


SITE NUMBER SH 18	SITE NAME Deer Mountain	HIGHWAY & KM HWY 33:14 KM 6	PREVIOUS INSPECTION DATE June 17, 2013	INSPECTION DATE July 2, 2014
LEGAL DESCRIPTION LSD 11-23-69-09 W5M	NAD 83 COORDINATES N 6,095,038 E 611,315	PREVIOUS RISK ASSESSMENT		
		PF: 9	CF: 2	TOTAL: 18
		CURRENT RISK ASSESSMENT		
		PF: 9	CF: 2	TOTAL: 18

<p>SUMMARY OF SITE INSTRUMENTATION:</p> <p>No Instrumentation</p>	<p>INSPECTED BY:</p> <p>AMEC: John Richmond, Vincent Huang Alberta Transportation: Roger Skirrow</p>  <p>John Richmond, P.Eng. Senior Geotechnical Engineer</p> <p>Reviewed by: Curtis R. Treen, M.Eng., P.Eng. Senior Associate Geotechnical Engineer</p> <p>AMEC Environment and Infrastructure Permit Number: P 04546</p>
--	--

PRIMARY SITE ISSUE(S):

I) Slumping of slope (bank) adjacent to small creek at the south east corner of the intersection of Highway 33 and Deer Mountain Road (Photo's 1 and 2). Slumping is likely due to combination of toe erosion, silty/sandy soils, and seepage from slope.

II) The creek is located in the south ditch adjacent to Deer Mountain Road. The creek crosses Highway 33 perpendicularly (east to west) through a culvert. The toe erosion and slumping is south of the creek and although the slumping/erosion does not directly impact either Deer Mountain Road or Highway 33, the slumping/erosion has historically caused blockage of the ditch requiring regular clean-outs.

III) Slope was remediated in Fall 2010 with the construction of a bioengineering retaining wall (Biowall - AT Design using geogrid reinforcement, biologs, and willow plantings) which subsequently failed in Spring 2011. Material within the main body of the slide (including the failed biowall material was soft and wet with seepage observed emanating from the base of the slide scarp (Photo 2).

IV) At the time of the 2014 inspection, the outlet of the culvert west of Highway 33 was below water and a pond had formed downstream of the culvert likely due to a blockage in the channel (Photo 4). The culvert outlet was also below water during the 2012 and the 2013 site visits.

Note: Refer to previous inspection reports for further details.

APPROXIMATE DIMENSIONS:

- ~ 30 m stretch of south creek bank with bowl shaped erosion/slump scarp undergoing active slumping and toe erosion. Slump scarp ~2 m high and the crest of the scarp was ~3 to 3.5 m above the elevation of the creek;
- Direction of ongoing retrogression of slump to the south/southeast away from Deer Mountain Road and Highway 33.
- Soils on the exposed scarp consisted mainly of silty clay with intermittent sand/silt seams;
- Typical width of creek ~1 m to 2 m.

DATE OF ANY REMEDIAL ACTION:

Fall 2010:

- Construction of bioengineering repair (Biowall - AT Design with biologs and willow plantings). The 2011 site inspection report indicated that the biowall had failed in the Spring of 2011.

