

KEYSTONE XL PIPELINE PROJECT

0543-SD-P4-XXX.X-XXX.X-S

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM			
1	VARIATION TYPE:	Refinement: <input type="text"/>	Reroute: <input type="text"/>
		Centerline: <input checked="" type="checkbox"/>	Pump Station: <input type="text"/>
		Footprint: <input checked="" type="checkbox"/>	Design: <input checked="" type="checkbox"/>
		Valve Site: <input type="text"/>	CAR: <input type="text"/>
2	LOCATION:	Sketch: <input type="text" value="Attached"/>	Pictures: <input type="text" value="N/A"/>
	State: <input type="text" value="SD"/>	County: <input type="text" value="Various"/>	Quad Map: <input type="text" value="N/A"/>
	Township: <input type="text" value="Various"/>	Range: <input type="text" value="Various"/>	Aerial Map: <input type="text" value="See attached map sheet"/>
	Section: <input type="text" value="Various"/>	Centerline: <input type="text" value="6/11/2013"/>	MP: <input type="text" value="XXX.X"/> to <input type="text" value="XXX.X"/>
3	REASON FOR ROUTE VARIATION (Please include reason for route variation):		
	<p>The primary reason for this design change is to incorporate Keystone XL HDD design recommendations for three (3) HDD locations in South Dakota based on the Laney Directional Drilling Co. review.</p> <p>This review was conducted based on comments and design changes proposed by Michels Corporation and has been subsequently reviewed by Engineering.</p>		
	DETAIL ROUTE VARIATION (Please describe route variation in detail):		
	<p>1. Ash Creek Bluff HDD (MP 431.22)</p> <ul style="list-style-type: none"> - Extended HDD exit point by 100 ft downstream. This also increases the total horizontal distance from 3480 ft to 3580 ft and the HDD length from 3522 ft to 3635 ft. Existing workspace including pull back area will be adjusted by 100 ft as a result. - Adjusted HDD exit angle from 12° to 14°. - Depth of cover will be increased by 40 ft by lowering the bottom tangent elevation from 1856 ft to 1816 ft. <p><u>1 tract impacted:</u> ML-SD-HK-00020.000 (Craig & Deborah Hanrahan)</p> <p>2. Bridger Creek HDD (MP 433.59)</p> <ul style="list-style-type: none"> - Extended HDD exit point by 300 ft downstream and the entry point by 150 ft upstream. This also increases the total horizontal distance from 8335 ft to 8785 ft and the HDD length from 8443 ft to 8897 ft. - Centerline change will be required to accommodate the 300 ft extension at the exit point of the HDD (Please see map attached). Pull back area will be extended 300 ft. Neck down at Wetland crossing. - Depth of cover will be increased by 50 ft by lowering the bottom tangent elevation from 1875 ft to 1825 ft. <p><u>4 tracts impacted:</u></p> <ul style="list-style-type: none"> - ML-SD-HK-00120.000 (Deborah L. Hanrahan, Personal Rep, Estate of Craig L. Hanrahan) - ML-SD-HK-00125.000 (Kelly Blair) - ML-SD-HK-00130.000 (Grant J. Olsen) - ML-SD-HK-00170.000 (Kelly Blair) <p>3. Bad River HDD (MP 485.97)</p> <ul style="list-style-type: none"> - The only adjustment to be made will be a depth of cover increase of 20 ft by lowering the bottom tangent elevation from 1760 ft to 1740 ft. As a result, HDD length will also increase from 2062 ft to 2065 ft (3 ft increase). <p><u>0 tracts impacted:</u> No above ground impact.</p>		
	ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induction bends, etc.):		
	<p>No additional costs associated with environmental surveys. Civil survey will be required for the Bridger Creek centerline change.</p> <p>For HDDs, 1 ft = ~ \$529. The following costs and distances are based on increases in HDD length. Ash Creek Bluff HDD = 113 ft x \$529 = ~ \$59,777 Bridger Creek HDD = 454 ft x \$529 = ~ \$240,166 Bad River HDD = 3 ft x \$529 = ~ \$1,587 Total = ~ \$301,530</p>		
	Is there an increase/decrease in the number of crossings?	Yes <input type="text"/>	No <input checked="" type="checkbox"/>
	If yes, please list:	<input type="text"/>	
	COST ANALYSIS (costs incurred or saved from the route variation)		
	Additional length of route realignment	11 ft.	\$ 3,960.00 \$ 360/ft
	Additional length of side-hill construction:	0 ft.	\$ - \$ 19/ft
	Additional length of wetland construction:	0 ft.	\$ - \$ 195/ft
	Additional bore length (Road, RR):	0 ft.	\$ - \$ 540/ft
	Additional foreign line/pipeline crossings:	0 EA	\$ - \$ 30,000/EA
	Additional water body crossing (streams, ponds, etc.):		
	35 - 65' +	0 EA	\$ - \$ 185,000/EA
	10' - 19'	0 EA	\$ - \$ 77,250/EA
	Less than 10'	0 EA	\$ - \$ 32,500/EA
	Additional survey required:		
	Civil:	0.82 mile	\$ 4,100.00 \$ 5,000/mile
	Cultural:	0.00 mile	\$ - \$ 2,500/mile
	Biological:	0.00 mile	\$ - \$ 2,800/mile
	Miscellaneous costs saved or added due to route variation from ADDITIONAL IMPACTS listed above:		\$ 301,530
	Overall estimated costs of the route variation:	\$ 309,590.00	(See "Additional Impacts" above)

