

KEYSTONE XL PIPELINE PROJECT

0527-SD-P4-XXX.X-XXX.X-S

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM	
1	VARIATION TYPE: Refinement: <input type="text"/> Reroute: <input checked="" type="checkbox"/> Footprint: <input type="text"/> Design: <input type="text"/> Centerline: <input checked="" type="checkbox"/> Pump Station: <input type="text"/> Valve Site: <input type="text"/> CAR: <input type="text"/>
2	LOCATION: Sketch: <input type="text"/> Attached Pictures: <input type="text"/> N/A State: <input type="text"/> SD County: <input type="text"/> Harding (Perkins) Quad Map: <input type="text"/> N/A Township: <input type="text"/> 016N (014N) Range: <input type="text"/> 008E (010E) Aerial Map: <input type="text"/> See attached map sheets Section: <input type="text"/> 031 (018) Centerline: <input type="text"/> 6/11/2013 MP: <input type="text"/> XXX.X to <input type="text"/> XXX.X
3	REASON FOR ROUTE VARIATION (Please include reason for route variation): <p>The primary reason for this route variation is to avoid impacting expanded eligible prehistoric cultural sites (SN# 39HN1202 or C710HA009) and (SN# 39PE0481 or C710PE001) by shifting the CL/workspaces away from the expanded area. This Route Variation expands on original RVs 0514-01 and 0515-01 (both to avoid prehistoric cultural sites). After the approval of RV-0514 and RV-0515, Environmental surveyed the reroutes and discovered the cultural sites extended beyond original delineated boundaries. These CL reroutes aim to avoid the newly delineated boundaries.</p> <p>These reroutes are proposed by Engineering and have been field verified by civil survey.</p>
	DETAIL ROUTE VARIATION (Please describe route variation in detail): <p>Listed in "Supplemental Info" Tab.</p> <p>No new landowners have been affected by the proposed route variations. The tracts impacted are as follows:</p> <p>RV-0527-01: 2 tracts impacted: ML-SD-HA-13020.000 - State of South Dakota ML-SD-HA-13030.000 - Marsha Lytle a.k.a Marsha Laurene Lytle</p> <p>RV-0527-02: 1 tract impacted: ML-SD-PE-00010.000 - Dee Wilcox</p>
	ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): <p>Listed in "Cost Analysis" Tab.</p> <p>Miscellaneous cost savings include: Treatment/mitigation (includes: Mitigation plan and approval by agencies, field work and report, etc) ~\$200,000-\$250,000 per reroute</p> <p>A small section of 0527-01 extends beyond the existing environmental survey limits.</p>
9	Originator: <input type="text"/> Engineering Date: <input type="text"/> 11/1/2013
10	Received by: <input type="text"/> Date: <input type="text"/> 11/1/2013 <i>Fax to: ?</i>
11	Assigned Tracking Number: <u>0527-SD-P4-XXX.X-XXX.X-S</u>
12	Filed by: <input type="text"/> Date: <input type="text"/> <i>Fax to: ?</i>

Keystone XL Pipeline - Supplemental Information for Route Variation Report 0527

Prepared: 2013-11-01

RV ID	MP Start	MP End	State	County	Section	Township	Range	Original Length (ft)	Reroute Length (ft)	Change in Length (ft)	Max. Perp. Deviation (ft)	Reason for Variation	Brief Variation Description	Additional Impacts/Comments	Originator
0527-01	346.81	347.25	SD	Harding	031	016N	008E	2,328	2,396	67.59	156.49	The primary reason for this route variation is to avoid impacting expanded eligible prehistoric cultural site (SN # 39HN1202 or C710HA009) by shifting the CL / Workspaces away from the expanded area. A reroute was approved for similar reasons at the same location in RV 0515-01.	The proposed route variation begins near MP 346.81 and continues straight in the southeast direction for 278ft before deviating -45 degrees (breaking into P.Is) eastward for - 2.120ft. It then ties back in to the centerline at MP 347.25.	- CL reroute has been field verified by civil survey.	Engineering
0527-02	362.24	362.61	SD	Perkins	018	014N	010E	1,954	1,967	13.71	97.27	The primary reason for this route variation is to avoid impacting expanded eligible prehistoric cultural site (SN # 39PE0481 or C710PE001) by shifting the CL / Workspaces away from the expanded area. A reroute was approved for similar reasons at the same location in RV 0514-01.	The proposed route variation begins near MP 362.2 and continues straight in the southeast direction for -41ft then deviates eastwards -18 degrees for 502ft. Proposed centerline further deviates 15 degrees eastwards for 1,425ft and ties back in at MP 362.607.	- CL reroute has been field verified by civil survey. - CAR-0234 will need to be extended to the new CL.	Engineering