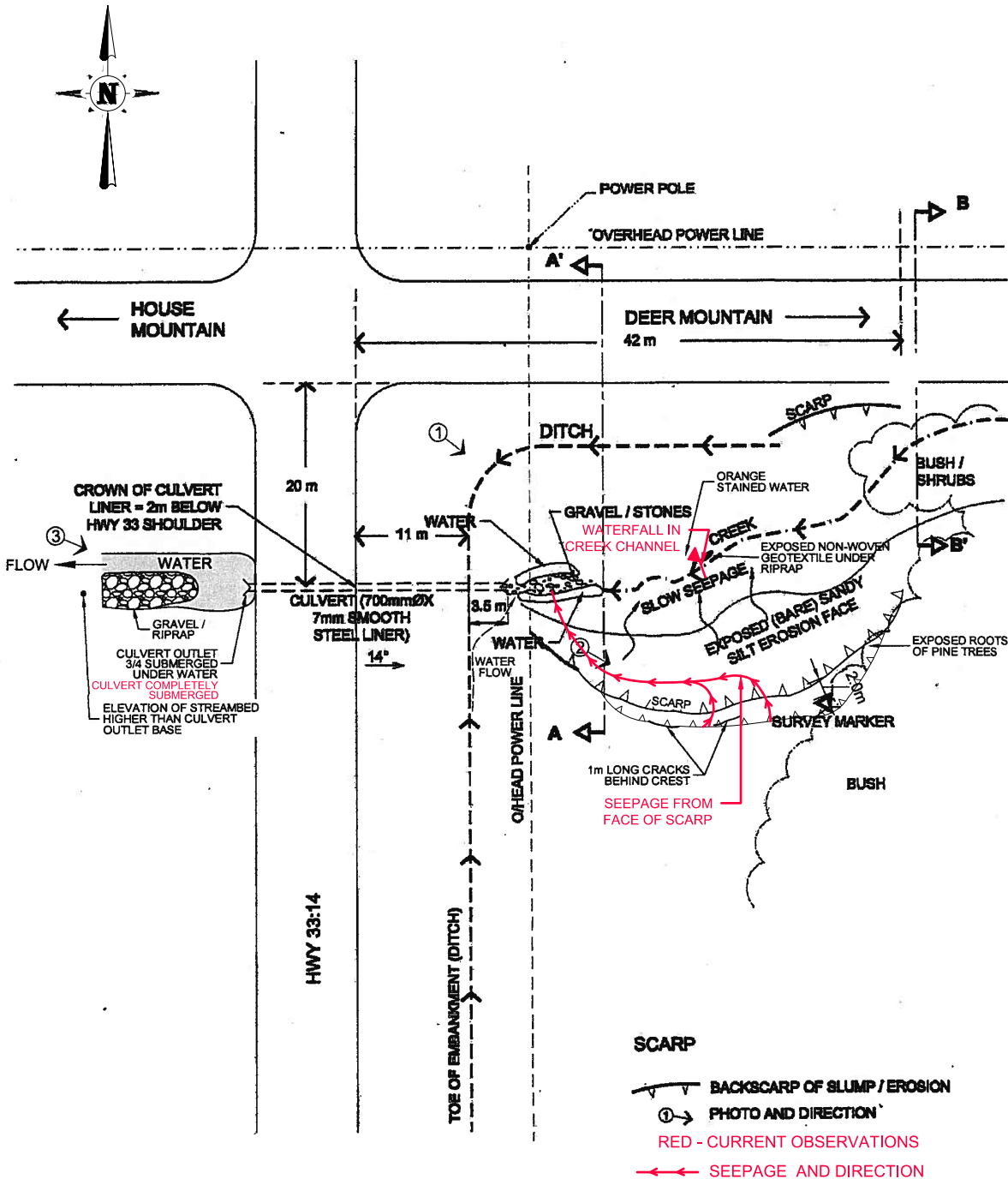
ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION		
	YES	NO		YES	NO	SEE COMMENTS
PAVEMENT DISTRESS		X			X	
SLOPE MOVEMENT	X		Continued minor retrogression of slide scarp	X		
EROSION	X		Toe erosion of slide mass by adjacent creek		X	
SEEPAGE	X		On-going seepage from the face of scarp and some overland drainage behind crest of scarp is directed through a shallow channel over the crest of the scarp and into the main body of slide		X	
OTHER	X		Small waterfall (0.3 m high) in the creek channel south of Deer Mountain Road Blockage in channel suspected downstream of culvert west of Highway 33		X	

COMMENTS:

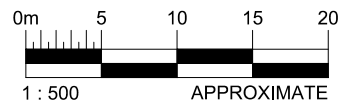
The bioengineering wall designed to remediate the slumping/erosion failed shortly after construction (circa spring 2011). The wall may have blocked seepage from the face of the scarp and the material behind the wall became saturated. This may have been exacerbated by the natural overland drainage behind the crest of the scarp that is directed toward the slide. The wall may also have been constructed on the soft, wet, weak, colluvium within the main body of the slide mass. Although further investigation and a new design for remediation of the slumping/erosion could be considered, the slumping/erosion has not historically impacted, and currently has a low potential to impact, operation of Highway 33 and/or Deer Mountain Road. Long term remedial measures that could be considered consist of a combination of slope flattening, gravel buttressing, and seepage/drainage control with plantings.

Remediation of the suspected channel blockage downstream should be carried out by removal of the material causing the blockage.

The ditch adjacent to Deer Mountain Road and downstream of the culvert outlet west of Highway 33 should be monitored for siltation and/or accumulation from toe erosion of the slide mass and cleaned as required.



REFERENCE: SH18Plan.pdf DATED JUNE, 2007, SUPPLIED BY ALBERTA INFRASTRUCTURE AND TRANSPORTATION.



CLIENT: 	DWN BY:	BGR	PROJECT: GEO HAZARD ASSESSMENT PEACE REGION (SWAN HILLS)	DATE:	NOVEMBER, 2014	
	CHK'D BY:	JAR		PROJECT No.:	EG10030	
 AMEC Environment & Infrastructure 5681-70 STREET, EDMONTON, ALBERTA, T6B 3P6 PHONE 780-436-2152, FAX 780-435-8425	DATUM:	-	TITLE:	SH18: HWY 33:14 km 6, DEER MOUNTAIN, AB SITE PLAN	REV. No.:	A
	PROJECTION:	-			FIGURE No.:	FIGURE 1
	SCALE:	1:500 (APPROX.)				



Photo 1: Slumping of slope looking south from Deer Mountain Road. Failed biowall within main body of slide visible in centre/centre right of photo.



Photo 2: Culvert inlet east of Highway 33



Photo 3: Looking west at pond downstream of culvert outlet west of Highway 33. Culvert outlet (not visible) below water at bottom of picture