4 LAND / TransCanada <i>Tina Hall</i>		
a) Is a new landowner affected by the proposed variation?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
b) Is the affected landowner/tract a possible condemnation?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
c) Does proposed route variation impact Tribal Lands?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
d) Does proposed route variation impact any Federal/State Lands?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
-If yes, name type (i.e. USFWS, BLM, etc.): <input type="text"/>		
e) Is proposed realignment outside the easement/workspace?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
f) Is realignment proposed to satisfy landowner request?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
-If yes, name of landowner(s)/track number(s): <input type="text"/>		
<input type="text"/>		
g) Has all the evaluation criteria been examined/provided for this specific discipline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If no, please explain why: <input type="text"/>		
<input type="text"/>		
5 ENGINEERING/CONSTRUCTION - TransCanada <i>Meera Kothari</i>		
a) Maximum deviation perpendicular to proposed alignment:	<input type="text" value="78"/> ft.	
b) Does variation (CL) (including workspaces) falls within 500 ft. MDEQ Corridor?	Yes <input type="text" value="N/A"/>	No <input type="text" value="N/A"/>
c) Has the centerline been staked for construction?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
d) Does route variation affect HDD crossing alignment?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
e) Is realignment proposed for engineering/construction reasons?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
f) Will the route variation require the relocation of a pump station?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
g) Has all the evaluation criteria been examined/provided for this specific discipline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If no, please explain why: <input type="text"/>		
<input type="text"/>		
6 ENVIRONMENTAL / TransCanada <i>Sandra Barnett</i>		
a) Has the corridor been environmentally surveyed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
b) Has the proposed variation been environmentally surveyed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
c) Does proposed route variation impact Sage Grouse areas?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
d) Does route variation impact ABB areas?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
e) Was variation proposed to satisfy environmental issues?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
f) Was realignment proposed to satisfy agency request?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
-If yes, name of agency(s): <input type="text"/>		
g) Environmental features:		
Added (+):	<input type="text"/>	Subtracted (-): <input type="text"/>
Wetland ID # for newly impacted wetlands: <input type="text"/>		
h) Has all the evaluation criteria been examined/provided for this specific discipline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If no, please explain why: <input type="text"/>		
<input type="text"/>		
7 ENGINEERING / FACILITIES AND HYDRAULICS (if applicable) <i>Sandra Gigovic</i>		
a) Will the route variation require the relocation of a pump station?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
b) Will route variation impact hydraulics?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
c) Are additional valves required at HCA's or water crossing?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
d) Has all the evaluation criteria been examined/provided for this specific discipline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If no, please explain why: <input type="text"/>		
8 STAKEHOLDER RELATIONS / TCPL (if applicable) <i>Bud Andersen</i>		
a) Does the variation result in any new stakeholders?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
b) Does the variation require follow-up with specific stakeholder groups?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
c) Was the variation proposed to satisfy stakeholder request?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
-If yes, please specify issue type (as it aligns to stakeholder database): <input type="text"/>		
d) Has all the evaluation criteria been examined/provided for this specific discipline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If no, please explain why: <input type="text"/>		
<input type="text"/>		
9 Originator: <input type="text" value="Engineering"/> Date: <input type="text" value="1/8/2014"/>	10 Received by: <input type="text"/> Date: <input type="text"/> Fax to: ?	
11 Assigned Tracking Number: <input type="text" value="0543-SD-P4-XXX.X-XXX.X-S"/>	12 Filed by: <input type="text"/> Date: <input type="text"/> Fax to: ?	

