



**ALBERTA TRANSPORTATION GEOHAZARD ASSESSMENT PROGRAM
PEACE REGION – PEACE-HIGH LEVEL
2020 INSPECTION**

Site Number	Location	Name	Hwy	km
PH61	East Hill	36+180 to 37+130 Site 4	2:60	36.7
Legal Description		UTM Co-ordinates		
NW & E29-083-21 W5M		11V E 482790	N 6231755	

	Date	PF	CF	Total
Previous Inspection:				
Site 4 Upslope	3-Jun-2019	2	5	10
Shallow slide 37+050	3-Jun-2019	8	4	32
Shallow slide elephant trunk 36+500	3-Jun-2019	7	3	21
Current Inspection:				
Site 4 Upslope	9-Jun-2020	2	5	10
Shallow slide 37+050	9-Jun-2020	8	4	32
Shallow slide elephant trunk 36+500	9-Jun-2020	7	3	21
Road WAADT:	4580		Year:	2019
Inspected By:	Ed Szmata, TRANS Rocky Wang, TRANS		Don Proudfoot, TEL Tyler Clay, TEL	
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input checked="" type="checkbox"/> Maintenance Items			

Primary Site Issue:	Large landslide (Site 4) on south side of Grouard bridge previously encompassed highway in 1980s. Mitigated upslope area by major crest unloading. Local gullying and erosion mainly on the north side of east approach embankment of Grouard bridge. Shallow instabilities of fill slope of roadway/cutslope to adjacent CN railway. Previous major gully erosion issues from elephant drain discharging midslope at 36+450; mitigated in 2007 with construction of new elephant trunk drain. Earth flow occurred in Spring 2016 at base of gully at 36+230 that encroached into the Heart River (Photo 61-06). Slope grading and concrete drainage swales were constructed at the bridge and within the ditch in 2017/2018.	
Dimensions:	Site 4 landslide is 200 m wide; extends 150 m upslope of roadway. CN rail line runs parallel (30 m horizontal) from roadway on downslope side. Earth flow at 36+230 is located 85 m downslope of highway and is approximately 30 m wide (widest point at the main gully head) and 100 m long.	
Maintenance:	Minor maintenance on the east approach embankment of Grouard bridge in 2014. No other maintenance activity since 2011.	
Observations:	Description	Worsened?
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>



Assessment:

Small deep-seated movements are occurring along roadway in vicinity of Site 4. These rates of movements are small and/or intermittently active and do not appear to pose any immediate threat unless they begin accelerating.

Shallow slide at 36+350 could impact edge of road as the main scarp retrogresses and/or erodes.

Active slide/earth flow area at the base of the slope below the gully does not pose immediate hazard to the highway but could cause retrogressive instability further upslope in the future.

Consideration may need to be given to diverting ditch flow around 36+200 to existing trunk drain or building new trunk drain to reduce gully expansion below roadway.

Grading and addition of concrete swale structures are expected to reduce rate of erosion at the bridge abutments from surface runoff. The sand and gravel buildup at the edge of the highway will need to be regularly cleaned to ensure water runoff is not blocked from entering the swale inlets.

Consideration should be given to building an asphalt berm to ensure runoff is directed to the swale.

Recommendations:

Cost

Remove buildup of sand and gravel at the pavement edges around Grouard Bridge embankments. Ditch grading required around Grouard Bridge.	Maintenance
Continue to monitor instruments twice yearly and undertake annual inspections.	-
Mitigation measures (such as excavation of slide material and replacement with gravel backfill) should be developed and implemented for the shallow slide on west side of elephant trunk at 36+450 and downslope shoulder at 36+350 to minimize potential retrogression into the highway.	\$350,000
Mitigation measures may be required to repair the culvert at 36+230.	\$450,000