

KEYSTONE XL PIPELINE PROJECT

0443-SD-P4-XXX.X-XXX.X-S

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM	
1	<b>VARIATION TYPE:</b> 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	<b>LOCATION:</b> Sketch: <input type="text"/> Attached Pictures: <input type="text"/> N/A State: <input type="text"/> SD County: <input type="text"/> Various Quad Map: <input type="text"/> N/A Township: <input type="text"/> Various Range: <input type="text"/> Various Aerial Map: <input type="text"/> See attached map sheets Section: <input type="text"/> Various Centerline: <input type="text"/> 6/11/2013 MP: <input type="text"/> XXX.X to <input type="text"/> XXX.X
3	<b>REASON FOR ROUTE VARIATION</b> (Please include reason for route variation): This report consists of 5 proposed CL route variations based on the 90% alignment sheet review to avoid impact to waterbodies, avoid workspaces paralleling creeks/drainage, among others. These proposed route variations have been field verified by civil survey.  The reason for each route variation is listed in the "Supplemental Info" tab.  The route variations are proposed by Engineering based on field verification by civil survey.
	<b>DETAIL ROUTE VARIATION</b> (Please describe route variation in detail): Listed in "Supplemental Info" Tab.  No new landowners have been affected by the proposed route variations. The tracts impacted are as follows:  RV-0443-01 = 2 tracts impacted: ML-SD-LY-10230.000 (Kathryn Knutson) and ML-SD-LY-10240.000 (Barbara Taylor). RV-0443-02 = 2 tracts impacted: ML-SD-JO-11000.000 (Dorothy Whitaker Bruns) and ML-SD-JO-11010 (Travis H. Hendricks & Diana M. Hendricks) RV-0443-03 = 2 tracts impacted: ML-SD-JO-10545.000 (Christopher J. Iversen and Roy A. Iversen) and ML-SD-JO-10565.000 (State of South Dakota). RV-0443-04 = 2 tracts impacted: ML-SD-HK-01270.000 and ML-SD-HK-01280 (both Hostutler Family, LLC). RV-0443-05 = 1 tract impacted: ML-SD-JO-10585.000 (Deloris M. Iversen & Deloris M. Iverson; Trustee of the Dale R. Iversen & Deloris M. Iversen).
	<b>ADDITIONAL IMPACTS</b> (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): Listed in "Cost Analysis" Tab.
9	Originator: <input type="text"/> Engineering Date: <input type="text"/> 8/8/2013
10	Received by: <input type="text"/> Date: <input type="text"/> 8/8/2013 Fax to: ?
11	Assigned Tracking Number: <input type="text"/> 0443-SD-P4-XXX.X-XXX.X-S
12	Filed by: <input type="text"/> Date: <input type="text"/> Fax to: ?

**Keystone XL Pipeline - Supplemental Information for Route Variation Report 0443**

Prepared: 2013-08-08

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
0443-01	537.02	537.49	SD	LYMAN	006	103N	078W	2,458	2,496	37.65	197.8	CL reroute to avoid paralleling creek/drainage feature per 60% CPMS design review (action item list #79)	Route variation starts near MP 537.0 and deviates ~6.5° southeast of CL. It continues in this direction for ~1,803 ft. Then the reroute turns further southeast and extends for ~693 ft. before rejoining the current CL near MP 537.5.	- Proposed route variation eliminates ~491 ft. of wet crossing.	Engineering
0443-02	527.61	528.15	SD	JONES	035, 036	002S	031E	2,844	2,899	55.27	220.9	CL reroute to avoid paralleling creek/drainage feature per 60% CPMS design review (action item list #78)	Route variation starts near MP 527.6 and deviates ~5.5° southeast of CL. It continues in this direction for ~2,306 ft. Then the reroute turns further southeast and extends for ~553 ft. before rejoining the current CL near MP 528.2.	- Proposed route variation eliminates 2 creek crossings.	Engineering
0443-03	344.32	344.32	SD	HARDING	022, 023	016N	007E	2,031	2,089	57.40	228.8	To avoid running parallel, alongside Giannonatti Creek and instead cross it straight/directly.	Route variation starts near MP 343.9 and deviates ~10° southeast of current CL. It continues in this direction for ~39 ft. before turning further southeast. It will extend in this direction for ~655 ft.. Then it will turn southeast one last time and extend for ~1,394 ft. to rejoin the current CL near MP 344.3.	- Proposed route variation eliminates ~73 ft. of wet crossing.	Engineering
0443-04	469.16	469.81	SD	HAAKON	001 006	002N	022E 023E	3,420	3,659	238.37	559.1	CL reroute to avoid waterbody crossing per 90% alignment sheet review.	Route variation starts near MP 469.2 and deviates ~12.5° northeast of current CL. It continues in this direction for ~40 ft. before turning further east. to avoid waterbody. It will extend in this direction for ~1,512 ft. Then it will turn southeasterly towards the current CL and extend for ~2,107 ft. to rejoin it near MP 469.8.	- Proposed route variation eliminates ~212 ft. of wet crossing.	Engineering
0443-05	511.07	511.48	SD	JONES	22	001S	029E	2,173	2,203	30.36	178.9	CL reroute to avoid paralleling a waterbody per 90% alignment sheet review.	Route variation starts near MP 511.1 and deviates ~8.5° southeast of current CL. It continues in this direction for ~1,291 ft. before turning further southeast. It will extend straight in this direction for ~912 ft. to rejoin the current CL near MP 511.5.	- Proposed route variation eliminates ~80 ft. of wet crossing.	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?
0443-01	YES	0	NO	NO	NO	NO	YES	YES	NO	NO	1,343	0	1			NO	NO
0443-02	NO		NO	NO	NO	NO	YES	YES	NO	NO	1,585	0	1			NO	NO
0443-03	YES	0	NO	NO	NO	NO	YES	YES	NO	NO	1,347	0	2			NO	YES
0443-04	YES	0	NO	NO	NO	NO	YES	YES	NO	NO	3,183	0	2			NO	YES
0443-05	YES	0	NO	NO	NO	NO	YES	YES	NO	NO	1,035	0	2			NO	NO

