

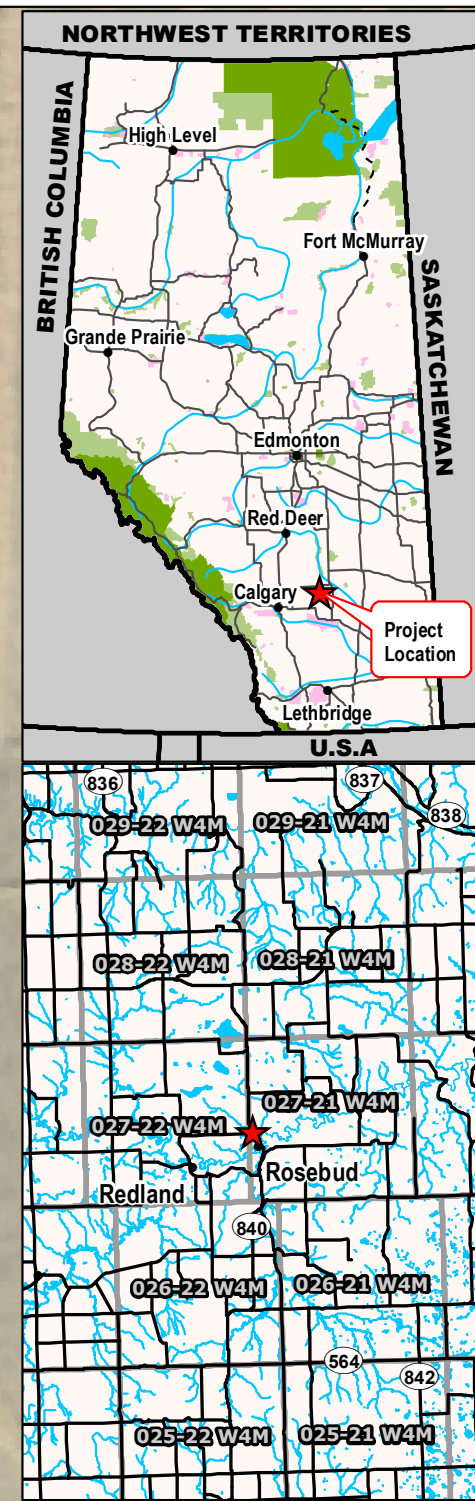
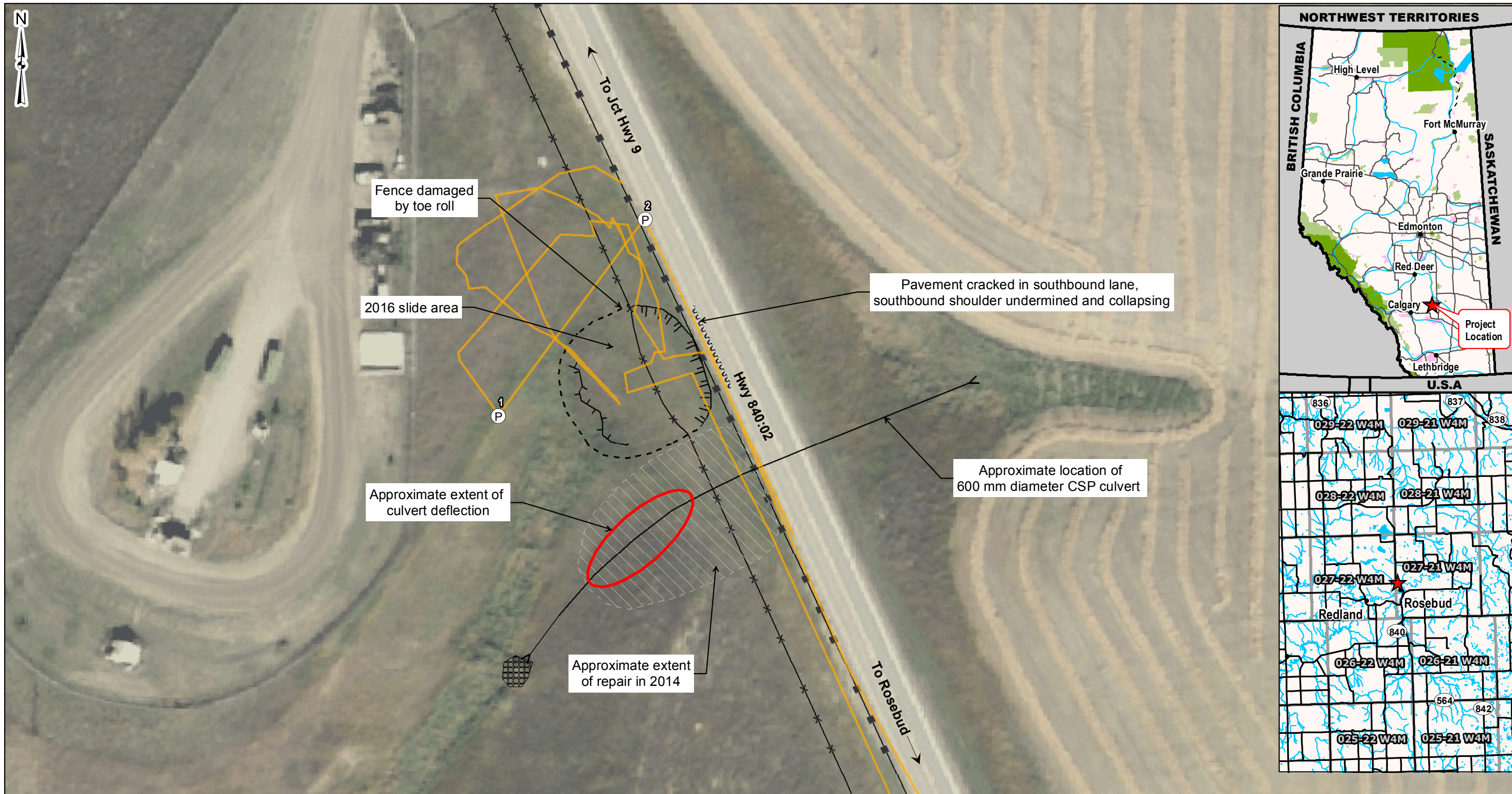
SITE NUMBER AND NAME: <b>S046 - I, II, and III Rosebud Slides</b>		HIGHWAY & KM: 840:02, 32.422 (I, III) 26.847 (II)	PREVIOUS INSPECTION DATE: June 13, 2017 (I & III))	INSPECTION DATE: <b>June 12, 2018</b>
LEGAL DESCRIPTION: 12-18-027-21 W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5685886 363665		RISK ASSESSMENT: PF: 1 CF: 1 TOTAL: 1 PF: 9 CF: 2 TOTAL: 18	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 420 (south) 520 (north),(Reference No. 107240, 105210)			CONTRACT MAINTENANCE AREA (CMA): 29	