RV ID	Civil Survey Complete?	Civil Survey Needed (ft)	Moves Pump Station?	Moves Valve Site?	In Co-located Area?	Does route variation impact ABB areas?	Biological Survey Complete for Existing Corridor?	Cultural Survey Complete for Existing Corridor?	Biological Survey Complete for Proposed Corridor?	Cultural Survey Complete for Proposed Corridor?	Estimated Length Requiring new Environmental Surveys (ft)	Number of New Landowners impacted by reroute	Number of Landowners on current route impacted by reroute	Is the affected landowner a possible condemnation?	Number of tracts purchased on original route.	Does proposed route variation impact Tribal Lands?	Does proposed route variation impact any Federal/State Lands?
0527-01	YES	0	NO	NO	NO	NO	YES	YES	NO	NO	450	0	2	NO		NO	YES - Tract ML-SD-HA-13020.000 (State of South Dakota)
0527-02	YES	0	NO	NO	NO	NO	YES	YES	YES	YES	0	0	1	NO		NO	NO

Keystone XL Pipeline - Cost Analysis for Route Variation Report 0527

Prepared: 2013-11-01

RV ID	Additional length (ft)	Cost \$360/ft	Additional length of wetland construction (ft)	Cost \$195/ft	Additional length of side hill construction (ft)	Cost \$19/ft	Additional bore length (ft)	Cost \$540/ft	Additional Waterbody crossings	Cost (\$77,250/EA btw 10' - 19') (\$32,500/EA < 10')	Cost of Environmental survey (\$5,300/mile)	Cost of Civil survey (\$5,000/mile)	Approximate cost for land purchased on current centerline	Miscellaneous cost for additional impacts	Total Cost
0527-01	67.59	\$ 24,332.40	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ 451.70	\$ -	\$ -	\$ (250,000.00)	\$ (225,215.90)
0527-02	13.71	\$ 4,935.60	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	\$ (250,000.00)	\$ (245,064.40)

Overall Estimated Costs of Routes Variations= \$ (470,280.30)