# Keystone XL Pipeline - Cost Analysis for Route Variation Report 0443

Prepared: 2013-08-08

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
0443-01	37.65	\$ 13,552.36	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ 1,347.76		\$ -	\$ (95,800.00)	\$ (80,899.88)
0443-02	55.27	\$ 19,896.50	0	\$ -	0	\$ -		\$ -	-2	\$ (65,000.00)	\$ 1,590.85		\$ -		\$ (43,512.65)
0443-03	57.40	\$ 20,663.82	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ 1,352.10		\$ -	\$ (14,000.00)	\$ 8,015.92
0443-04	238.37	\$ 85,812.66	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ 3,195.43		\$ -	\$ (41,400.00)	\$ 47,608.09
0443-05	30.36	\$ 10,929.81	0	\$ -	0	\$ -		\$ -	0	\$ -	\$ 1,038.82		\$ -	\$ (15,600.00)	\$ (3,631.37)

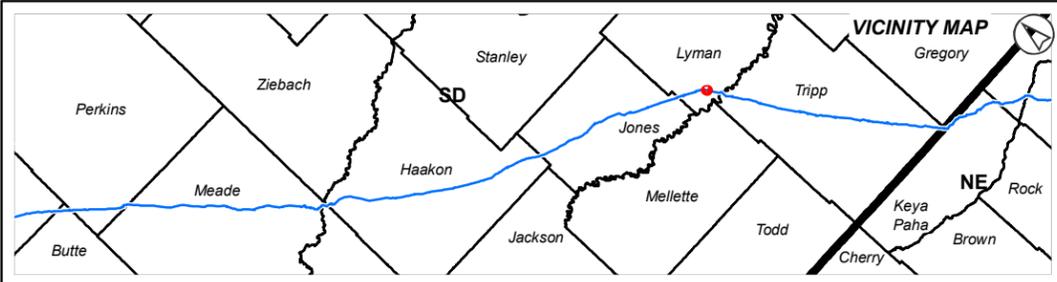
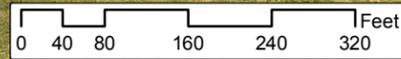
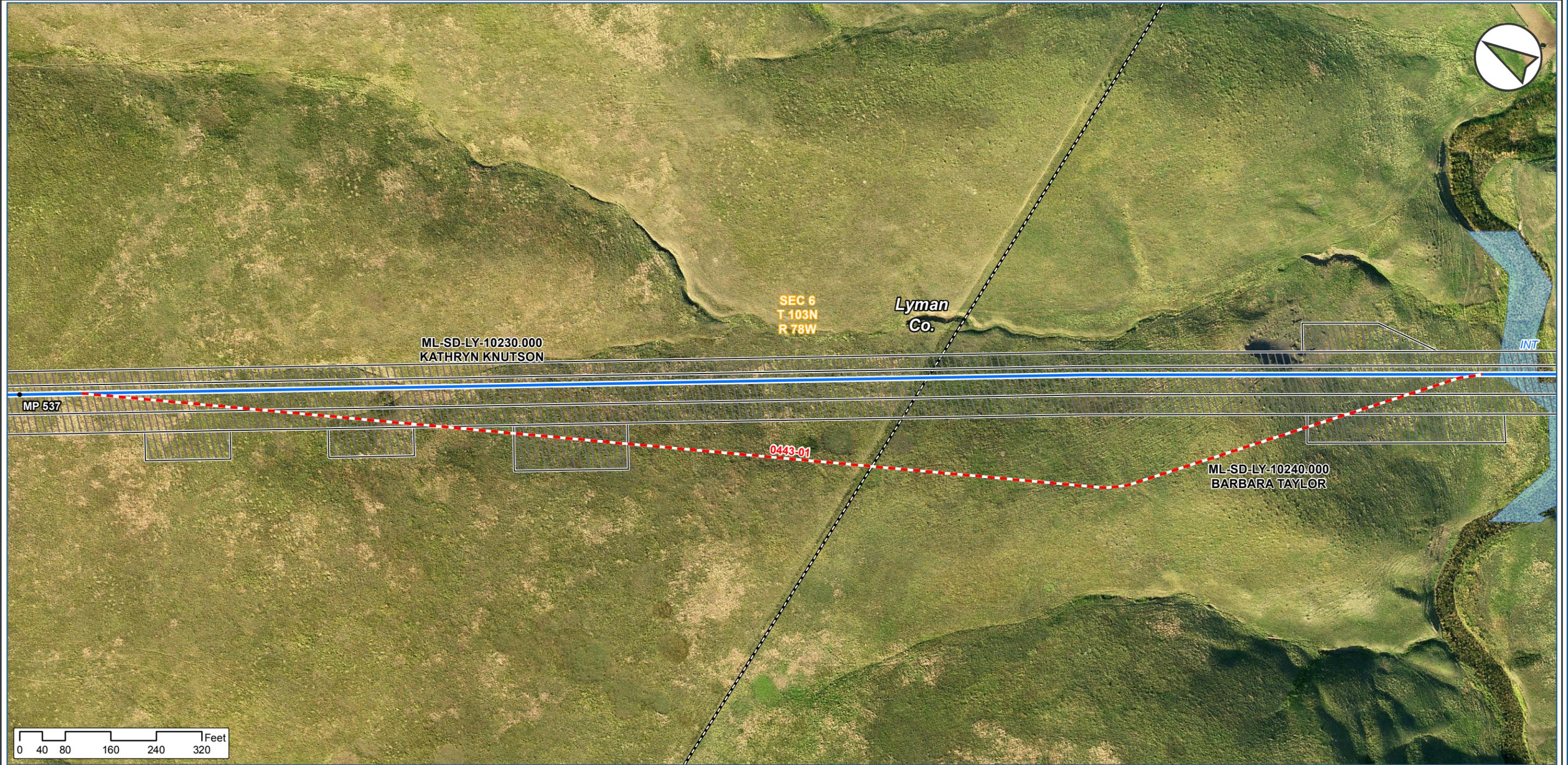
Overall Estimated Costs of Routes Variations= \$ (72,419.90)

