--	--	--	<0.1	--
	440.7	442.0	1.3	OH038	0.1	--	1.2	0.3	0.2	--	--	--
	442.0	448.1	6.2	OH040	2.2	--	4.0	--	--	--	0.4	--
	448.1	448.9	0.7	OH038	<0.1	--	0.7	0.1	<0.1	--	--	--
	448.9	449.1	0.3	OH040	<0.1	--	0.2	--	--	--	<0.1	--
	449.1	450.1	1.0	OH038	<0.1	--	0.9	0.2	0.1	--	--	--
	450.1	451.1	1.0	OH040	0.4	--	0.7	--	--	--	<0.1	--
	451.1	451.8	0.7	OH030	--	--	0.5	0.2	0.2	--	--	<0.1
	451.8	456.3	4.5	OH040	1.6	--	2.9	--	--	--	0.3	--
	456.3	457.7	1.4	OH028	0.3	--	1.0	0.1	<0.1	--	--	--
	457.7	459.0	1.3	OH040	0.5	--	0.9	--	--	--	<0.1	--
	459.0	459.4	0.4	OH030	--	--	0.2	0.1	0.1	--	--	<0.1
Clinton	459.4	459.8	0.4	OH030	--	--	0.3	0.2	0.1	--	--	<0.1
	459.8	464.4	4.6	OH040	1.6	--	3.0	--	--	--	0.3	--
	464.4	466.0	1.6	OH039	--	--	1.6	0.3	--	--	--	--
	466.0	466.8	0.8	OH040	0.3	--	0.5	--	--	--	<0.1	--
	466.8	468.3	1.5	OH039	--	--	1.5	0.3	--	--	--	--
	468.3	469.2	0.9	OH040	0.3	--	0.6	--	--	--	<0.1	--
	469.2	469.8	0.5	OH039	--	--	0.5	0.1	--	--	--	--
	469.8	470.5	0.8	OH040	0.3	--	0.5	--	--	--	<0.1	--
	470.5	472.2	1.7	OH039	--	--	1.7	0.3	--	--	--	--

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	472.2	473.0	0.7	OH167	<0.1	--	0.7	0.6	<0.1	--	--	--
	473.0	473.7	0.7	OH033	0.2	--	0.5	<0.1	<0.1	--	--	--
Greene	473.7	473.7	0.0	OH033	<0.1	--	<0.1	<0.1	<0.1	--	--	--
	473.7	476.5	2.8	OH023	<0.1	--	2.7	1.5	1.5	--	--	--
Fayette	476.5	483.8	7.3	OH023	0.2	--	7.1	3.8	3.8	--	--	--
	483.8	484.5	0.7	OH028	0.2	--	0.5	<0.1	<0.1	--	--	--
	484.5	486.0	1.6	OH023	<0.1	--	1.5	0.8	0.8	--	--	--
	486.0	486.8	0.8	OH028	0.2	--	0.5	<0.1	<0.1	--	--	--
	486.8	490.3	3.5	OH023	0.1	--	3.4	1.8	1.8	--	--	--
	490.3	491.1	0.9	OH028	0.2	--	0.6	<0.1	<0.1	--	--	--
	491.1	493.6	2.4	OH025	0.1	--	2.3	0.5	0.1	--	--	--
	493.6	494.6	1.0	OH028	0.2	--	0.7	0.1	<0.1	--	--	--
	494.6	495.9	1.3	OH025	<0.1	--	1.2	0.3	<0.1	--	--	--
	495.9	496.5	0.6	OH033	0.2	--	0.4	<0.1	<0.1	--	--	--
	496.5	498.3	1.8	OH025	0.1	--	1.7	0.4	<0.1	--	--	--
	498.3	499.8	1.5	OH033	0.5	--	1.0	0.2	<0.1	--	--	--
Pickaway	499.8	500.2	0.4	OH033	0.1	--	0.3	<0.1	<0.1	--	--	--
	500.2	501.1	0.8	OH031	<0.1	--	0.8	0.3	0.3	--	--	--
	501.1	501.4	0.4	OH033	0.1	--	0.2	<0.1	<0.1	--	--	--
	501.4	504.4	3.0	OH031	<0.1	--	2.9	1.2	1.2	--	--	--
	504.4	505.2	0.9	OH033	0.3	--	0.6	<0.1	<0.1	--	--	--
	505.2	509.0	3.8	OH031	0.1	--	3.7	1.5	1.5	--	--	--
	509.0	509.6	0.6	OH028	0.1	--	0.4	<0.1	<0.1	--	--	--
	509.6	511.3	1.7	OH033	0.5	--	1.1	0.2	<0.1	--	--	--
	511.3	513.3	2.1	OH023	<0.1	--	2.0	1.1	1.1	--	--	--
	513.3	514.1	0.8	OH034	0.3	<0.1	0.5	<0.1	<0.1	<0.1	--	--
	514.1	514.1	0.0	OH028	<0.1	--	<0.1	<0.1	<0.1	--	--	--
	514.1	516.0	1.9	OH028	0.5	--	1.3	0.2	<0.1	--	--	--
	516.0	517.9	1.9	OH034	0.7	<0.1	1.1	0.2	0.1	<0.1	--	--

