

0260-SD-P4-XXX.X-XXX.X-1

KEYSTONE XL PIPELINE PROJECT PIPELINE ROUTE VARIATION FORM	
1	<b>VARIATION TYPE:</b> Refinement: <input checked="" type="checkbox"/> Reroute: <input type="checkbox"/> Footprint: <input type="checkbox"/> Design: <input type="checkbox"/> Centerline: <input checked="" type="checkbox"/> Pump Station: <input type="checkbox"/> Valve Site: <input type="checkbox"/> CAR: <input type="checkbox"/>
2	<b>LOCATION:</b> Sketch: <input type="text" value="Attached"/> Pictures: <input type="text" value="N/A"/> State: <input type="text" value="SD"/> County: <input type="text" value="Haakon"/> Quad Map: <input type="text" value="N/A"/> Township: <input type="text" value="02N, 01N"/> Range: <input type="text" value="24E, 25E"/> Aerial Map: <input type="text" value="See attached map sheet"/> Section: <input type="text" value="Multiple"/> Centerline: <input type="text" value="3/14/2012"/> MP: <input type="text" value="XXX.X"/> to <input type="text" value="XXX.X"/>
3	<b>REASON FOR ROUTE VARIATION</b> (Please include reason for route variation): <p>This report consists of 4 proposed route refinements. These route refinements are proposed to improve the crossing angle at water pipeline locations or to shift workspaces/CL away from waterlines. The reason for each route variation is listed in the "Supplemental Info" tab.</p> <p>The route variations have been proposed based on a combination of Civil survey data, Flyover video of Centerline, LIDAR data, Pictometry and other aeriels.</p>
	<b>DETAIL ROUTE VARIATION</b> (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:                      RV-0260-01 = 1 tract impacted (ML-SD-HK-11600.000, Roger &amp; Edna Dale)                      RV-0260-02 = 1 tract impacted (ML-SD-HK-11620.000, Jerry &amp; Sonia Nemecc)                      RV-0260-03 = 2 tracts impacted (ML-SD-JO-11970.000 &amp; ML-SD-JO-10010.000, both tracts Finn Farms, Inc.)                      RV-0260-04 = 1 tract impacted (ML-SD-HK-11690.000, Jerry P. Jones)</p>
	<b>ADDITIONAL IMPACTS</b> (Please include any additional impacts which may affect cost; crossings, induction bends, etc.): <p>Listed in "Cost Analysis" Tab.</p>
9	Originator: <input type="text" value="Engineering"/> Date: <input type="text" value="3/20/2012"/>
10	Received by: <input type="text"/> Date: <input type="text" value="3/20/2012"/> Fax to: ?
11	Assigned Tracking Number: <input type="text" value="0260-SD-P4-XXX.X-XXX.X-1"/>
12	Filed by: <input type="text"/> Date: <input type="text"/> Fax to: ?

**Keystone XL Pipeline - Supplemental Information for Route Variation Report 0260**

Prepared: 2012-03-20

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
0260-01	479.33	479.64	SD	Haakon	27	02N	24E	1,661	1,670	8	70	To improve Crossing Angle (24°) at water pipe (WRLJ, PVC yellow 250 pipe).	Route variation starts near MP 479.1 and deviates ~3.5° west from CL. It continues in this direction for ~ 1,451 ft., then it turns east and extends in this direction for ~ 222 ft. before rejoining the CL near MP 479.4.	- Crossing angle is improved to 45.5°	Engineering
0260-02	480.04	480.20	SD	Haakon	26	02N	24E	837	849	12	69	To improve Crossing Angle (24°) at water pipe (WRLJ, PVC yellow 250 pipe).	Route variation starts near MP 479.8 and deviates ~3.5° east from CL. It continues in this direction for ~ 749 ft., then it turns west and extends in this direction for ~100 ft. before rejoining the CL near MP 479.9.	- Crossing angle is improved to 46°	Engineering
0260-03	488.53	489.50	SD	Haakon	13,18	01N	25E	5,121	5,124	3	60	To shift Permanent and Temporary Workspaces away from waterline.	Route variation starts near MP 488.3 and deviates ~1.5° west of CL for ~ 2,307 ft. It then slightly turns east and continues in this direction for ~ 2,816 ft. before it rejoins the CL near MP 489.3.	- Switch ATWS near dam/pond to opposite side and attach to existing ATWS.	Engineering
0260-04	481.99	482.51	SD	Haakon	31	02N	25E	2,770	2,772	2	81	Jerry Jones Reroute to avoid existing rural waterline. Civil surveyed shifts CL/WS away from waterline.	Route variation starts near MP 481.8 and deviates ~2.5° northeast of current CL. It extends in this direction for ~1,316 ft. Then the reroute turns southeast and extends for ~175 ft before it turns further southeast for ~811 ft. It continues turning southeast for ~470 ft. to rejoin the CL near MP 482.3.	- This reroute was shot in the field by civil survey.	Engineering (Civil Surveyed)