Keystone XL Pipeline - Approval form for Route Variation Report 0443

Prepared: 2013-08-08

RV ID		0443-01	0443-02	0443-03	0443-04	0443-05
LAND (TransCanada) Tina Hall	Approval (Y/N)	Y	Y	N	Y	Y
	Comments			Landowner not agreeable to any changes		
	Signature	<i>Tina Hall</i>	<i>Tina Hall</i>	<i>Tina Hall</i>	<i>Tina Hall</i>	<i>Tina Hall</i>
ENGINEERING (TransCanada) Meera Kothari	Approval (Y/N)					
	Comments					
	Signature	<i>Meera Kothari</i>	<i>Meera Kothari</i>	<i>Meera Kothari</i>	<i>Meera Kothari</i>	<i>Meera Kothari</i>
ENGINEERING (exp) Kevin McGlynn	Approval (Y/N)	Y	Y		Y	Y
	Comments					
	Signature	<i>Kevin McGlynn</i> 8-20-13	<i>Kevin McGlynn</i> 8-20-13		<i>Kevin McGlynn</i> 8-20-13	<i>Kevin McGlynn</i> 8-20-13
ENVIRONMENTAL (TransCanada) Sandra Barnett	Approval (Y/N)	Y	Y	Y	Y	Y
	Comments	Pending Survey				
	Signature	<i>Sandra Barnett</i>	<i>Sandra Barnett</i>	<i>Sandra Barnett</i>	<i>Sandra Barnett</i>	<i>Sandra Barnett</i>
FACILITIES (TransCanada) Sandra Gigovic	Approval (Y/N)					
	Comments					
	Signature					
PROJECT MANAGEMENT - MONTANA (TransCanada) Alan Lietz	Approval (Y/N)					
	Comments					
	Signature					
PROJECT MANAGEMENT - SOUTH DAKOTA (TransCanada) James Odom	Approval (Y/N)	Y	Y	Y	Y	Y
	Comments					
	Signature	<i>James Odom</i>	<i>James Odom</i>	<i>James Odom</i>	<i>James Odom</i>	<i>James Odom</i>
PROJECT MANAGEMENT - NEBRASKA (TransCanada) Robert Bradley	Approval (Y/N)					
	Comments					
	Signature					
KEYSTONE XL MANAGER (TransCanada) Steve Marr	Approval (Y/N)					
	Comments					
	Signature					

RV-0443-03 = Rejected until sept.2013 environmental survey effort is conducted. Will reassess after that.