Keystone XL Pipeline - Approval form for Route Variation Report 0527

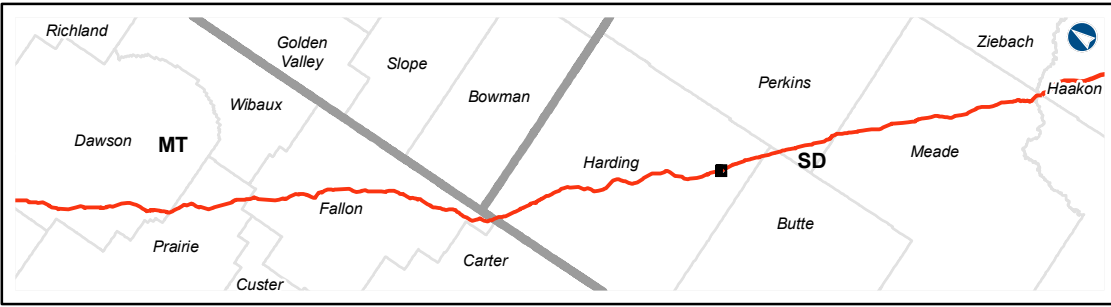
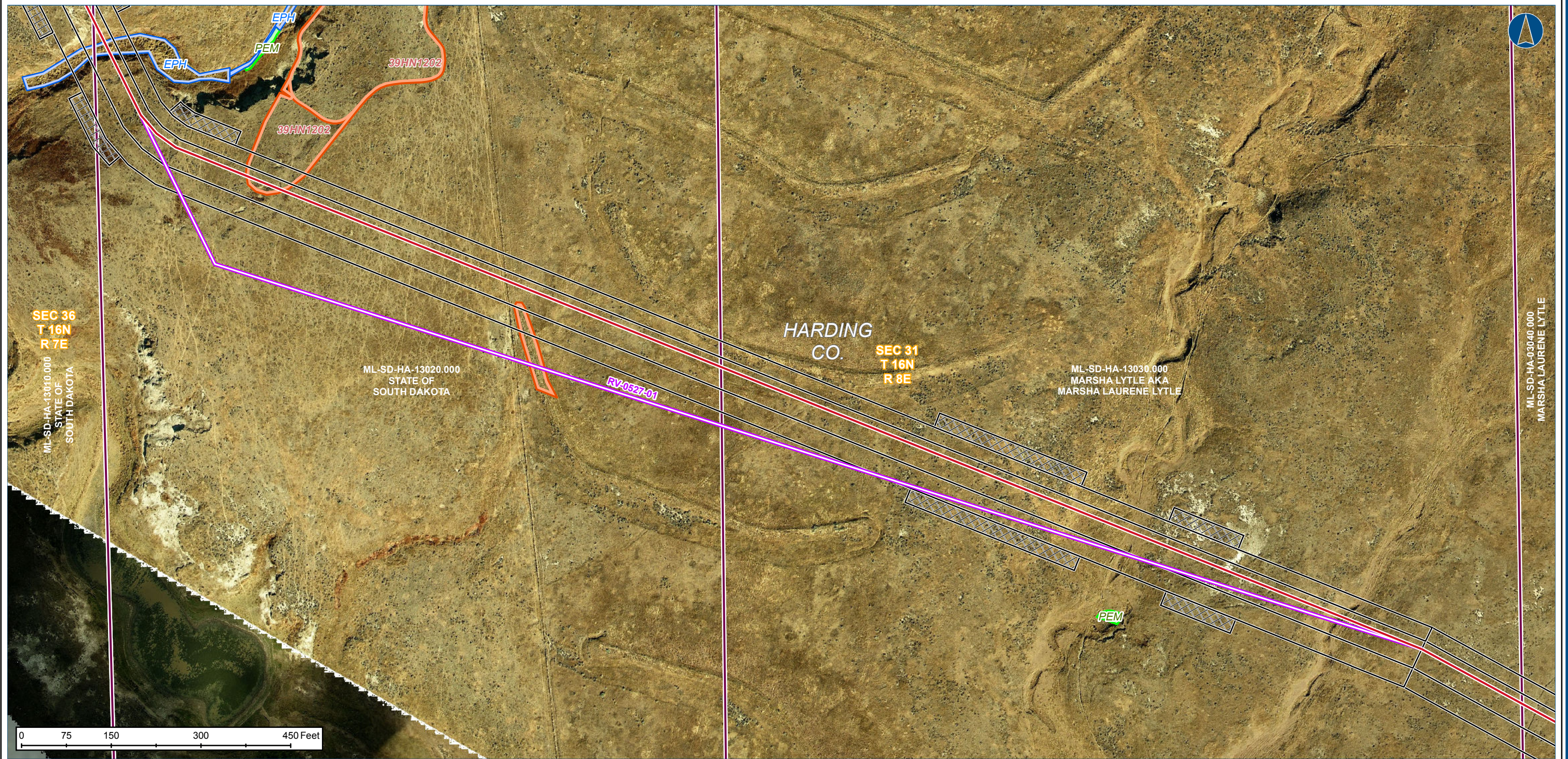
Prepared: 2013-11-01

RV ID	0527-01	0527-02
LAND (TransCanada) Tina Hill	Approval (Y/N)	Y
	Comments	
	Signature	<i>Tina Hill</i>
ENGINEERING (TransCanada) Heena Kohli	Approval (Y/N)	Y
	Comments	
	Signature	<i>Heena Kohli</i>
ENGINEERING (exp) Kevin McGlynn	Approval (Y/N)	Y
	Comments	
	Signature	<i>Kevin McGlynn</i>
ENVIRONMENTAL (TransCanada) Sandra Barnett	Approval (Y/N)	Y
	Comments	
	Signature	<i>Sandra Barnett</i>
FACILITIES (TransCanada) Sandra Gogovic	Approval (Y/N)	Y
	Comments	
	Signature	<i>Sandra Gogovic</i>
PROJECT MANAGEMENT - MONTANA (TransCanada) Alan Lietz	Approval (Y/N)	Y
	Comments	
	Signature	<i>Alan Lietz</i>
PROJECT MANAGEMENT - SOUTH DAKOTA (TransCanada) James Odum	Approval (Y/N)	Y
	Comments	
	Signature	<i>James Odum</i>
PROJECT MANAGEMENT - NEBRASKA (TransCanada) Robert Bradley	Approval (Y/N)	Y
	Comments	
	Signature	<i>Robert Bradley</i>
KEYSTONE XL MANAGER (TransCanada) Steve Marr	Approval (Y/N)	Y
	Comments	
	Signature	<i>Steve Marr</i>

