

SITE NUMBER AND NAME: <b>S056-I West Gorge Creek Steep Slope Slides</b>		HIGHWAY & KM: 25002:02 7.693	PREVIOUS INSPECTION DATE: July 5, 2021	INSPECTION DATE: <b>May 16, 2022</b>
LEGAL DESCRIPTION: 15-29-019-05 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5612799 665797		RISK ASSESSMENT: PF: 12 CF: 10 TOTAL: 120	
MONTHLY AVERAGE DAILY TRAFFIC (MADT): May 2020 390 (west) & 382 (east) (Reference No. 55460220)			CONTRACTOR MAINTENANCE AREA (CMA): 27	

SUMMARY OF SITE INSTRUMENTATION:  There is no instrumentation at the S056-I site.  LAST READING DATE: N/A	INSPECTED BY: Chris Morgan (KCB) Laura Assaad (KCB) Alex Frotten (AT) Roger Skirrow (AT)
PRIMARY SITE ISSUE: Slope failure on the south side of the highway due to surface runoff erosion and groundwater. The highway is located at the crest of a steep valley slope above Sheep Creek River. The southern ditch has been undermined and is draining directly into the slide zone. Head scarp is within 1 m of the south edge of the highway.	
APPROXIMATE DIMENSIONS: Head scarp is approximately 15 m wide at the crest of a 40 m to 50 m high slope above Sheep River. Approximately 1/3 of the way down the slope, the failure area narrows to a 3 m to 5 m wide erosion gully.	
DATE OF ANY REMEDIAL ACTION: None	