**LEGEND**

• Milepost	— Access Road	▭ Section Line
⊗ Valve	P—P Overhead Power Line	▭ County Line
⊗ Power Pole	▭ Cultural Site	▭ Waterbody
— Centerline (2012-11-18)	▭ Workspace	▭ Wetland
- - - Route Variation	▭ Wash Station	▭ MDEQ Corridor
	▭ Property Parcel	

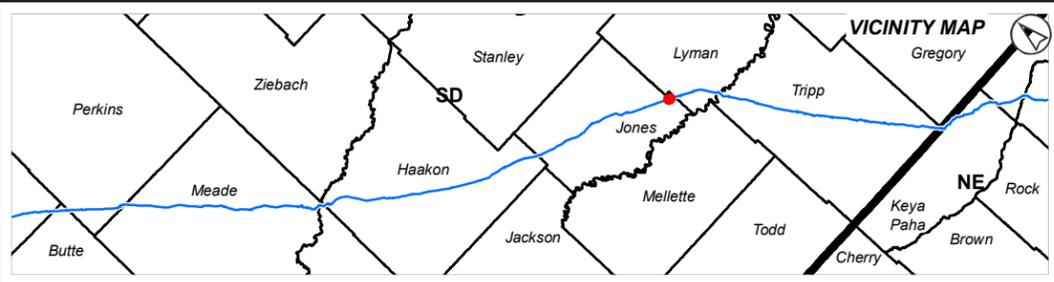
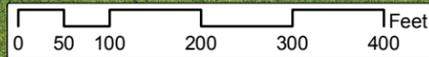
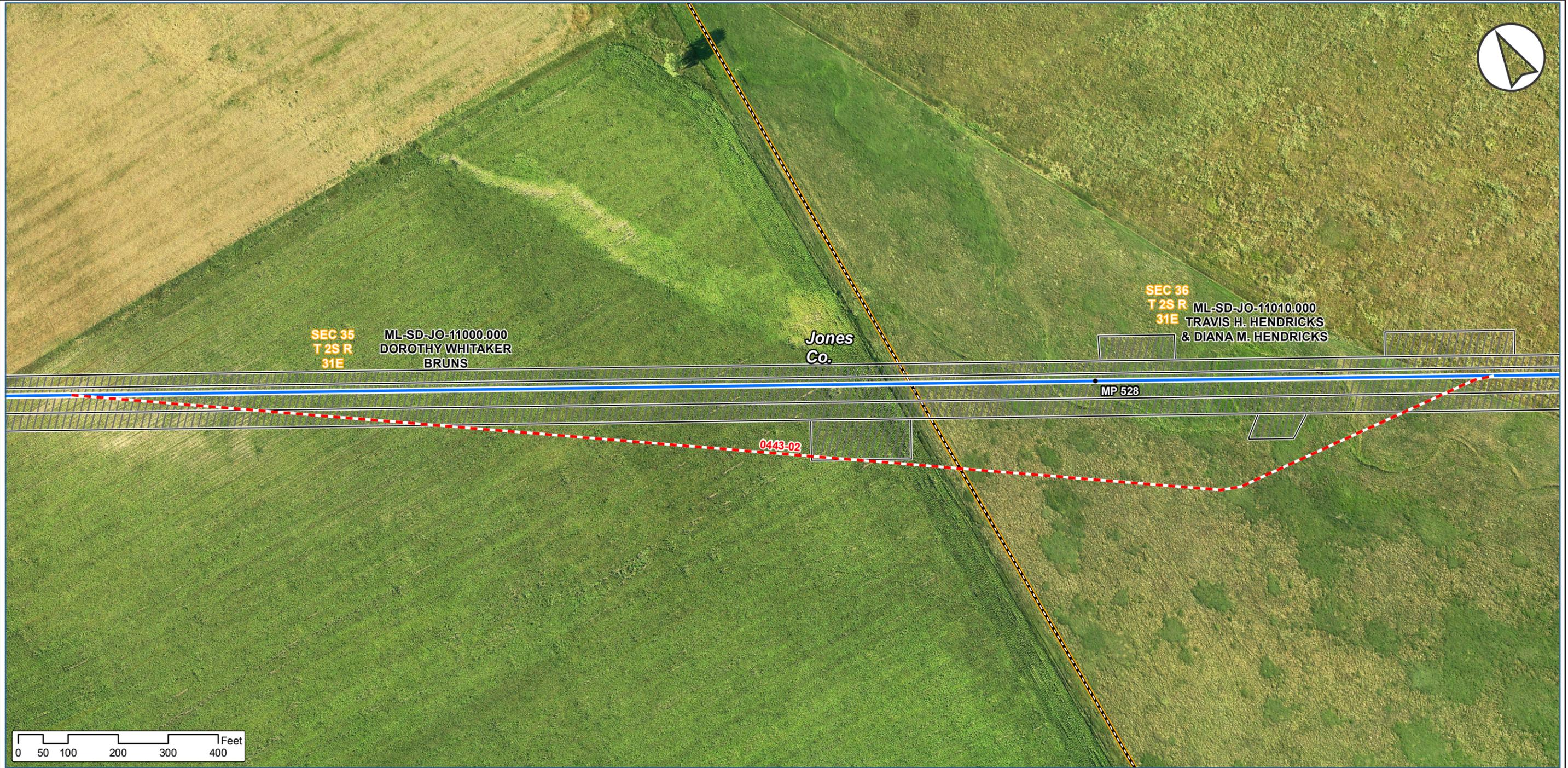
**KEYSTONE XL PROJECT**  
**PROPOSED ROUTE VARIATION**