SUMMARY OF SITE INSTRUMENTATION:  None  LAST READING DATE: n/a	INSPECTED BY: Chris Gräpel (KCB) Ryan Gazley (KCB) Rocky Wang (AT) Tony Penney (AT)
PRIMARY SITE ISSUE: S046 – I and III: adjacent shallow slope failures in the highway embankment fill where Hwy 840 crosses a creek valley. The slides are located on the west side (southbound lane) of Hwy 840. The slope failure at S046 – III occurred in June 2016 adjacent to the S046 – I site repaired in 2014.	
APPROXIMATE DIMENSIONS: S046 – I: the reconstructed slope is approximately 20 m wide. S046 – III, the slide is approximately 25 m wide at the crest, and highway embankment is approximately 8 m high.	
DATE OF ANY REMEDIAL ACTION: S046 – I and II: 2014 – failures repaired with gravel fill, slopes regraded.	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		S046 – III: pavement cracked in eastbound lane; eastbound shoulder undermined and collapsing		X
Slope Movement	X		S046 – III: fence damaged by toe roll; seven guardrail posts undermined and almost hanging	X	
Erosion		X	None observed		X
Seepage		X	None observed		X
Culvert Distress		X	S046 – I and III: 600 mm diameter CSP culvert flowing		X

<b>COMMENTS</b>
At S046 – I, vegetation is establishing itself on the erosion control blanket (i.e., coconut matting).
At S046 – III:
<ul style="list-style-type: none"> <li>– The guardrail and southbound shoulder are being undermined by retrogression of the slope. Seven guardrail posts (an increase from five in 2017) are almost hanging.</li> <li>– Limits of the slide are beginning to extend towards the north.</li> <li>– Longitudinal cracking in the southbound lane could indicate potential retrogression of the backscarp into the highway.</li> <li>– Slope movements are likely exacerbated by surface water flow and infiltration during periods of heavy or prolonged rainfall, and seepage from the culvert.</li> </ul>
The S046 – II site was not inspected in 2017 or 2018.
Discussed remedial actions: S046 – III: excavate and reconstruct the slope with geosynthetic-reinforced fill, with a shear key and subsurface drainage as per KCB design. A remote-operated video camera survey of the culvert was completed in September 2017 by Maverick Inspection Ltd. Mavericks observations are summarized as follows: deformation of the culvert (described as “ovalling”) (up to 15% of the diameter) was observed from 21 to 40 m from the west end of the culvert; at 60 m, near the east end of the culvert, a large hole approximately 10 cm

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	YES	NO		YES	NO
<p>in diameter has formed at the invert; and evidence of corrosion could be seen along the invert for the entire length of the culvert. Based on these observations, AT should plan to replace the entire culvert as part of the slope repair work.</p>					



- Legend**
- (P) Photo Location
  - GPS Track
  - x— Fence
  - Guardrail
  - ~ Crack
  - >< Culvert
  - |—|— Scarp
  - |—|— Toe Roll
  - |—|— Riprap



<b>NOTES:</b> 1. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM Zone 12N 3. IMAGE SOURCE: Abacus Datagraphics Ltd. Image dated July 5, 2011 to October 7, 2011	CLIENT 	PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
		TITLE Site Plan S046 Rosebud Slide Hwy 840:02, km 32.442
SCALE 1:750	PROJECT No. A05115A03	SKETCH No. 1

Time: 16:58:59 PM  
 Date: August 08, 2018  
 File: \\nt.kohn.com\projData\A\EDM\A05115A03\ABT\_Southern Region GRMP\400 Drawings\20182\_Section BIMXD\S046\_ver2\_180620.mxd



**Photo 1**      **The slope failure continues to undermine the guardrail and shoulder of the southbound lane. Seven guardrail posts are exposed but not hanging. Photo taken June 12, 2018 looking east.**



**Photo 2**      **Condition of pavement at head of slide. Photo taken June 12, 2018 looking south.**

