



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

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

	<b>Date</b>	<b>PF</b>	<b>CF</b>	<b>Total</b>
<b>Previous Inspection:</b>				
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
<b>Current Inspection:</b>				
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
<b>Road WAADT:</b>	4580		<b>Year:</b>	2019
<b>Inspected By:</b>	Ed Szmata, TRANS Rocky Wang, TRANS		Don Proudfoot, TEL Tyler Clay, TEL	
<b>Report Attachments:</b>	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input checked="" type="checkbox"/> Maintenance Items			

<b>Primary Site Issue:</b>	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.	
<b>Dimensions:</b>	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.	
<b>Maintenance:</b>	Minor maintenance on the east approach embankment of Grouard bridge in 2014. No other maintenance activity since 2011.	
<b>Observations:</b>	<b>Description</b>	<b>Worsened?</b>
<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.

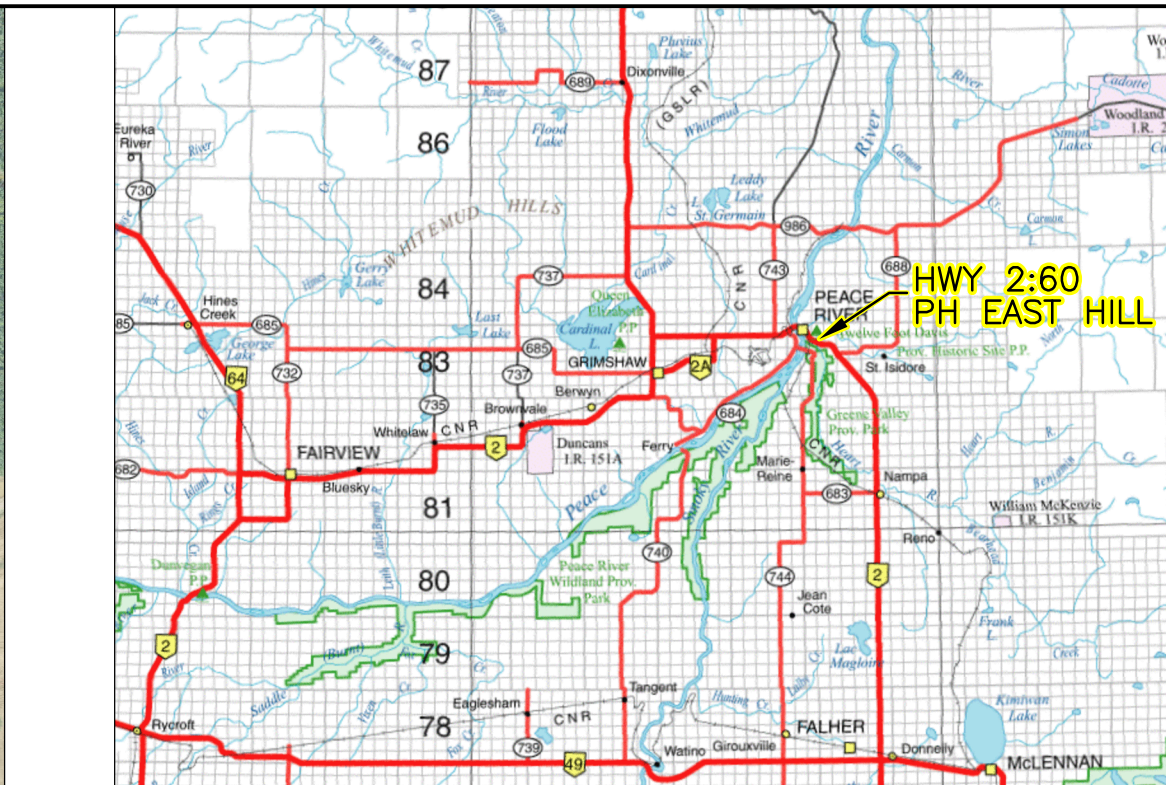
Consideration should be given to building an asphalt berm to ensure runoff is directed to the swale.

**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





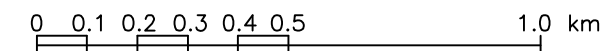
KEY MAP  
SCALE 1:1 000 000

LEGEND:  
PH61 EXTENT



NOTES:

- 1 DRAWING MUST BE USED IN CONJUNCTION WITH THE ATTACHED REPORT REFERENCE 13351 DATED DECEMBER 2020 AND IS SUBJECT TO THE STATEMENT OF LIMITATIONS AND CONDITIONS INCLUDED IN THE REPORT.
- 2 AIR PHOTO BASE FROM TARIN RESOURCE SERVICES LTD. 0.4 m/PIXEL (2012).
- 3 CHAINAGE SHOWN ARE APPROXIMATE ONLY.



Alberta Transportation

PEACE REGION (PEACE RIVER/HIGH LEVEL)

PEACE RIVER EAST HILL  
HWY 2:60 (PH61)  
KEY MAP

FIGURE PH61-1

DRAWN BY	ICB
DESIGNED BY	TTC
APPROVED BY	DWP
SCALE	1:15 000
DATE	DECEMBER 10, 2020
FILE No.	13351-C4A





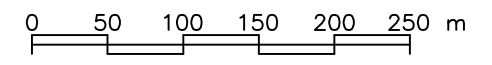


**LEGEND:**

- HORIZONTAL CHAINAGE (37+130 GROUARD BRIDGE) ● 36+900
- PHOTOGRAPH LOCATION 📷 41-01
- SLOPE INCLINOMETER
- NO MOVEMENT ● SI 64
- CREEP 📏 SI 82
- MEASURABLE MOVEMENT (OR RECENTLY SHEARED) ● SI 82
- PIEZOMETER ▲ PN 004
- PH61 EXTENT —

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- 2 AIR BASE FROM TARIN RESOURCE SERVICES LTD. 0.4 m/PIXEL (2012).
- 3 SLIDE FEATURES, PHOTOGRAPHS AND CHANIANGE ARE SHOWN APPROXIMATE ONLY.



**Alberta** Transportation

PEACE REGION (PEACE RIVER/HIGH LEVEL)

**PEACE RIVER EAST HILL  
HWY 2:60 (PH61) STA. 36+180 TO 37+130  
LOCATION PLAN**

FIGURE PH61-2

DRAWN BY	ICB
DESIGNED BY	TTC
APPROVED BY	DWP
SCALE	1:5000
DATE	DECEMBER 10, 2020
FILE No.	13351-C5A







**Photo 61-01.**  
Looking east towards the shallow slide scarp approximately 10 m below the highway (36+350). No major change since 2019.



**Photo 61-02.**  
Local erosion around guardrail post and gully of embankment slope below (36+470). Erosion ongoing with minor lateral expansion since the previous inspection.





**Photo 61-03.**  
Looking towards trunk drain outlet structure which was functioning as intended.



**Photo 61-04.**  
Erosion within southeast side of Grouard Bridge abutment slope (37+050). Concrete swale and slope repairs were constructed in 2017/2018. Road runoff is draining over the pavement edge before reaching the swale due to sand and gravel buildup. Gravel and geocell slope repair was effective in select areas but has washed out in others.





**Photo 61-05.**  
Swale and cobble armor outlet at the northeast side of the Grouard Bridge (37+125). Ditch erosion is active further downstream from outlet.



**Photo 61-06.**  
Overall view of the site and lower valley slope from Hwy 744.