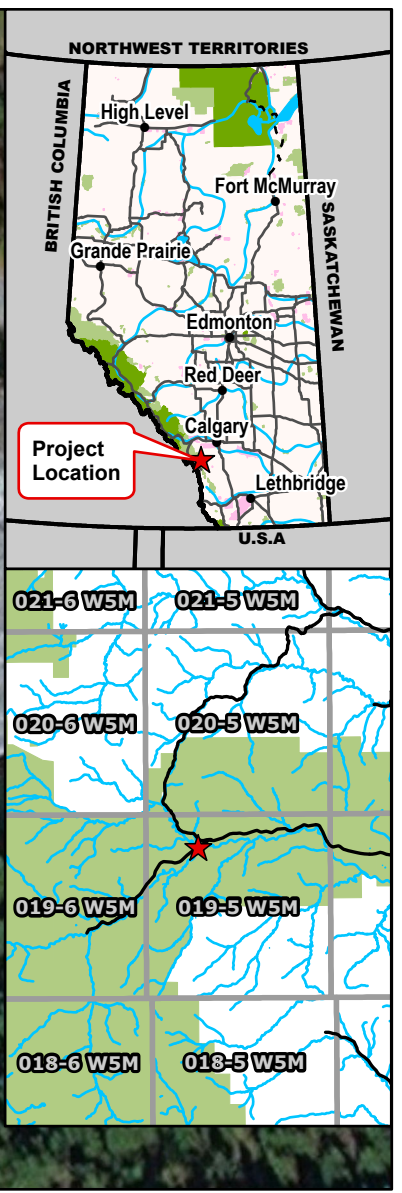
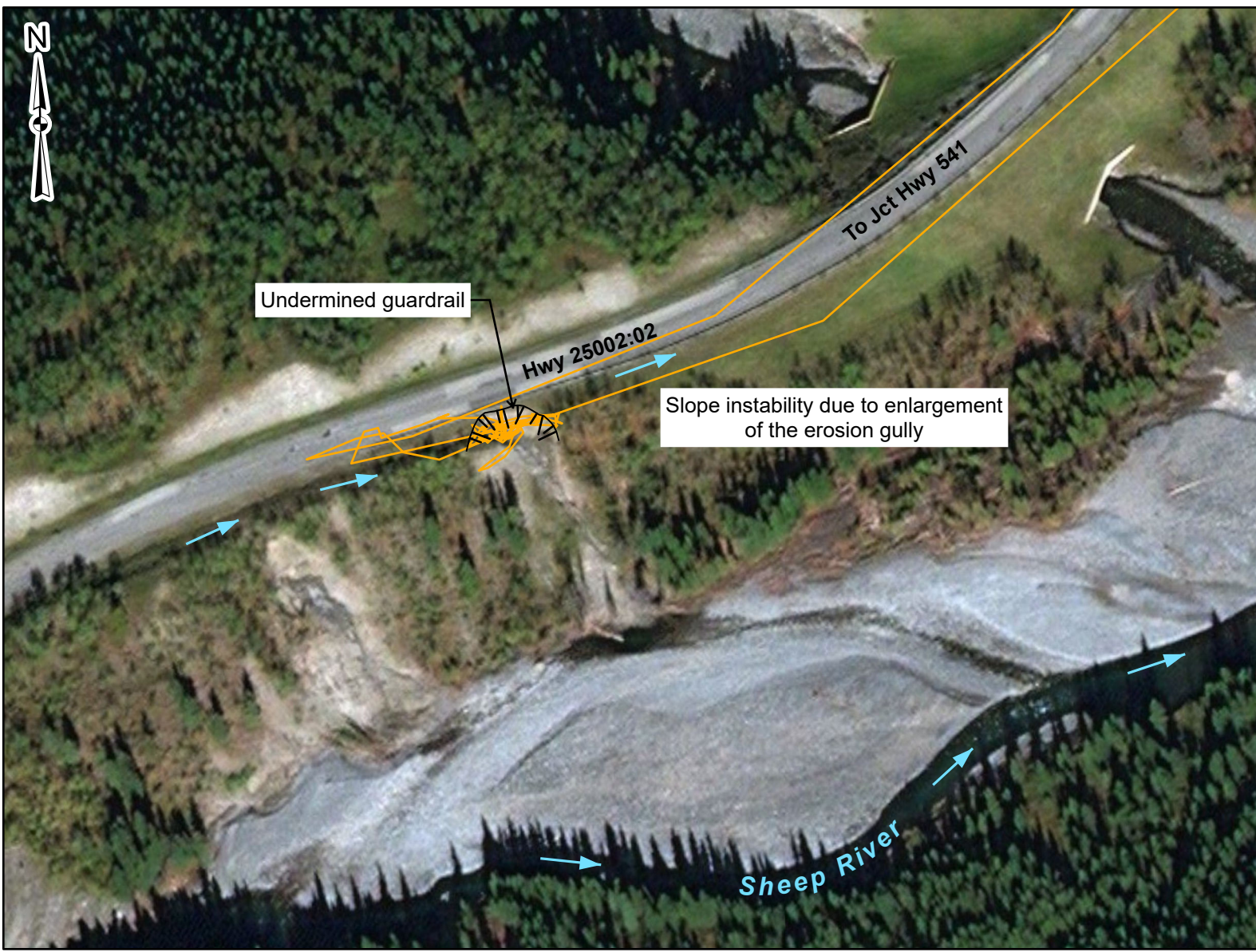
ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Head scarp has started to undermine the pavement		X
Slope Movement	X		Slope failure due to ongoing erosion from surface water runoff		X
Erosion	X		Slope erosion due to surface water runoff from the south (eastbound) ditch into slide area	X	
Seepage		X	Groundwater seepage has been observed approximately 6 m down the slope, near the rock ledge	X	
Culvert Distress		X	N/A – none observed		X