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?
0260-01	NO	1,670	NO	NO	NO	NO	Yes	Yes	Yes	Yes	0	0	1		1	NO	NO
0260-02	NO	849	NO	NO	NO	NO	Yes	Yes	Yes	Yes	0	0	1		1	NO	NO
0260-03	NO	5,124	NO	NO	NO	NO	Yes	Yes	Yes	Yes	0	0	1		1	NO	NO
0260-04	YES	2,772	NO	NO	NO	NO	Yes	Yes	Yes	Yes	0	0	1		1	NO	NO

## Keystone XL Pipeline - Cost Analysis for Route Variation Report 0260

Prepared: 2012-03-20

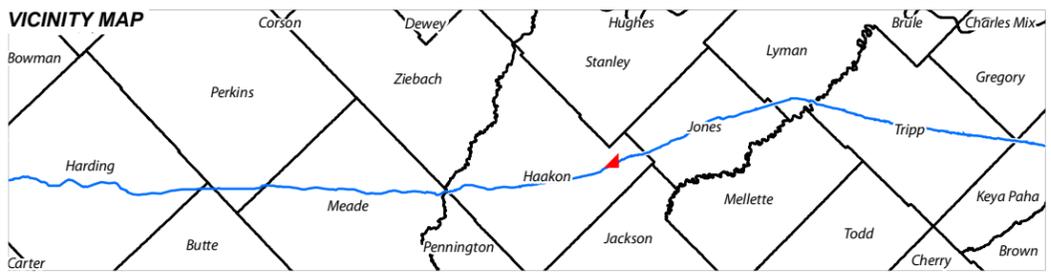
RV ID	Additional length (ft)	Cost \$360/ft	Additional length of wetland construction (ft)	Cost \$195/ft	Additional length of side hill construction (ft)	Cost \$19/ft	Additional bore length (ft)	Cost \$540/ft	Additional Waterbody crossings	Cost (\$77,250/EA btw 10' - 19') (\$32,500/EA < 10')	Cost of Environmental 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
0260-01	8	\$ 3,001.27	0	\$ -	0	\$ -	-30	\$ (16,200.00)	0	\$ -	\$ -	\$ 1,581.27	\$ -		\$ (11,617.46)
0260-02	12	\$ 4,491.92	0	\$ -	0	\$ -	-30	\$ (16,200.00)	0	\$ -	\$ -	\$ 804.36	\$ -		\$ (10,903.72)
0260-03	3	\$ 1,058.74	0	\$ -	0	\$ -	-60	\$ (32,400.00)	0	\$ -	\$ -	\$ 4,852.12	\$ -		\$ (26,489.14)
0260-04	2	\$ 762.31	0	\$ -	0	\$ -	-50	\$ (27,000.00)	0	\$ -	\$ -	\$ 2,624.73	\$ -		\$ (23,612.95)

Overall Estimated Costs of Routes Variations= \$ (72,623.27)

# Keystone XL Pipeline - Approval form for Route Variation Report 0260

Prepared: 2012-03-20

RV ID		0260-01	0260-02	0260-03	0260-04
LAND (TransCanada) Tina Hall	Approval (Y/N)	Y	Y	Y	Y
	Comments				
	Signature				
ENGINEERING (TransCanada) Meera Kothari	Approval (Y/N)	Y	Y	Y	Y
	Comments				
	Signature				
ENGINEERING (exp) Butch Wallace	Approval (Y/N)	Y	Y	Y	Y
	Comments				
	Signature				
ENVIRONMENTAL (exp) Jonathan Minton	Approval (Y/N)	Y	Y	Y	Y
	Comments				
	Signature				
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
	Comments				
	Signature				
PROJECT MANAGEMENT - NEBRASKA (TransCanada) Robert Bradley	Approval (Y/N)				
	Comments				
	Signature				
KEYSTONE XL MANAGER (TransCanada) Steve Marr	Approval (Y/N)	Y	Y	Y	Y
	Comments				
	Signature				