COUNTY:	LYMAN	DRAWN BY:	RJM
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2013-07-09	
<b>PRELIMINARY</b>			
DATE:	2013-07-08	PROJECTION:	NAD83   UTM14 N

PREPARED BY:  
**exp** Energy Services Inc.  
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DWG: XL-46-P-9299-A-CLRV SHEET: 1 of 1



**LEGEND**

• Milepost	— Access Road	▭ Section Line
⊗ Valve	P—P Overhead Power Line	▭ County Line
⊗ Power Pole	▭ Cultural Site	▭ Waterbody
— Centerline (2012-11-18)	▭ Workspace	▭ Wetland
- - - Route Variation	▭ Wash Station	▭ MDEQ Corridor
	▭ Property Parcel	

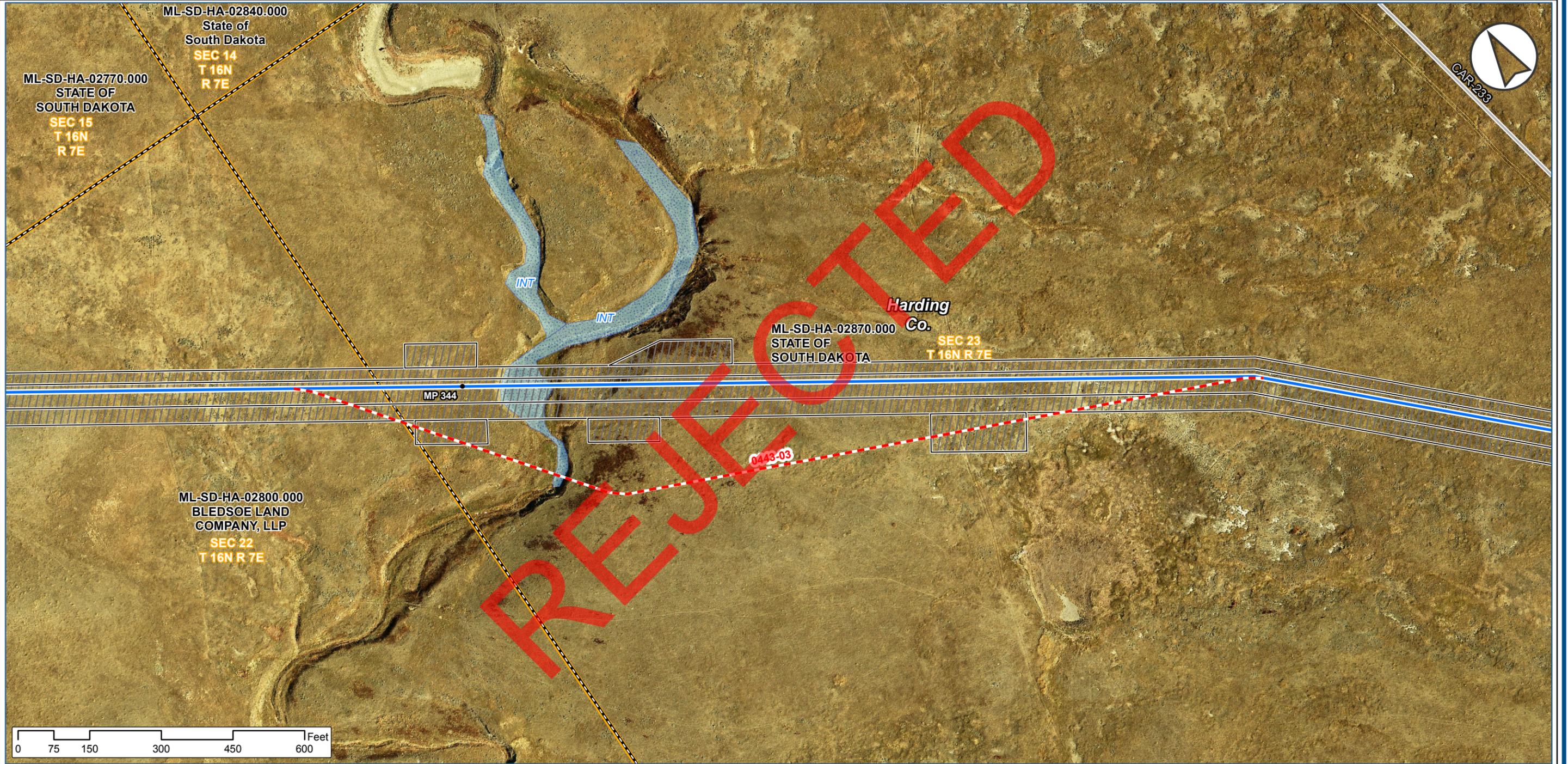
