

**Slide Name:** (GP 15b) SH 727:02 Ksituan River  
**Inspection Date:** May 4, 2005  
**Inspection by:** Alberta Infrastructure & Transportation and EBA staff listed on Page 1

## 1.0 BACKGROUND

This stretch of highway sidehill fill alignment along the north valley slope of the Ksituan River was widened in 1999 and obvious slide movements were not reported. Since then, the highway was observed to have progressively deteriorated during the past 5 years.

## 2.0 OBSERVATIONS

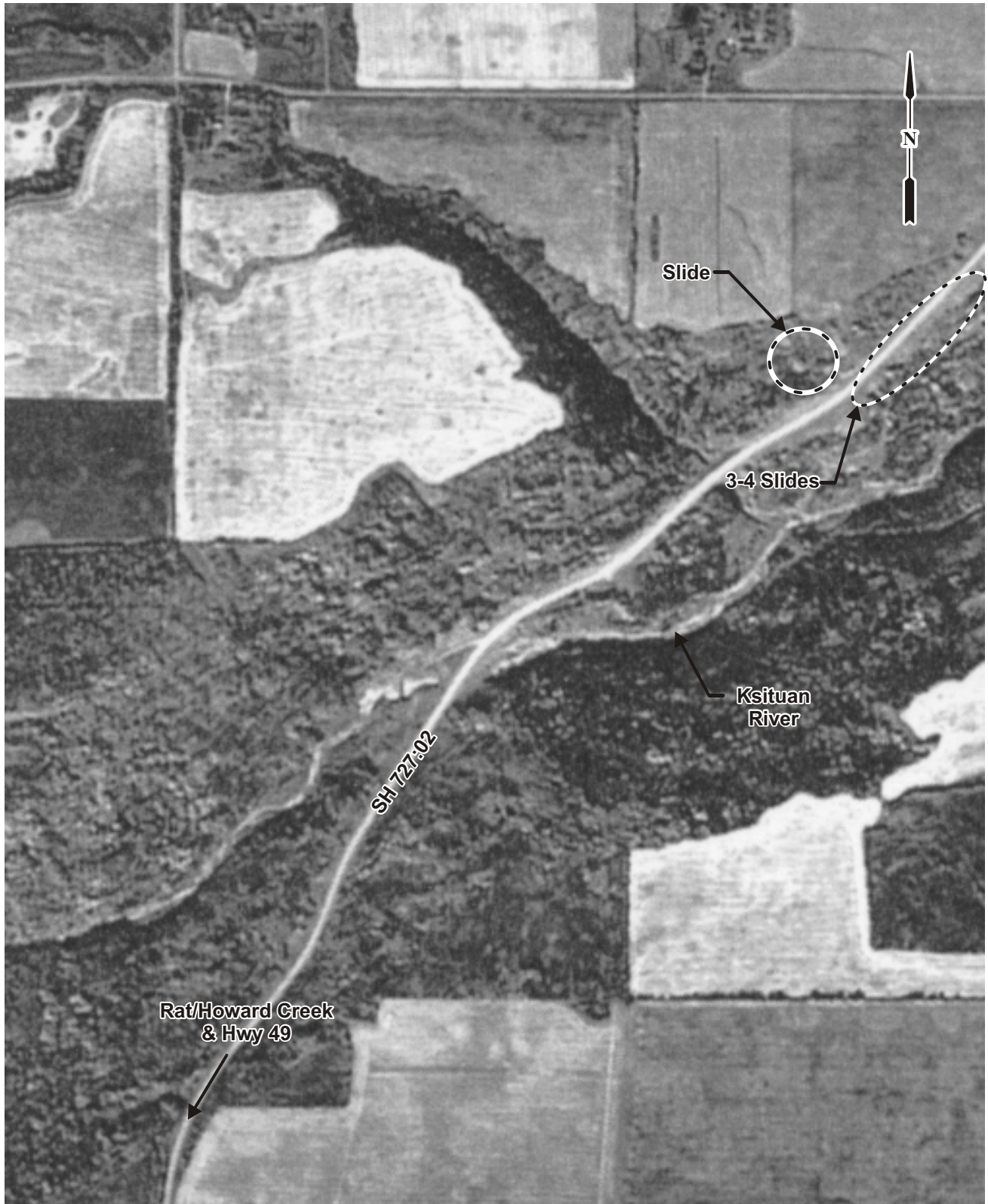
- Along the upper portion of the valley slope:
  - 3 locations of sliding of the sidehill fill has occurred and become noticeable from the roadway elevation. The slide areas, each measured about 50 m in width (along the shoulder edge) and toes onto a bench of the valley slope (which could be a previous local road). Signs of groundwater seepage and willow growth is commonly observed along the toe area of the slide failures and treeline edge of right-of-way. The failures might have gradually retrogressed and become noticeable once they migrated to the highway shoulder. The slides were previously not noticeable because they were located below the highway and difficult to observe from the roadway.
  - 2 locations of backslope failures entailing: (i) an erosion gully formed by flow from upland farm drainage outfall; (ii) a backslope slide approximately 300 m downgrade from the erosion gully.