**LEGEND**

- MILEPOST
- KEYSTONE XL CL (2012-03-14)
- - - PROPOSED ROUTE VARIATION
- ▭ SECTION LINE
- ACCESS ROAD
- ▭ PUMP STATION
- ⊗ VALVE
- ⊗ SURVEYED FENCE
- ▭ PROPERTY PARCEL
- ▭ CULTURAL SITE
- ▨ WETLAND
- ▨ WATERBODY
- ▭ 500FT MDEQ CORRIDOR

**KEYSTONE PHASE IV, US**  
*Proposed Route Variation 0260-01*

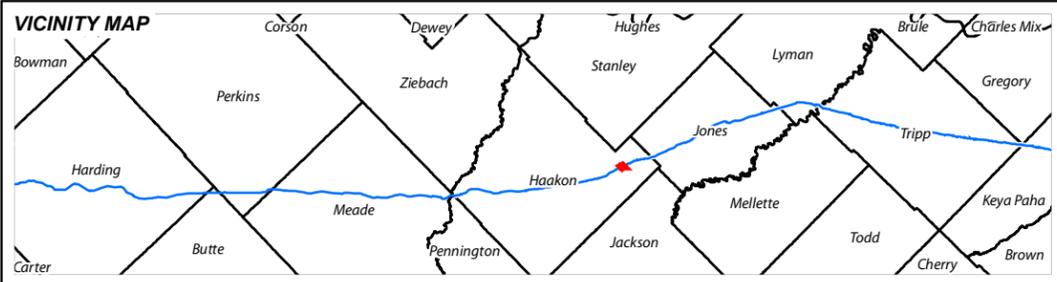
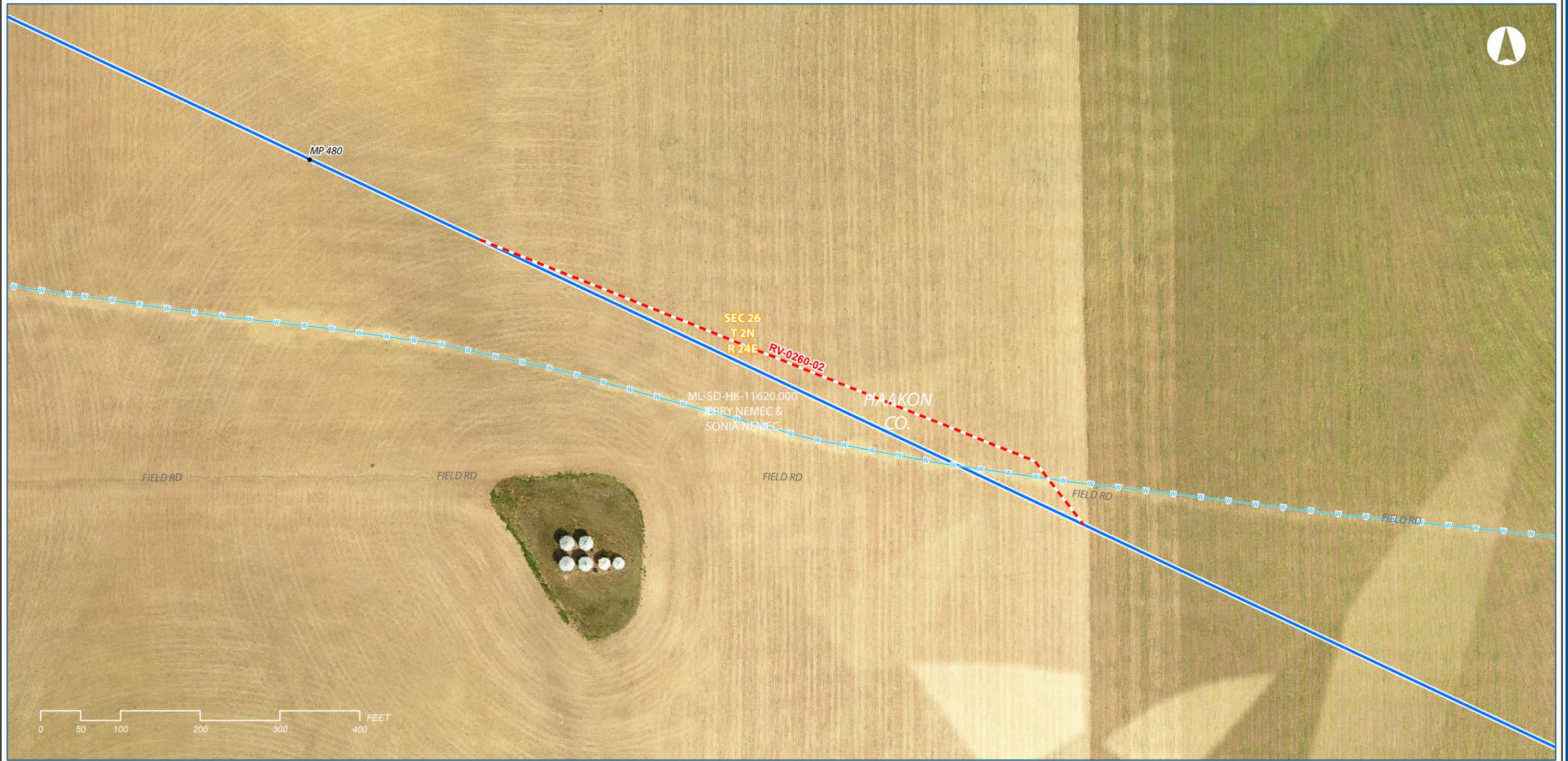
COUNTY:	HAAKON	DRAWN BY:	PD
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	REVISION	DATE	
0	ISSUED FOR REVIEW.	2012-03-19	
<b>PRELIMINARY</b>			
DATE:	2012-03-19	PROJECTION:	NAD83   UTM14 N