**KEYSTONE XL PROJECT**  
**PROPOSED ROUTE VARIATION**

COUNTY: JONES	DRAWN BY: RJM
STATE: SOUTH DAKOTA	CHECKED BY: JP
REV. NO.: 0	REVISION: ISSUED FOR REVIEW. DATE: 2013-07-09
<b>PRELIMINARY</b>	
DATE: 2013-07-08	PROJECTION: NAD83   UTM14 N

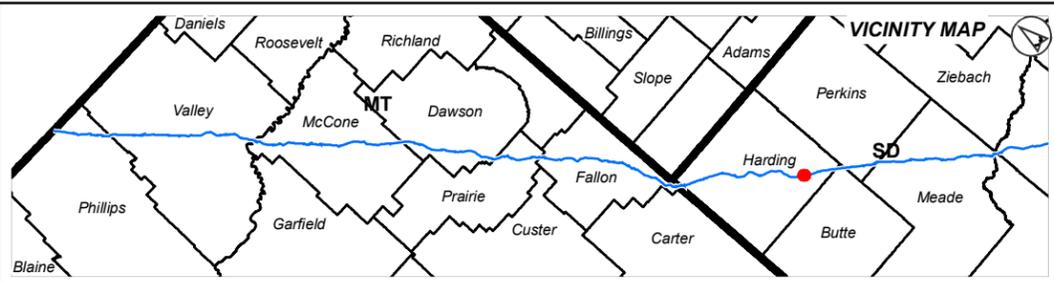
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DWG: XL-46-P-9299-A-CLRV SHEET: 1 of 1



PRELIMINARY  
 CANCELLED



**LEGEND**

• Milepost	— Access Road	▭ Section Line
⊗ Valve	P—P Overhead Power Line	▭ County Line
⊗ Power Pole	▭ Cultural Site	▭ Waterbody
— Centerline (2012-11-18)	▭ Workspace	▭ Wetland
- - - Route Variation	▭ Wash Station	▭ MDEQ Corridor
	▭ Property Parcel	

