

SITE NUMBER AND NAME: S058 Spring Hill		HIGHWAY & KM: 505:04, 21.110	PREVIOUS INSPECTION DATE: July 7, 2020	INSPECTION DATE: July 8, 2021
LEGAL DESCRIPTION: 15-29-004-23 W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5466599 350117		RISK ASSESMENT: PF: 7 CF: 6 TOTAL: 42	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 570 (east) (Ref. No. 93050), 530 (west) (Ref. No. 99030)			CONTRACTOR MAINTENANCE AREA (CMA): 25	

SUMMARY OF SITE INSTRUMENTATION: None present LAST READING DATE: N/A	INSPECTED BY: Chris Morgan (KCB) Margot Lederman (KCB) Roger Skirrow (AT) Alex Frotten (AT)
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PRIMARY SITE ISSUE: Deep-seated earth slide within coulee side slope. The head scarp extends into the roadway and is impacting the pavement and south shoulder of the embankment.

APPROXIMATE DIMENSIONS: Cracking extends across the pavement and along left flank of slide. The visible head scarp is approximately 200 m long. The highway embankment is sloped approximately 2H:1V and the coulee slope to the left of the slide is approximately 3H:1V.

DATE OF ANY REMEDIAL ACTION: Road pavement has been patched (unknown date). Gravel appears to have been placed on the south shoulder of the embankment. The pavement appears to have been milled recently to improve the smoothness of the highway through this site.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Pavement cracking due to slope movement. Signs of milling and patching	X	
Slope Movement	X		Active slope movement in coulee side slope south of the highway		X
Erosion		X			X
Seepage	X		Possible seepage from blocked culverts		X
Culvert Distress		X	Unable to check		X

COMMENTS

Site was named Bulrush Hill prior to 2021.

No significant changes noted during the 2021 inspection. The pavement cracking extends westward through the recent overlay and there is possible tension cracking between the highway and the fence line along the side of the coulee. There is no visible instability on the bank to the north of the highway.

The pavement cracking lines up with tension cracking along the side of the coulee. There is a possible toe bulge at the base of the valley, near to the old creek alignment.

A vertical 6" diameter corrugated HDPE pipe is visible in the north ditch. This may be part of a subsurface drain running north to south beneath the highway and reporting to a small draw in a field south of the highway.

There is a possible horizontal spur (may be perforated) running east to west along the ditch alignment, which appears to have a blocked outlet and could be associated with the area of inclined marsh with cattails (bulrushes) In 2021, the marsh area was noted as dry.

A high-pressure gas pipeline was marked in the shoulder on the north side of the highway,

Short-term recommendations include:

- Investigating the drainage pipe and clearing the outlets to promote positive drainage.
- Paving and patching should include milling or excavation, to avoid adding weight to the crown of the slide.

Candidate repair options for this site include a driven steel pile wall, drainage improvements, or a toe berm. Ground investigation and instrumentation monitoring would be required for design.

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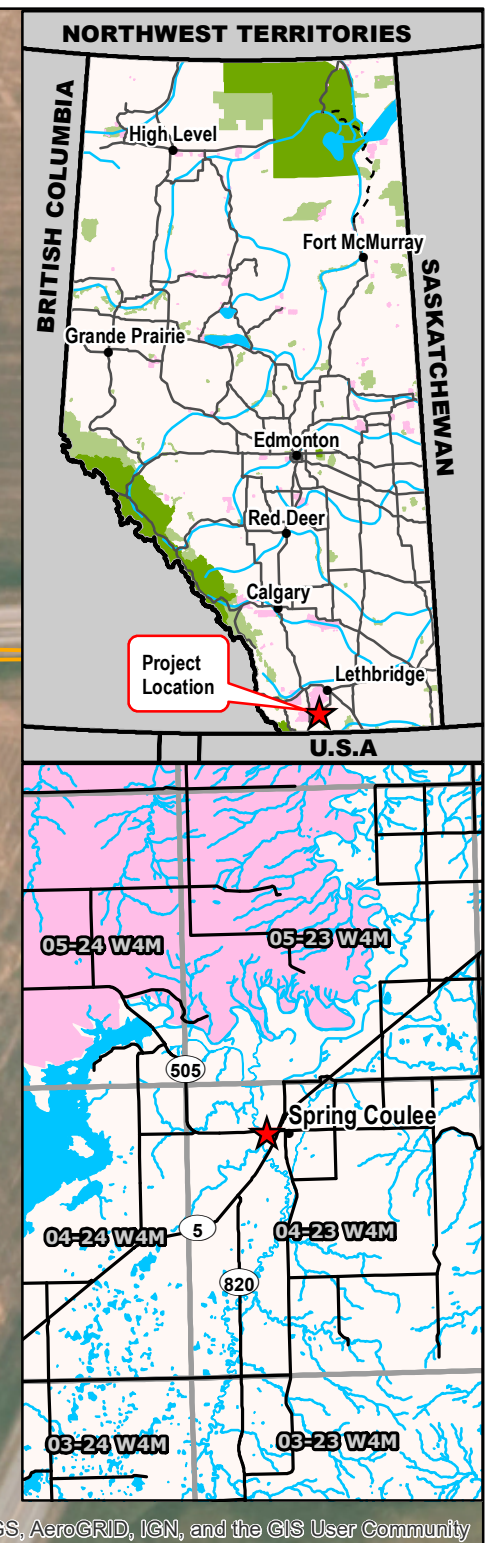
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- (iii) KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.



2021-11-25

Chris Morgan, M.Sc., P.Eng.
Senior Geotechnical Engineer



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Legend**
- ▲ GPS Waypoint (July 8, 2021) - - - Pavement cracking
 - ▲ GPS Waypoint (July 7, 2020) ▤ Scarp
 - GPS Track (July 8, 2021) → Flow Direction



NOTES: 1. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM Zone 12N 3. IMAGE SOURCE: World Imagery, ESRI ArcGIS Online. Source date September 5, 2018 (Town of Cardston)	CLIENT 	PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
		TITLE Site Plan S058 - Spring Hill Hwy 505:04, km 21.11
	SCALE 1:2,000	PROJECT No. A05116A03
		FIG No. 1

Time: 14:28:34 PM
 Date: October 14, 2021
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Photo 1 Pavement cracking and settlement due to head scarp of slide on coulee slope south of highway. Photo taken facing northwest on July 8, 2021.



Photo 2 Pavement patching and milling due to ongoing slope movement. Cracking has extended through the recent overlay. Photo taken facing east on July 8, 2021.



Photo 3 Transverse crack to the west of the pavement cracking and milling. Photo taken facing south on July 8, 2021.



Photo 4 Head scarp of slide on coulee slope south of highway. Photo was taken facing southeast on July 8, 2021.