PREPARED BY:  
**exp Energy Services Inc.**  
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DWG:	XL-30-P-9200	SHEET:	1
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**LEGEND**

- MILEPOST
- KEYSTONE XL CL (2012-03-14)
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- ⊗ SURVEYED FENCE
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- ▭ CULTURAL SITE
- ▨ WETLAND
- ▨ WATERBODY
- ▭ 500FT MDEQ CORRIDOR

**KEYSTONE PHASE IV, US**  
*Proposed Route Variation 0260-02*

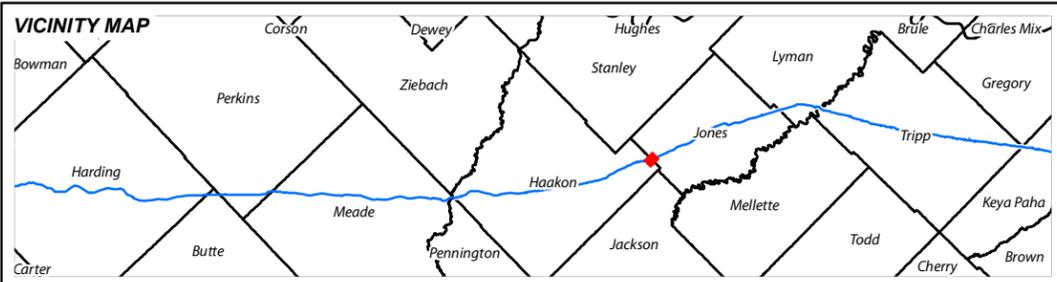
COUNTY:	HAAKON	DRAWN BY:	PD
STATE:	SOUTH DAKOTA	CHECKED BY:	JP
REV. NO.:	0	REVISION	ISSUED FOR REVIEW.
		DATE	2012-03-19
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DWG: XL-30-P-9200 SHEET: 1



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**KEYSTONE PHASE IV, US**  
*Proposed Route Variation 0260-03*