## 3.0 RISK ASSESSMENT

PF (12) \* CF (5) = 60

## 4.0 ACTION

- The significant deterioration and manifestation of the sideslope slides will eventually impact highway safety and operation. The options of either slide repair or realignment of this roadway should be considered promptly.
- The proposed realignment should include bypassing the Ksituan River slide and selecting a new crossing area.
- Continue visual monitoring of this area. Maintenance forces are requested to record details of resurfacing (gravel placement) and any occurrence of settlement in the future.
- The site should be inspected in 2006.



Based on 1995 Aerial Photograph

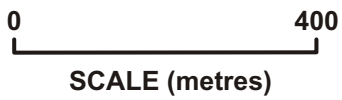


Figure 1  
Site Plan





**Photo 7**

Looking south down Ksituan River valley slope (north side)

- 1) Upper side of sideslope (foreground of photo) at elbow of fill and natural valley slope
- 2) Adjacent lower side at sideslope (middle centre of photo before parked vehicle)
- 3) Erosion gully a backslope with upland farm (at top right of photo)
- 4) A backslope new slide at centre of photo (to right and above parked vehicle - SEE PHOTO 12).





**Photo 12**

Looking south (downgrade) from backslope - new backslope slide (30m x 60m area) at approx 500m from top.





**Photo 8**

Looking from toe and side of slide (up sideslope)

- 1) Slide possibly triggered by seepage and long term erosion outfall from highway ditch down elbow of fill and natural valley slide (treed area to right of photo)
- 2) Slumping soil block movements of shallow to medium seated nature
- 3) Seepage exit of groundwater probable, willow growth at bottom toe area



**Photo 9**

Looking along toe of slide

- 1) Headscarp of upper slide (with adjacent lower slide at background just below vehicle)
- 2) There is a bench (to left and not shown in photo) flat area about 30 m - 40 m space followed by (a) old road path clearing (approx. 10 m space), (b) treed slope of natural river valley
- 3) Space (to left of photo) can be available for earthwork berm

**Note: Photos Taken in March 2005**

**Upper Slide at Sideslope**  
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**Photo 10**

Looking upgrade at a lower slide from upper slide

- 1) Headscarp at about 2 m setback separation from shoulder edge
- 2) Slide about 50 m (wide along shoulder) X 60 m (long, down slope) (slope at approx. 2.5H:1V)
- 3) Note (background) ditch outflow into upper slide at far top of photo
- 4) Note: possible seepage influence from upland and backslope erosion gully (left) across roadway to affect stability of slope (right)



**Photo 11**

Looking upgrade

**Centre Lower Slide at Sideslope**  
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**Photo 11a**

Looking upgrade. Lower slide at sideslope. Slide at approx 50m south of centre slide. Headscarp at approx 15m setback separation from road shoulder edge.





**Photo 13**  
3 m depth erosion gully at backslope  
Effect of erosion from upland (farm) runoff



**Photo 14**  
Looking south downgrade (along top of valley slope edge of upland farm area)  
1) Surface water outfall down backslope to cause concentrated flow erosion  
2) No swale or catchwater ditch (dyke) along perimeter of upland farm



**Photo 15**  
Looking north upgrade (along top of valley slope)  
1) Surface water outfall down backslope to cause concentrated flow erosion  
2) No swale or catchwater ditch (dyke) along perimeter of upland farm



**Photo 16**  
Toe of slope  
1) Water ponding and erosion debris  
along backslope ditch