PART B: 2002 SITE VISIT
LANDSLIDE RISK ASSESSMENT
PEACE REGION (PEACE RIVER VALLEY/HIGH LEVEL)

## SITE PH11: WHITEMUD RIVER CROSSING

LEGAL LOCATION: 88-21-W5M

Location along Highway: Station 42+600 to 46+000

AT FILE: SH743:02

Date of Site Visit: 22 May 2002

SH743:02 approaches the valley of the Whitemud River from the south, turning towards the west as it crosses the valley. The valley is approximately 150 m deep. The road follows the valleys of tributaries at each side of the crossing.

Since construction of the road in 1970, sliding has occurred at a number of locations on both sides of the crossing. Slope movements or other activity have been reported at the following sites (bridge is at Station 44+300):

- 42+600: slide of embankment;
- 42+650: sideslope slide, dates back to 1971 and 1983; failure may have been caused by overloading during construction;
- 43+200: slumping of sideslope due to scour by creek;
- 44+700 to 45+000: old slide, no active movement;
- 45+350: sinkhole due to collapse of culvert, culvert replaced;
- 45+800 to 46+000: slide, lime and flyash stabilization carried out in 1984

The road was not surfaced and the traffic volume appeared low.

### Station 42+600, Embankment Slide

Remedial measures were implemented at this slide in November-December 2002. Remedial measures consisted of reconstruction of the slope, incorporating geogrids and drainage layers; construction of a downdrain; erosion protection of the creek bed; and repair of the culvert outlet.

### Significant Observations

- This is a surficial failure of a fill slope at the upstream side of a culvert crossing.
- The fill slope was steep (2H:1V or steeper).
- The slide mass appeared wet.
- The toe of failed mass was encroaching on the culvert inlet.
- The road is a low-traffic unsurfaced secondary highway.
- The slide is approximately 30 m wide and 40 m long.
- The guard rail had been moved towards the center of the road, such that the scarp of the slide was outside the guard rail.

- Slumped material had encroached on the creek bed and was being eroded. The material may have blocked the creek, because there were signs of a water level approximately 0.5 m above the water level at the time of the site visit.

**Changes from Previous Visits**

Possibly, additional movement of the slide mass had occurred. In November 2002, severe erosion of gabions at the culvert outlet was observed (Photos 1,2 & 3). A new culvert outlet was constructed in December 2002.

**Discussion**

This appears to be a failure of the fill slope, which was relatively steep, possibly with a high water table.

**Assessment**

Remedial measures were implemented in November-December 2002.

**Station 42+650**

A subdued scarp was noted at the slide. The scarp was not new, but it had not been observed before. No recent movement observed at this slide.

In October 2002, it was noted that the gabions at the culvert outlet had failed. In December 2002, a new gabion and rip rap outlet structure was constructed at the outlet of the culvert.

**Station 43+200**

No changes were reported at this site.

At this location the road has been shifted into the cut slope, after a failure that resulted in loss of the road prior to 1990. The cut slope is in shale. It is very steep. An accumulation of loose shale has to be removed once a year typically. It is recommended that visual monitoring continue at this site.

**Station 44+700 to 45+000**

No changes were reported at this site.

The road had been shifted uphill of the slide area prior to 1990. Grabens indicate that significant movement has occurred here; however, none of the features appeared recent. A toe was not identified. The slope inclinometers could not be located. It is recommended that visual monitoring continue at this site.

**Station 45+800 to 46+000**

No changes were reported at this site.

Scarps were observed uphill of a culvert outlet halfway down the slope below the road. The old slope inclinometers were located. There appears to be no immediate threat to the road. It is recommended that visual monitoring continue at this site.