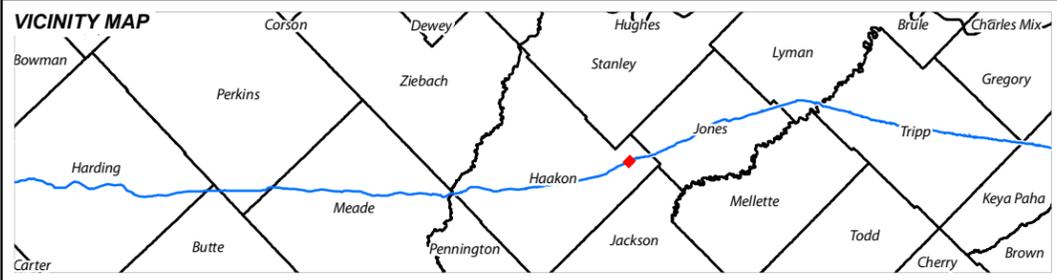
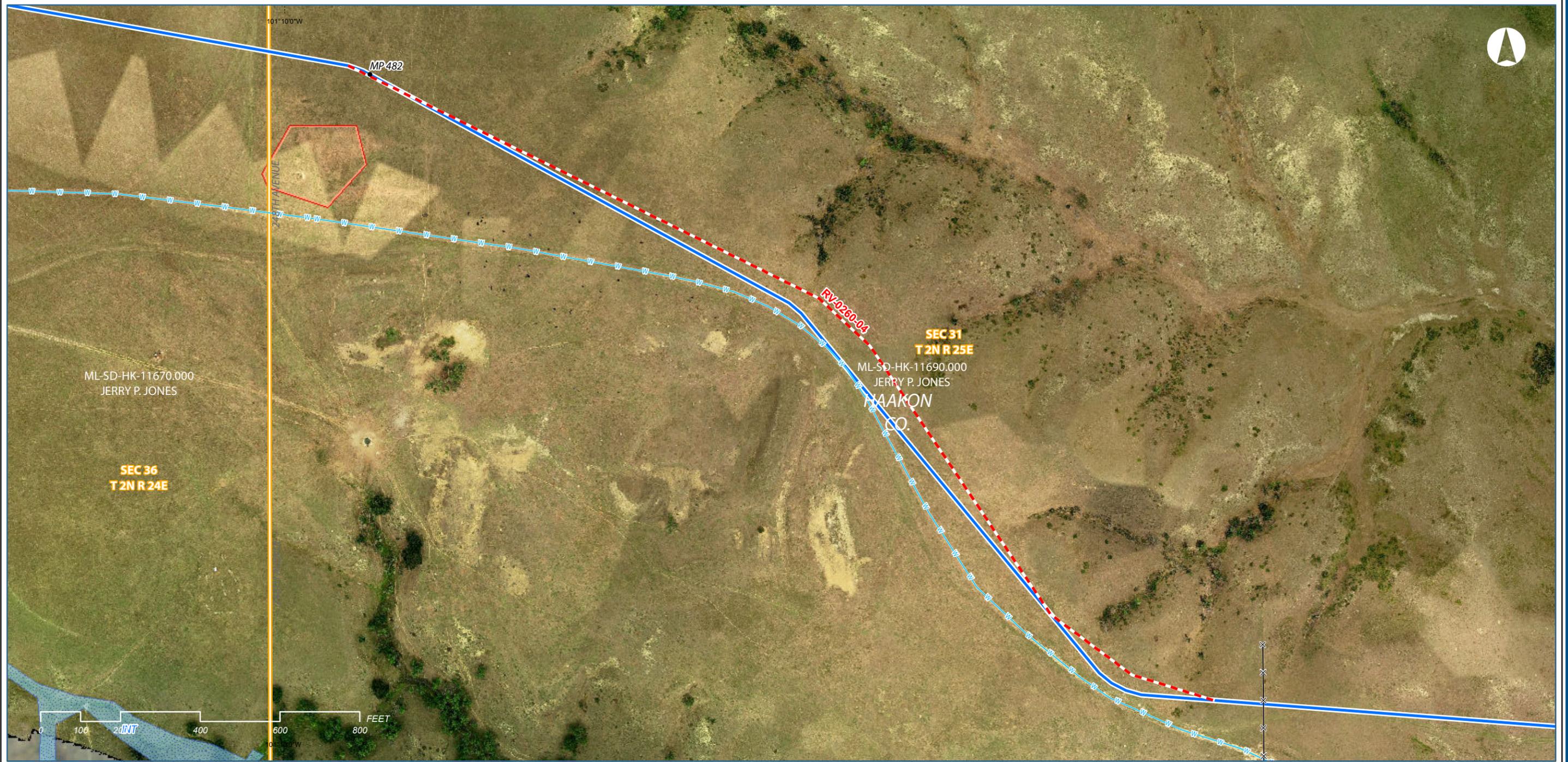
COUNTY: HAAKON	DRAWN BY: PD	
STATE: SOUTH DAKOTA	CHECKED BY: JP	
REV. NO.: 0	REVISION: ISSUED FOR REVIEW.	DATE: 2012-03-19
PRELIMINARY		
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DWG: XL-30-P-9200	SHEET: 1	
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**KEYSTONE PHASE IV, US**

*Proposed Route Variation 0260-04*

COUNTY: HAAKON	DRAWN BY: PD	
STATE: SOUTH DAKOTA	CHECKED BY: JP	
REV. NO.: 0	REVISION: ISSUED FOR REVIEW.	DATE: 2012-03-19

**PRELIMINARY**

DATE: 2012-03-19	PROJECTION: NAD83   UTM14 N
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