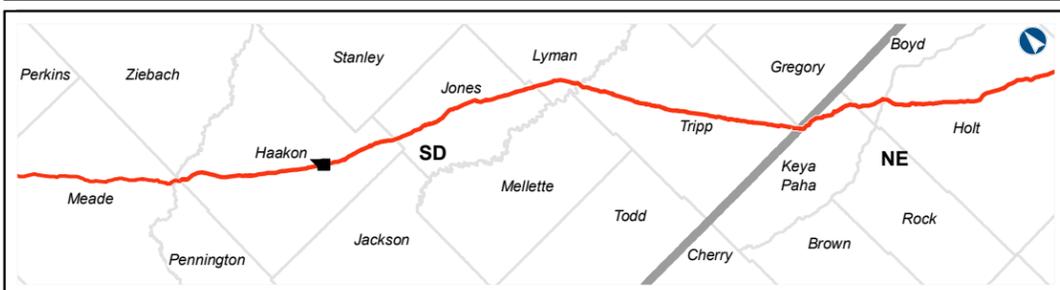
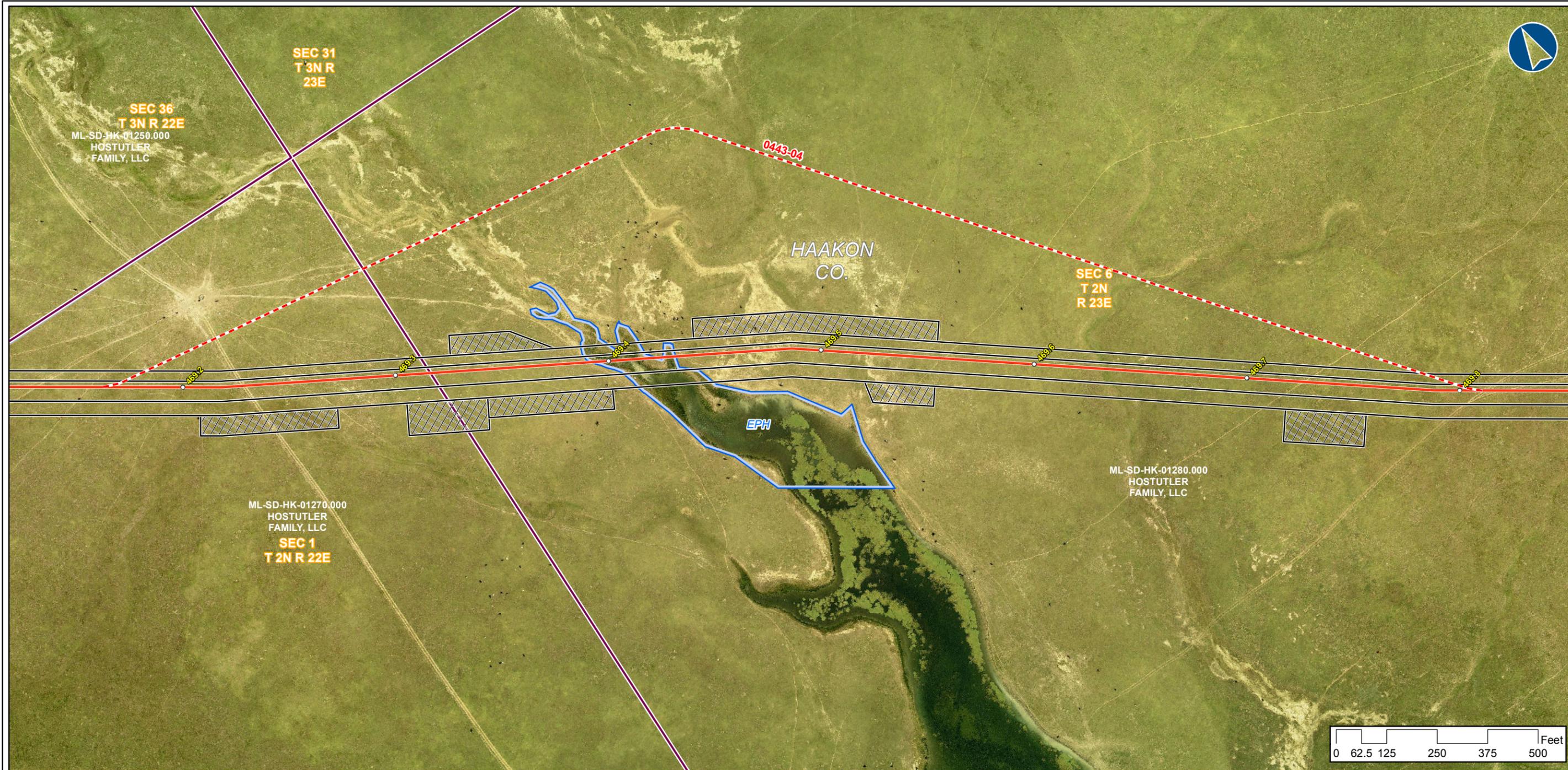
**KEYSTONE XL PROJECT**  
**PROPOSED ROUTE VARIATION**

COUNTY:	HARDING	DRAWN BY:	RJM
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2013-06-27	
<b>PRELIMINARY</b>			
DATE:	2013-06-27	PROJECTION:	NAD83   UTM13 N

PREPARED BY:  
**exp** Energy Services Inc.  
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DWG: XL-30-P-9299-A-CLRV SHEET: 1 of 1



**Legend**

○ 1/10 Mile Post	Access Road - Permanent	Property Parcel
● Centerline Mile Post (2013-06-11)	Access Road - Temporary	Section Line
⊗ Valve	P— Transmission Line	County Line
⊗ Power Pole	□ Valve Site	Waterbody
Keystone XL Centerline (2013-06-11)	Workspace	Wetland
Route Variation	Pump Station	

