

**GEOHAZARD ASSESSMENT PROGRAM**

**PEACE RIVER / HIGH LEVEL AREA**

**2013 INSPECTION**



Site Number	Location	Name	Hwy	km
PH47	West of Deadwood, AB	Deadwood Slide	690:02	Approx. 2.2
Legal Description		UTM Co-ordinates		
SW1/4 28-89-23-W5M		11V N 6289120	E 462789	

	Date	PF	CF	Total
<b>Previous Inspection:</b>	June 28, 2012	14	3	42
<b>Current Inspection:</b>	May 30, 2013	13	3	39
<b>Road AADT:</b>	80		<b>Year:</b>	2012
<b>Inspected By:</b>	(Don Proudfoot and Harjeet Panesar, Thurber Engineering) (Rocky Wang, Ed Szmata and Erwin Kurz Alberta Transportation)			
<b>Report Attachments:</b>	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

<b>Primary Site Issue:</b>	Slope movement affecting highway		
<b>Dimensions:</b>	See drawing		
<b>Date of any remediation:</b>	None in the last year		
<b>Maintenance:</b>	ACP patch (Fall 2011)		<b>Worsened?</b>
<b>Observations</b>	<b>Description</b>	<b>Worsened?</b>	
		<b>Yes</b>	<b>No</b>
<input checked="" type="checkbox"/> Pavement Distress	Crack widening and vertical drop in asphalt pavement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Slow creep movement causing cracks in pavement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Erosion		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Seepage		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge/Culvert Distress	Coupling near centreline culvert has separated creating a sinkhole.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Other		<input type="checkbox"/>	<input type="checkbox"/>

**Instrumentation:**  
None.

**Assessment (Refer to Figure PH47-1):**

- The slope failure appears to be the result of toe erosion caused by the creek located immediately south of the highway leading to over-steeping of the slope. It is expected that, if left untreated, slow creep movements will continue.
- The road pavement was patched in the fall of 2011
- Pavement cracks of up to about 60 mm wide and vertical drops of about 30 mm were noticed which have increased since 2012.

**Recommendations:**

Three options have been identified as possible long term solutions.

The first option would involve the installation of a 1500 mm diameter CSP culvert along the toe of the slide, which would prevent further creek erosion of the toe of the slope. In addition to the culvert installation, a toe berm would be constructed and the slide mass re-graded to a flatter uniform slope in order to re-establish slope stability. A DFO authorization would be required to carry out this option.

The second solution would be based on the use of a pile wall to stabilize the highway side slope. Drilled, reinforced concrete piles would likely be needed to stabilize the slide. As the slide appears to be greater than 5 m to 6 m deep, tie-back anchors might also be needed.

The third option would include either partial or full excavation of the slide mass, construction of a deep shear key, and reconstruction of the highway sideslope. This option would also involve the lining of the creek bed with riprap in order to prevent further toe erosion.

The outlet and clay seal of the centerline pipe should be repaired. It is understood that the pipe is scheduled for replacement, so repairs could likely be deferred until that time.