0543-SD-P4-XXX.X-XXX.X-S

KEYSTONE XL PIPELINE PROJECT

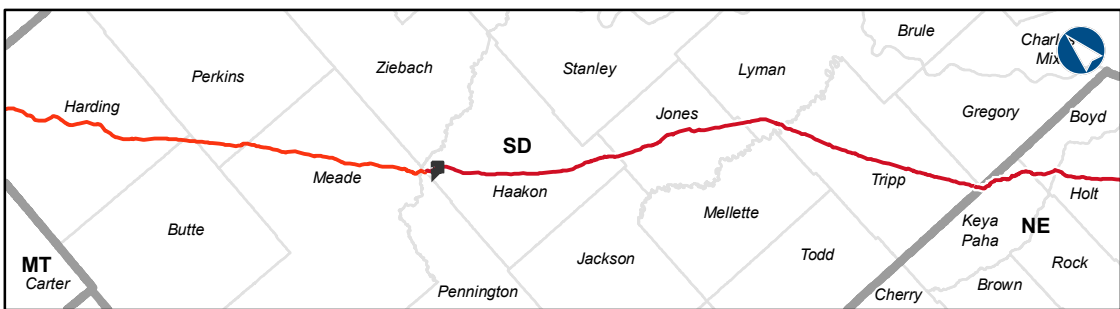
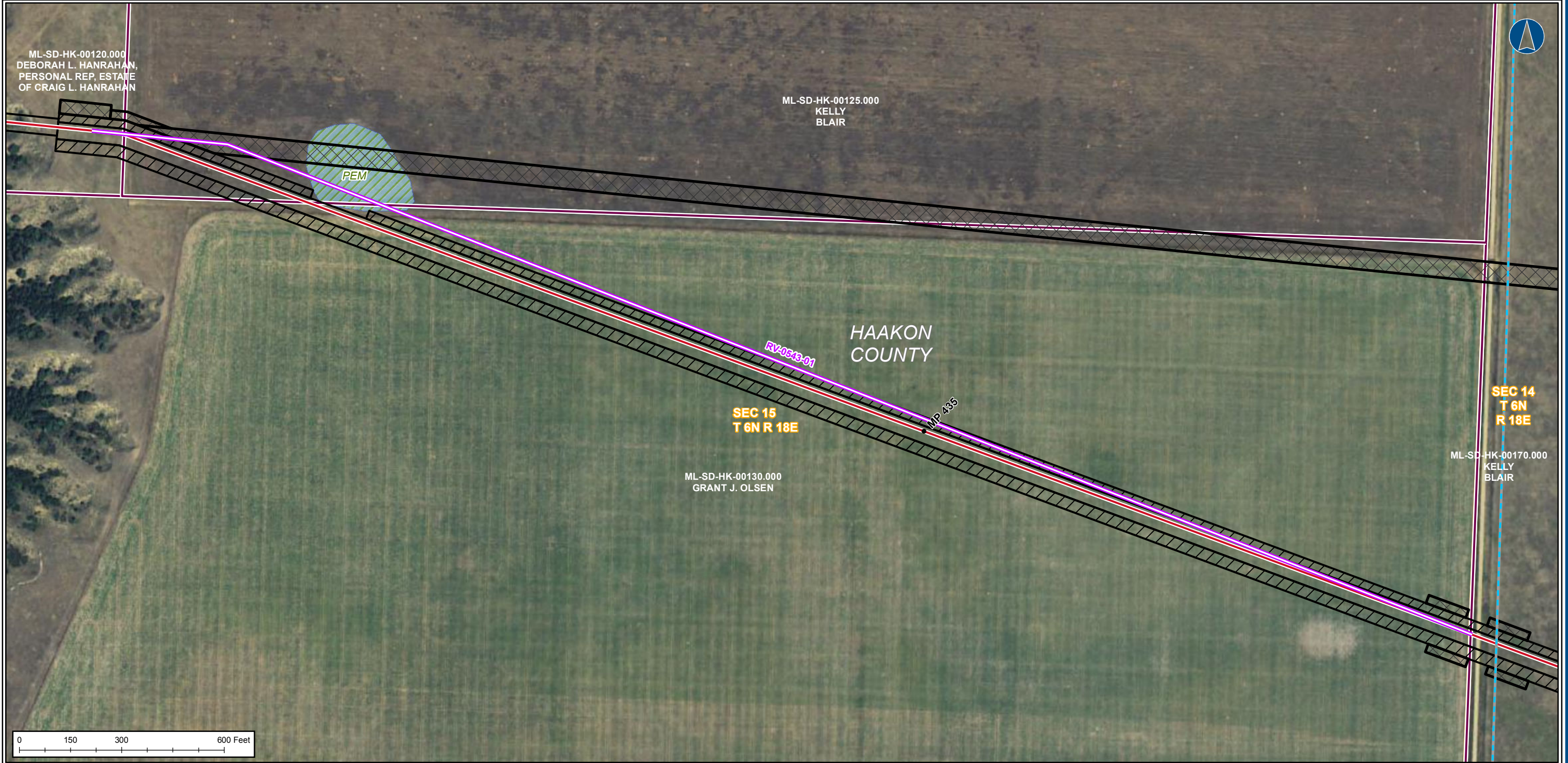
KEYSTONE XL PIPELINE PROJECT ROUTE VARIATION AUTHORIZATION FORM		
Date: 1/8/2014	Tracking Number: 0543-SD-P4-XXX X-XXX X-S	
Description: The primary reason for this design change is to incorporate Keystone XL HDD design recommendations for three (3) HDD locations in South Dakota based on the Laney Directional Drilling Co. review.	MP: XXX X to XXX X	Originated By: Engineering
	Variation Form Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
TransCanada - Land Tina Hall	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	Date: 1-13-2014
Comments:	If Rejected Why?	
TransCanada - Engineering Meera Kothari	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	Date: 1/16/14
Comments:	If Rejected Why?	
Exp - Engineering Kevin McGlynn	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	Date: 2-17-2014
Comments:	If Rejected Why?	
TransCanada - Environmental Sandra Barnett	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	Date: 1/13/14
Comments:	If Rejected Why? Work's pace needs to be kept out of the wetland.	
Stantec - Risk Assessment Heidi Tilquist	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
TransCanada - Facilities Sandra Gigovic	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
TransCanada - PM (Montana) Alan Lietz	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
TransCanada - PM (South Dakota) James Odom	Variation: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
TransCanada - PM (Nebraska) Robert Bradley	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
TransCanada - Area Manager Steve Marr	Variation: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	Date:
Comments:	If Rejected Why?	
Forward to:	Tina Hall <input type="checkbox"/> Meera Kothari <input type="checkbox"/> Kevin McGlynn <input type="checkbox"/>	Sandra Barnett <input type="checkbox"/> Heidi Tilquist <input type="checkbox"/> Sandra Gigovic <input type="checkbox"/> Alan Lietz <input type="checkbox"/>
	James Odom <input type="checkbox"/> Robert Bradley <input type="checkbox"/> Steve Marr <input type="checkbox"/>	