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	517.9	518.9	1.0	OH025	<0.1	--	1.0	0.2	<0.1	--	--	--
	518.9	523.4	4.5	OH034	1.7	0.1	2.7	0.5	0.3	<0.1	--	--
	523.4	524.0	0.5	OH033	0.2	--	0.3	<0.1	<0.1	--	--	--
Fairfield	524.0	526.4	2.4	OH033	0.7	--	1.6	0.2	<0.1	--	--	--
	526.4	531.3	5.0	OH071	1.8	--	3.2	0.5	0.2	0.4	0.4	--
	531.3	534.2	2.9	OH028	0.7	--	2.0	0.3	<0.1	--	--	--
	534.2	536.0	1.8	OH071	0.7	--	1.2	0.2	<0.1	0.2	0.2	--
	536.0	536.4	0.4	OH028	<0.1	--	0.2	<0.1	<0.1	--	--	--
	536.4	540.4	4.1	OH071	1.5	--	2.6	0.4	0.2	0.4	0.4	--
	540.4	543.3	2.9	OH064	0.5	--	2.4	0.3	0.1	--	--	--
	543.3	548.4	5.0	OH071	1.8	--	3.2	0.5	0.2	0.5	0.5	--
Perry	548.4	548.4	0.0	OH071	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	--
	548.4	556.9	8.5	OH045	6.5	--	1.4	0.5	--	0.8	2.1	--
	556.9	566.3	9.4	OH114	8.2	--	0.8	0.3	--	2.9	5.0	--
Muskingum	566.3	577.4	11.1	OH114	9.7	--	1.0	0.3	--	3.5	5.9	--
	577.4	580.9	3.5	OH114	3.0	--	0.3	0.1	--	1.1	1.9	--
	580.9	581.3	0.4	OH174	<0.1	--	<0.1	0.1	<0.1	--	<0.1	--
	581.3	582.1	0.8	OH114	0.7	--	<0.1	<0.1	--	0.3	0.4	--
	582.1	584.6	2.5	OH174	0.4	--	0.1	0.8	0.4	--	<0.1	--
	584.6	586.0	1.4	OH114	1.2	--	0.1	<0.1	--	0.4	0.7	--
	586.0	588.4	2.4	OH150	2.3	--	<0.1	<0.1	--	--	2.3	--
	588.4	589.1	0.7	OH146	0.6	--	--	--	--	0.3	0.3	--
	589.1	591.7	2.6	OH150	2.5	--	<0.1	<0.1	--	--	2.5	--
Guernsey	591.7	591.9	0.2	OH150	0.2	--	<0.1	<0.1	--	--	0.2	--
	591.9	599.5	7.6	OH110	6.1	--	0.5	0.6	--	1.4	6.4	--
	599.5	601.1	1.6	OH174	0.3	--	<0.1	0.5	0.3	--	<0.1	--
	601.1	608.2	7.1	OH124	6.5	--	0.9	--	--	0.2	5.8	--
	608.2	608.4	0.2	OH149	0.1	--	--	<0.1	<0.1	<0.1	<0.1	--
	608.4	608.5	0.1	OH124	<0.1	--	<0.1	--	--	<0.1	<0.1	--

TABLE 7A-1 Revised

Soil Characteristics by Milepost Segment for Each MUID Polygon Along the Rockies Express Pipeline-East Project Pipeline Route

State / County	Begin Milepost	End Milepost	Crossing Length (miles)	MUID	Water [a]	Wind [b]	Prime Farmland [c]	Hydric Soils [d]	Compaction-Prone [e]	Stony – Rocky [f]	Shallow Bedrock [g]	Droughty [h]
					Miles							
	608.5	610.9	2.4	OH149	2.2	--	--	0.1	<0.1	0.5	1.3	--
	610.9	611.3	0.4	OH147	0.4	--	--	--	--	0.2	0.3	--
Noble	611.3	618.0	6.7	OH147	6.4	--	--	--	--	4.2	5.5	--
Belmont	618.0	619.3	1.3	OH147	1.3	--	--	--	--	0.8	1.1	--
	619.3	623.6	4.2	OH112	3.7	--	0.5	--	--	--	4.2	--
	623.6	625.4	1.8	OH137	1.6	--	0.2	--	--	--	1.8	--
	625.4	626.8	1.4	OH118	1.3	--	0.1	--	--	--	1.4	--
	626.8	626.8	0.0	OH137	<0.1	--	<0.1	--	--	--	<0.1	--
	626.8	628.5	1.6	OH118	1.5	--	0.1	--	--	--	1.6	--
	628.5	629.4	1.0	OH137	0.9	--	<0.1	--	--	--	1.0	--
	629.4	630.2	0.8	OH118	0.7	--	<0.1	--	--	--	0.8	--
	630.2	630.9	0.7	OH137	0.6	--	<0.1	--	--	--	0.7	--
	630.9	632.6	1.7	OH118	1.5	--	0.2	--	--	--	1.7	--
	632.6	633.8	1.2	OH096	1.2	--	--	--	--	--	1.1	--
Monroe	633.8	637.3	3.5	OH096	3.5	--	--	--	--	--	3.4	--
	637.3	638.2	0.9	OH095	0.8	--	<0.1	--	--	--	0.8	--
	638.2	639.1	0.9	OH096	0.9	--	--	--	--	--	0.8	--

[a] Includes land in capability subclasses 4E through 8E and soils with slopes greater than 9 percent.

[b] Includes soils in wind erodibility groups 1 and 2.

[c] Includes land listed by the Natural Resources Conservation Service (NRCS) as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

[d] As designated by the NRCS.

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

[f] Includes soils that have either: 1) a cobbly, stony, bouldery, gravelly, shaly, or slaty modifier to the textural class, or 2) have > 5 percent (weight basis) of stones larger than 3 inches in the surface layer.

[g] Includes soils that have bedrock within 60 inches of the soil surface.

[h] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.