

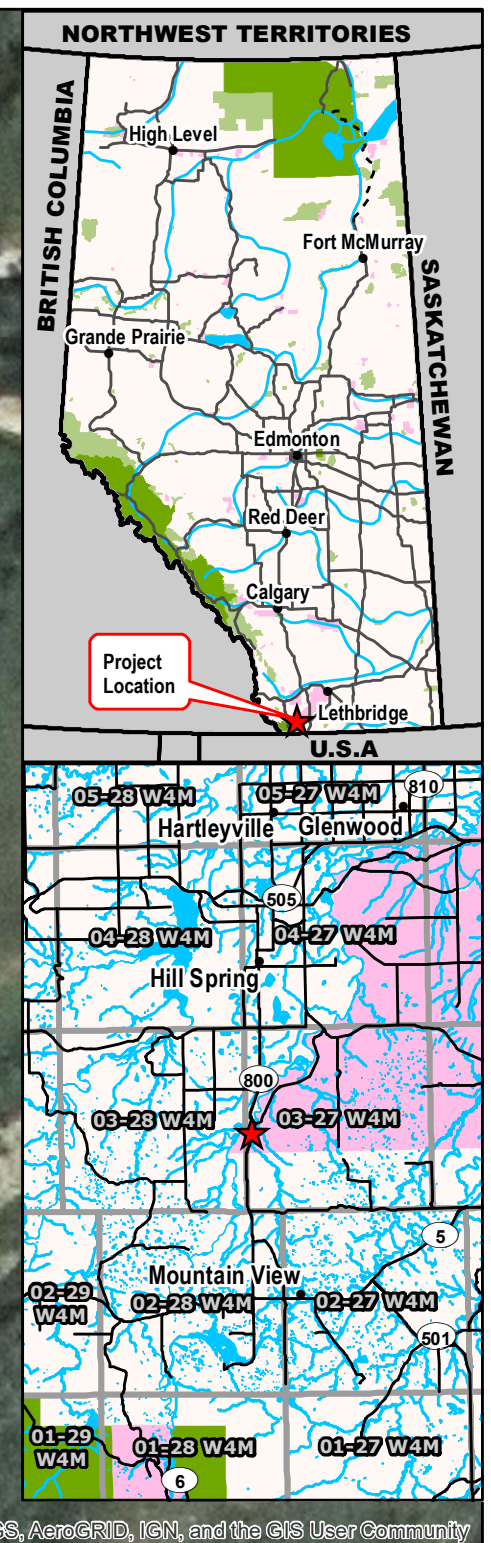
SITE NUMBER AND NAME: S036 Belly River		HIGHWAY & KM: 800:02, 9.050	PREVIOUS INSPECTION DATE: May 3, 2018	INSPECTION DATE: May 9, 2019
LEGAL DESCRIPTION: 12-18-003-27 W4M	NAD 83 COORDINATES: UTM Northing Easting 12 5454363 308507		RISK ASSESSMENT: PF: 3 CF: 1 TOTAL: 3	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 400 (north), 620 (south), (Ref No. 87010, 87030)			CONTRACTOR MAINTENANCE AREA (CMA): 25	

SUMMARY OF SITE INSTRUMENTATION: 6 vibrating wire piezometers and 2 slope inclinometers. LAST READING DATE: May 2019	INSPECTED BY: Chris Gräpel (KCB) Chris Morgan (KCB) Alex Frotten (AT) Roger Skirrow (AT) Nicolas Ropchan (AT)
PRIMARY SITE ISSUE: Monitoring landslide repairs on outside of bend of Belly River.	
APPROXIMATE DIMENSIONS: Approximately 200 m at river bank, repaired slope is approximately 15 to 20 m high, and approximately 4H:1V from crest to toe.	
DATE OF ANY REMEDIAL ACTION: Slide repair in 2012 consisted of toe berm, subsurface drainage, regraded slopes with slope benches and improved surface drainage, riprap longitudinal peaked stone toe protection (LPSTP) armouring with redirective vanes, and bio-engineering (including live staking).	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X			X
Slope Movement		X			X
Erosion	X		High water events have displaced some of the riprap redirective vanes. There is erosion of the bank at the west end of the site, directly upstream of the riprap.		X
Seepage	X		Wet zones at outlet of drains near toe of slope.		X
Culvert Distress		X			X

COMMENTS
Repaired slope in good condition with generally well-established vegetation. Visit site every 2 years on the GRMP tour moving forward. Keep reading the instruments twice a year.
Erosion noted on the bank upstream of northwestern end of riprap. The bank erosion has the potential to wash out behind the riprap. No change noted since the 2018 inspection.
LPSTP riprap armouring appears in good condition, although some minor displacement of riprap particles at the redirective vanes. No obvious changes since previous inspection. KCB took photos of the redirective vanes during low water flows in fall 2019.
There are mixed results with live staking of the slope toe. Willows on the left flank (down near the water) are doing well but the remainder of the planting is not very successful. It is possible that animals are eating the willows.

Lower bench is damp where drain outlets are present. Logs and stumps/roots were deposited on the lower bench by high-water event in 2017/2018. Some erosion at the toe of the slope near the south end of the site.



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

Legend

- ▣ Slope Incliner
- ⊗ Vibrating Wire Piezometer
- GPS Track (May 9, 2019)
- Culvert
- ✕ Fence



NOTES: 1. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM Zone 12N 3. IMAGE SOURCE: World Imagery, ESRI Arc GIS Online Southern Alberta 2015 Imagery 4. LPST = Longitudinal Peaked Stone Toe Protection	CLIENT 	PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
		TITLE Site Plan S036 - Belly River Hwy 800:02, km 9.050
	SCALE 1:1,250	PROJECT No. A05115A03
		FIG No. 1

Time: 17:33:17 PM
 Date: May 29, 2019
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Photo 1 North section of repaired slide area. Photo was taken facing north on May 9, 2019.



Photo 2 South section of repaired slide area. Photo was taken facing west on May 9, 2019.



Photo 3 North toe area of repaired slide zone. Some riprap has been displaced from the redirective vanes at river edge. High water in 2017/2018 deposited woody debris at the toe of the slope. Photo taken facing northeast on May 9, 2019.



Photo 4 Erosion at upstream limit of riprap. Minimal change noted from previous inspection. Photo was taken facing east on May 9, 2019.