<b>COMMENTS</b>
Steep slope at approximately 2H:1V, with no vegetative cover in the slide area. The highway ditch on the right (west) flank of the slide is draining directly onto the slide area. The slope failure will continue to encroach on the highway surface and guard rail with continued erosion due to the ditch discharge.
A seepage zone was observed during the 2021 inspection, approximately halfway down the slope at a bedrock outcrop. The seepage zone appeared dry during the 2022 inspection.
Between the 2021 and 2022 inspection, the slope failure has continued to expand to the west (upslope) and vegetation is falling into the erosion feature. In addition to expanding westwards, the overall slope of the erosion feature is flattening in the upper section as the feature deepens and ongoing erosion continues to remove sediment. Erosion has exposed a sedimentary rock ledge on the west side.
The back scarp has retrogressed to within 0.5 m of the highway and the guardrail continues to be undermined. A plastic jersey barrier has been placed north of the guard rail to protect road users (Photo 1). No deflection of the

<p>barrier was noted.</p>
<p>Slope erosion appears to be depositing an alluvial fan in the Sheep River (Photo 2).</p>
<p>There is a wooden stake and a rock painted orange present upstream of the right flank used to estimate the gully retrogression. At the time of the 2022 inspection, the wooden stake was 1.7 m from the edge of the right flank (Photo 3).</p>
<p>During the 2020 inspection, tension cracking and slumping was first observed on the left (east) flank of the slope failure (Photo 4). Between the 2021 and 2022 inspections, the ground surface appears to have dropped approximately 0.30 m (0.45 m since 2020) and a tree had fallen down the slope. The area is expected to eventually fail into the erosion feature downslope, enlarging the disturbed area.</p>
<p>During the 2022 inspection, a potential bank swallow nest was observed in the back slope.</p>
<p>The ongoing toe erosion from the river and surface water runoff from the highway ditch are causing the erosion feature to enlarge and will eventually lead to undermining of the pavement, surface cracking, and a dip that will require extensive repairs, including a possible shift of the road to the north.</p>
<p><u>Maintenance/Repair/Monitoring Recommendations:</u></p> <ul style="list-style-type: none"> <li>• The surface water flow into the slide area from the south (eastbound) ditch should be diverted away from the slide area. A cross culvert could divert flow beneath the highway into the north (westbound) ditch.</li> <li>• The slope could be stabilized using either geogrid reinforced granular fill with a timber crib wall, a lock block retaining wall, or a gabion basket wall constructed at the toe of the slide zone on stable ground. A geotechnical investigation and laboratory testing program should be completed to assess subsurface conditions to support design and construction work.</li> <li>• If slope stabilization is not feasible, the highway could potentially be realigned further north, which would require steepening of the north slope. Drainage improvement would also be required to divert surface water runoff from the slide area.</li> </ul>
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<p>Chris Gräpel, M.Eng., P.Eng. Senior Civil Engineer, Associate</p>	
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Undermined guardrail

Hwy 25002:02

Slope instability due to enlargement of the erosion gully

Sheep River



**Legend**

- GPS Track (May 16, 2022)
- Flow Direction
- Main Scarp

NOTES:  
 1. HORIZONTAL DATUM: NAD83  
 2. GRID ZONE: UTM ZONE 11N  
 3. IMAGE SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS AND THE GIS USER COMMUNITY.

CLIENT

PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan S056-1 - West of Gorge Creek Steep Slope Slides Hwy 25002:02, km 7.693		
SCALE 1:1,500	PROJECT No. A05116A03	FIG No. 1

## Inspection Photographs

**Photo 1** Failure area located on the downslope side of Sheep River Road. Photo taken May 16, 2022, facing east.



**Photo 2** View from highway of the erosion gully, facing downslope. An alluvial fan is forming in the Sheep River due to ongoing erosion. Photo taken May 16, 2022, facing southeast.



**Photo 3** The south (eastbound) ditch is diverting flows into failure area. A painted wooden stake is approximately 1.7 m from the edge of the right (west) flank. Photo taken May 16, 2022, facing west.



**Photo 4** Slumping of the bank on the left (east) flank due to ongoing erosion (indicated by red circle). Photo taken May 16, 2022, facing southwest.