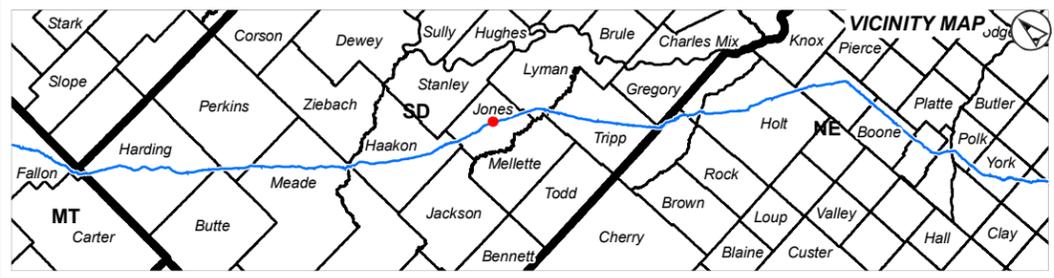
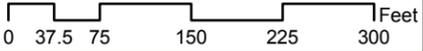
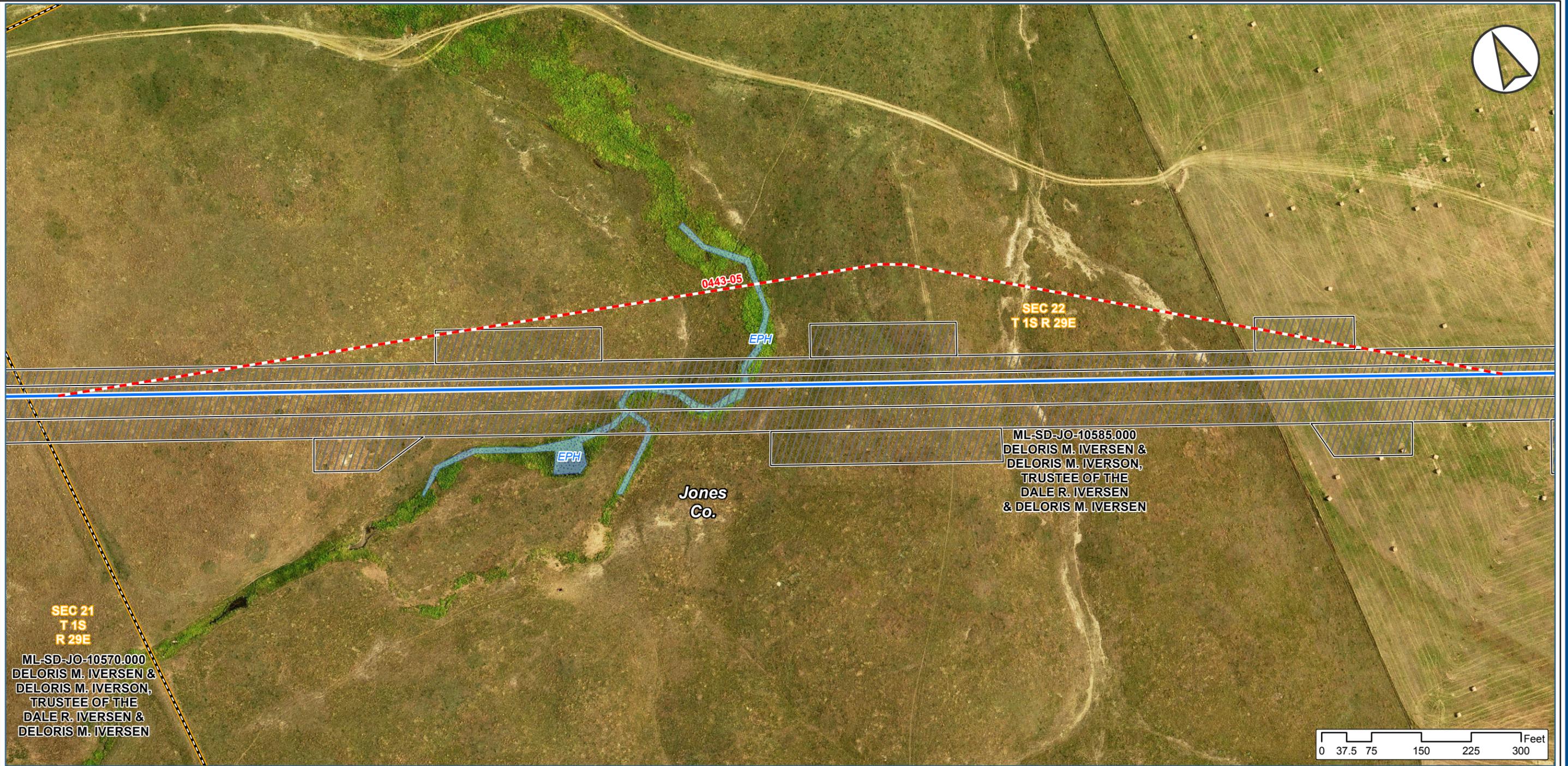
**KEYSTONE XL PROJECT**  
**PROPOSED ROUTE VARIATION**

COUNTY: HAAKON	DRAWN BY: CC	
STATE: SOUTH DAKOTA	CHECKED BY: PD	
REV. NO.: 0	REVISION: ISSUED FOR REVIEW	DATE: 2013-08-08
<b>PRELIMINARY</b>		
DATE: 2013-08-08	PROJECTION: NAD83   UTM14 N	DWG: XL-46-P-9299-A-CLRV_0443

PREPARED BY:  
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**LEGEND**

- Milepost
- Valve
- Power Pole
- Centerline (2012-11-18)
- Route Variation
- Access Road
- Overhead Power Line
- Cultural Site
- Workspace
- Wash Station
- Property Parcel
- Section Line
- County Line
- Waterbody
- Wetland
- MDEQ Corridor

**KEYSTONE XL PROJECT**  
**PROPOSED ROUTE VARIATION**

COUNTY:	JONES	DRAWN BY:	RJM
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2013-07-09	
<b>PRELIMINARY</b>			
DATE:	2013-07-08	PROJECTION:	NAD83   UTM14 N

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