0543-SD-P4-XXX X-XXX X-S

KEYSTONE XL PIPELINE PROJECT

KEYSTONE XL PIPELINE PROJECT ROUTE VARIATION AUTHORIZATION FORM		
Date: 1/8/2014	Tracking Number: 0543-SD-P4-XXXX-XXXX-6	
Description: The primary reason for this design change is to incorporate Keystone XL HDD design recommendations for three (3) HDD locations in South Dakota based on the Leray Directional Drilling Co. review.	Drawn By: Engineering	
TransCanada - Land: Tim Hall	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - Engineering: Meera Kolbas	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
Eng - Engineering: Kevin McArryn	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - Environmental: Sandra Rainell	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
State - MR Approval: Matt Tilquist	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - Facilities: Sandra Rainell	Approval: Approved <input checked="" type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: 1/10/2014	
	If Rejected Why? <input type="text"/>	
TransCanada - PM (Montana): Alan Lutz	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - EM (South Dakota): James Olson	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - CM (Nebraska): Robert Bradley	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
TransCanada - Area Manager: Steve Hall	Approval: Approved <input type="checkbox"/> Rejected <input type="checkbox"/>	
Comments:	Date: <input type="text"/>	
	If Rejected Why? <input type="text"/>	
Reviewed by:		
Tim Hall <input type="checkbox"/>	Sandra Rainell <input type="checkbox"/>	James Olson <input type="checkbox"/>
Meera Kolbas <input type="checkbox"/>	Matt Tilquist <input type="checkbox"/>	Robert Bradley <input type="checkbox"/>
Kevin McArryn <input type="checkbox"/>	Sandra Rainell <input type="checkbox"/>	Steve Hall <input type="checkbox"/>
	Alan Lutz <input type="checkbox"/>	

0543-SD-P4-XXXX-XXXX-6



LEGEND

- 1/10 Mile Post
- Mile Post (2013-06-11)
- ⊗ Valve
- Keystone XL Centerline (2013-06-11)
- Route Revision (Proposed)
- Access Road - Permanent
- Access Road - Temporary
- Water Lines
- Workspace
- ATWS
- Valve Site
- Pump Station
- Property Parcel
- Section Line
- County Line
- Current Waterbody
- Currently Wetland

KEYSTONE XL PROJECT

RV-0543-01 ROUTE REVISION

COUNTY:	HAAKON	DRAWN BY:	CC
STATE:	SOUTH DAKOTA	CHECKED BY:	PD
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW	2014-01-07	

PRELIMINARY

DATE:	2014-01-07	PROJECTION:	NAD83 UTM14 N
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PREPARED BY:

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DWG:	XL-46-P-9299-A-RV-0543-01	SHEET:	1
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