SITE C9: GABION WALL

LEGAL LOCATION:	**SE 4-40-7-W5**
REFERENCE LOCATION ALONG HIGHWAY:	km 5.1 (S of Intersection between H11 and H22)
UTM COORDINATES (NAD83):	**N 5,808,420** **E 640,245**
AT FILE:	**H11:10**
AT PLAN & PROFILE:	
Date of Initial Observation:	February 2001
Dates of Previous Inspections: (Inspected By)	Feb 13, 2001 (KCCL) Jun 25, 2001 (KCCL) May 28, 2002 (KCCL) May 23, 2003 (KCCL) Jun 11, 2003 (KCCL) May 12, 2004 (KCCL)
Instruments Installed:	none
Instruments Operational:	none
Risk Assessment:	PF(5) * CF(1) = **5**
Last Updated by:	Klohn Crippen Consultants Ltd.
Date:	April 2004

Location and General Description of Instability

The intersection of Highways 11 and 22 west of Rocky Mountain House was constructed in 1992. The property owner to the south of Highway 11 had a septic field adjacent to the relatively deep highway ditch on the south side. The ditch slopes in this area suffered instability and slumping immediately after construction due to ground saturation in this area. To remediate the problem, drains were installed and were effective from 1993 to 1999.

In 1999, the property owner adjacent to the ditch complained that loss of ground was reoccurring in the ditch slopes due to slope instability. The initial remediation plan was to install horizontal drains, however, this concept was discounted due to the potential for settlement of the property owner's house.

Alberta Transportation contracted the maintenance contractor, Alberta North Highway Systems, to raise the ditch grade adjacent to the property. This change in grade involved the construction of an approx. 4.5 m high retaining wall in the centre of the ditch. As we understand it, no detailed design was undertaken and no survey or design records exist.

The constructed wall consisted of a centre section of five gabion baskets (4 m long by 0.9 m high) and two wing walls. The wing wall construction and foundation details are to be confirmed, although it would appear that 3 to 5 baskets were used to construct the wing walls. Due to the presence of filter cloth between the centre section and the wing walls it appears that there is no mechanical connection or anchorage between these sections. Filter cloth was also provided between the lower two centre wall baskets. The ditch upstream of the wall was lined with filter cloth and rock rip rap.

During high runoff ditch flows, erosion occurred under and around the wing-walls resulting in a gradual collapse of these structural elements. There is also an apparent slumping failure of the left side.

The 2002 repair work comprised a partial dismantling of the wall leaving the center section intact and 2.5 m high. The approach channel was excavated to suit the new wall elevation. Fill from the excavation was used to flatten the west downstream slopes. New wing walls, training walls and mats were constructed from new gabion baskets to prevent erosion around the wall.

The repair work was awarded to the local highway maintenance contractor, Ledcor Industries in September 2002. Construction started on October 24, 2002 and was substantially complete by November 1, 2002. The total cost of construction work completed in November 2002 was $50,146. Final grading and seeding was delayed to Spring 2003.

Due to continued slumping of the left slope during 2003, re-grading and a vegetation program was conducted in the fall of 2003.

Geotechnical Conditions

Chronology (Refer to Section G for Further Information)

1999
Gabion wall constructed as part of ditch raising project.

2001
Failure of gabion structure due to erosion and slope movement

October 2002
Gabion wall rebuilt and slopes flattened.

June 2003
Further slumping of left side

Fall 2003
Slope re-graded and planted with live stakes and wattles.

Reports and Documents

Feb 2001 (KCCL) Emergency Inspection Report
June 2001 (KCCL) Inspection Report
May 2002 (KCCL) Inspection Report
May 2003 (KCCL) Inspection Form
June 2003 (KCCL) Emergency Inspection Report
May 2004 (KCCL) Inspection Form

Wall Reconstruction & Slope Re-grading Report (KCCL), August 20, 2002.
As-Built Report (KCCL), November 1, 2002.