

**PEACE REGION – GRANDE PRAIRIE
GEOHAZARD RISK ASSESSMENT
SITE INSPECTION FORM**

SITE NUMBER GP-5	SITE NAME Cutbank North Slide	HIGHWAY & KM Hwy 40:40	PREVIOUS INSPECTION DATE May 20, 2010	INSPECTION DATE June 2, 2011
LEGAL DESCRIPTION LSD 9-21-65-5-W6M	NAD 83 COORDINATES N 6,056,268 E 391,516	PREVIOUS RISK ASSESSMENT PF: 7 CF: 6 TOTAL: 42		
		CURRENT 2011 RISK ASSESSMENT PF: 7 CF: 6 TOTAL: 42		

<p>SUMMARY OF SITE INSTRUMENTATION:</p> <p><u>Operational</u> Slope Indicators 2 SI's</p> <p><u>Piezometers</u> Nil piezo</p> <p>LAST READING DATE: Sept, 2011 For details, refer to 2011 Cycle 2 Instrumentation Report</p>	<p>INSPECTED BY:</p> <p>(i)KarlEng: Karl Li, John Heilman</p> <p>(ii) AT: Ed Szmata, Ted Prue, Mark Hoseasson, Rocky Wang</p>
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INSTRUMENTATION Monitoring Results/Updates:
(Reiterated from previous report)

(i) At head of slide (sideslope of highway) and upper slope, movement was previously monitored at 17m depths at adjacent to highway shoulder area.

(ii) At mid and lower slope, SI (15m and 17m depths) was not deep enough to intercept slide movements. It is anticipated that movement can be deeper than 15-17m depths.

PRIMARY SITE ISSUE:
(Reiterated from previous report)

Sliding and subsidence movement of approach fill has been slowly ongoing since time of original grading construction in early 1980's.

- Subsidence occurring at fill juncture with natural ground of valley wall despite construction of a toe berm (in original 1980's grading construction). The slide headscarp has encircled the roadway.
- Subsidence of ground estimated at about 20mm per year (or smaller) and can be maintained by pavement patching

Note:
Refer to previous 2010 Slide Tour and earlier reports for details.

APPROXIMATE DIMENSIONS:
(Reiterated from previous report)

-Along roadway, the headcarp of slide (width @70m) has caused road contortion and cracking at cut/fill interface of the approach fill. Length of slope (slide) about 150m (from roadway to edge of toe berm). -

-About 4H:1V average slope can be estimated.

- This site is an approach fill construction up the Cutbank River valley. Top of fill is at 40m to 50m height above toe. A toe berm (about 3-5m in height) was constructed along Cutbank River flood plain at the original fill construction (early 1980's). Flood plain depositions likely prevalent of soft alluvial deposits with buried channel deposition (and abandoned ox-bow channel) environment.

DATE OF ANY REMEDIAL ACTION:

None.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
PAVEMENT DISTRESS	x		Pavement cracking and settlement due to headscarp movement (at fill junction with natural valley slope)		x
SLOPE MOVEMENT	x		Movement of approach fills likely originated at basal and toe berm footprint area where soft alluvial deposits prevailed despite toe berm construction. -Movement rate is slow over past 30 years since original grading construction in early 1980's		x
EROSION	x		(i)Erosion of backslope ditch is re-starting (at adjacent cut-section to the north). This was repaired with riprap stones (2006/07) and is starting to deteriorate. (ii)Erosion of a gully at backslope (soft sandstone) due to a broken downrain culvert spitting outflow from top catchment area. As backslope is of sandstone nature, effect of erosion should not be highly destabilizing.	(ii)x	(i)x
SEEPAGE		x	n/a		x
CULVERT DISTRESS	x		Over the years, a broken downrain culvert discharging outflow to erode a gully down the backslope (soft sandstone). The downrain probably installed at early 1980's highway construction. A repair strategy maybe required on basis of future site performance.	x	

COMMENTS:

In current 2011 site visit, it was reviewed that

- 1) No new deterioration has become obvious
 - Erosion of a gully down the backslope (soft sandstone material) (a previous broken downrain culvert located at top of backslope) has not deteriorated.
 - However, some erosion of backslope ditch has re-started and the ditch should be regraded with additional riprap lining.
- 2) Pavement patching should be carried out as appropriate when subsidence movement and cracking of pavement occurs.
- 3) Instrumentation monitoring and site inspection should be continued.
- 4) As noted in previous inspection(s). Since some SIs (allow mid and lower slope) were of too shallow a depth to capture the slide regime. It is advisable to install additional deeper instrumentations and carry out a detailed survey. It was discussed that the following Instrumentation scheme should be considered.
 - o Two line of SIs (2 SIs per line)
 - o A total of 4 SIs (at 40m depths) with associated piezometers are considered appropriateDetailed Survey of the slide
 - o The extent of survey will include the toe area (inclusive of ox-bow abandoned channel area)
 - o The survey will incorporate digital topography contour site map information as well.

Important Note:

This form assessment is an update for current year only. Please refer to the detailed assessment provided as in the 2010 Annual Assessment Report and earlier Reports for background understanding of this site.

END



Photo 1

Looking north upgrade (towards Grande Prairie direction) at headscarp crack

- Headscarp cracking has encircled both lanes and backslope ditch
- Shape of headscarp (width of slide) remained same for last 5-10 years
- Slide movement (right to left) down this approach fill

Note: Photos taken on May 2011

GP-5
Page 1 of 2



Photo 2

Looking south downgrade (towards Cutbank River and bridge) at headcarp of slide

- Ditch erosion has re-started to continue despite earlier placement of bouldery pitrun lining along ditch
- Ditch water runs into erosion rill towards headscarp circuit slump zone



Photo 2a

Rill erosion along headscarp circuit at head of slide



Photo 2b

Looking north upgrade along backslope ditch

- Erosion of ditch continuing



Photo 2c

Looking north upgrade along backslope ditch

- Erosion of ditch continuing

Note: Photos taken on May 2011