Keystone XL Pipeline - Approval form for Route Variation Report 0527

Prepared: 2013-11-01

RV ID	0527-01	0527-02
LAND (TransCanada) Tina Hill	Approval (Y/N)	
	Comments	
	Signature	
ENGINEERING (TransCanada) Neema Kulkarni	Approval (Y/N)	
	Comments	
	Signature	
ENGINEERING (ecp) Kevin McSlynn	Approval (Y/N)	
	Comments	
	Signature	
ENVIRONMENTAL (TransCanada) Sandra Barlett	Approval (Y/N)	
	Comments	
	Signature	
FACILITIES (TransCanada) Sandra Elgovic	Approval (Y/N)	Y
	Comments	Nov 4, 2013
	Signature	Signature A.
PROJECT MANAGEMENT - MONTANA (TransCanada) Agn Lise	Approval (Y/N)	
	Comments	
	Signature	
PROJECT MANAGEMENT - SOUTH DAKOTA (TransCanada) Janine Coon	Approval (Y/N)	
	Comments	
	Signature	
PROJECT MANAGEMENT - NEBRASKA (TransCanada) Robert Emshy	Approval (Y/N)	
	Comments	
	Signature	
KEYSTONE XL MANAGER (TransCanada) Steve Hill	Approval (Y/N)	
	Comments	
	Signature	



LEGEND

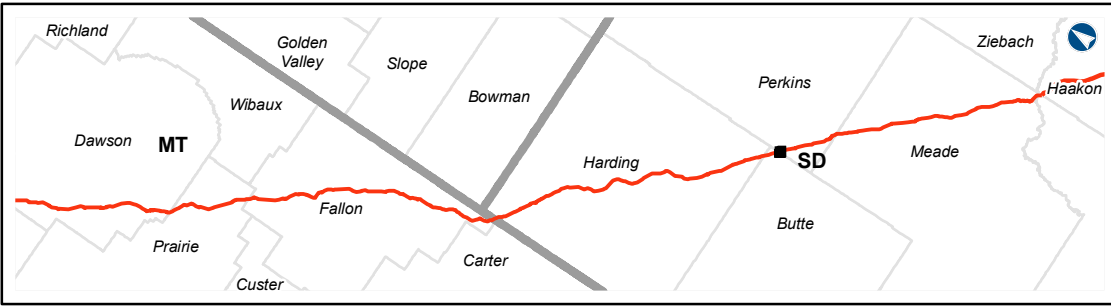
● Mile Post	Access Road - Permanent	Property Parcel
Valve	Access Road - Temporary	Section Line
Valve Site	Transmission Line	County Line
Power Pole	Cultural Site	Waterbody
Keystone XL Centerline (Working)	Pump Station	Wetland
Route Revision (Proposed)		

KEYSTONE XL PROJECT
RV-527-01 ROUTE REVISION

COUNTY: HARDING	DRAWN BY: CC
STATE: SOUTH DAKOTA	CHECKED BY: PD
REV. NO.: 0	REVISION: ISSUED FOR REVIEW
	DATE: 2013-10-30
PRELIMINARY	

PREPARED BY:
exp Energy Services Inc.
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LEGEND

● Mile Post	Access Road - Permanent	Property Parcel
⊗ Valve	Access Road - Temporary	Section Line
Valve Site	Transmission Line	County Line
Power Pole	Cultural Site	Waterbody
Keystone XL Centerline (Working)	Pump Station	Wetland
Route Revision (Proposed)		

KEYSTONE XL PROJECT
RV-527-02 ROUTE REVISION

COUNTY: PERKINS	DRAWN BY: CC	
STATE: SOUTH DAKOTA	CHECKED BY: PD	
REV. NO.: 0	REVISION: ISSUED FOR REVIEW	DATE: 2013-10-30
PRELIMINARY		

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