

GEOHAZARD ASSESSMENT PROGRAM
NORTH CENTRAL REGION – ATHABASCA
2010 INSPECTION



Site Number	Location	Name	Hwy	km
NC 6	11 km E. of Slave Lake	Mitsue Lake	2:46	47.5
Legal Description		UTM Co-ordinates (NAD 83)		
NW-7-72-4-W5M		11 N 6177576	E 664053	

	Date	PF	CF	Total
Previous Inspection:	June 22, 2009	8	2	16
Current Inspection:	May 28, 2010	8	2	16
Road AADT:	3160	Year:	2009	
Inspected By:	Tarek Abdelaziz, Renato Clementino (Thurber) Neil Kjelland, Gordon Wolters, (TRANS)			
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

Primary Site Issue:	Side slope landslide movements related to high seasonal groundwater levels.	
Dimensions:	About 100 m long	
Date of any remediation:	Slope flattening in Fall 2007 and drainage improvements consisting of installation of sub-drains, construction of riprap lined swale, flushing and tying existing sub-horizontal drains to a drainage collection manhole at the bottom of the slope. The highway was overlaid in Fall 2008.	
Maintenance:	Remediation of erosion gullies noted within the swale and placement of additional rip rap to prevent future erosion in Fall 2008	
Observations:	Description	Worse?
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>
<input type="checkbox"/> Slope Movement		<input type="checkbox"/>
<input type="checkbox"/> Erosion		<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	Four of the sub-horizontal drains were flowing into the manhole. The top of the water inside the manhole was about 1.0 m below existing ground surface at the manhole location. The drainage swale and culvert were dry.	<input type="checkbox"/>
<input type="checkbox"/> Bridge/Culvert Distress		<input type="checkbox"/>
<input type="checkbox"/> Other		<input type="checkbox"/>
Instrumentation: (2SIs, 4 SPs)		
Rate of movement of 9 mm/yr in SI1.No discernable movement in SI3. Water levels decreased in all of the standpipe piezometers.		

Assessment (Refer to attached Figure):

Since the implementation of the remedial measures, the operational slope inclinometers continued to show either creep movement or no discernable movement. The operational four sub-horizontal drains continued to yield flow. The water level inside the manhole raised by about 1.5 m compared to last year, presumably indicating that the flow rates increased significantly since our last site inspection in 2008.

No signs of slope instability or pavement distress were noted during the site visit. The site observations and the instrument readings reflect the effectiveness of the implemented remedial measures.

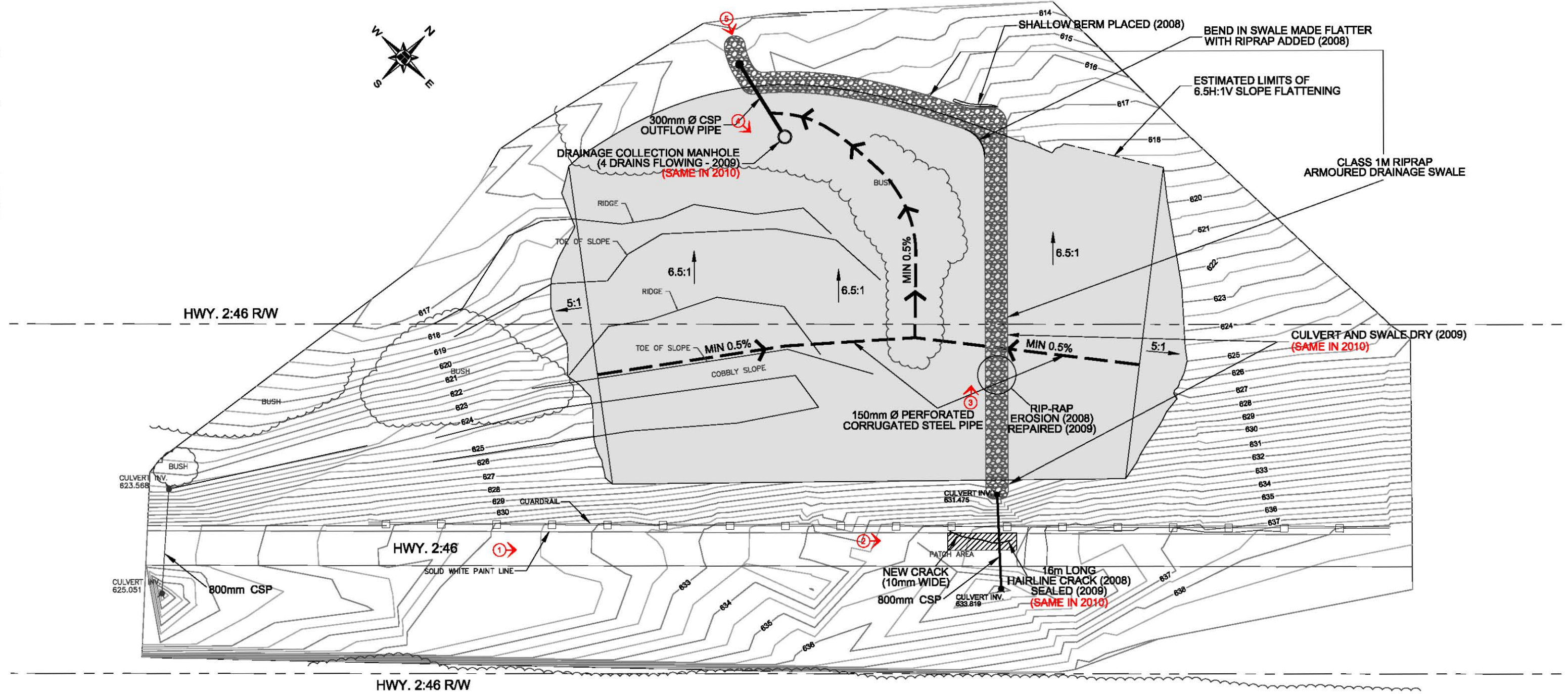
Recommendations:

The site conditions have not changed from last year and, therefore, the risk factor has not been changed for this site.

As discussed on site, this site will be removed from the Geo-hazard Visual Assessment Program. However, reading instruments on an annual basis will continue to assess the effectiveness of the remedial measures.

A Standard Alberta Transportation's lock was used to tie down the manhole lid.

The MCI should watch for any signs of movement and particularly after heavy precipitation events. We also recommend that the local MCI undertake a periodic inspection of the drains inside the manhole. If the flowing drains become plugged and dry in the future, it will be necessary to flush these drains to avoid the probably of raising ground water levels within the repaired slope area. The standpipe water levels will provide another indication of the ongoing effectiveness of the drains.



LEGEND

- SUBDRAIN ALIGNMENT
- RIPRAP ARMoured CHANNEL
- EXISTING PIPES (HORIZONTAL DRAINS)
- PHOTOGRAPH APPROXIMATE LOCATION AND DIRECTION (JUNE 18, 2009)

MAY 28, 2010 OBSERVATIONS ARE SHOWN IN RED

NOTE

MANHOLE APPROXIMATE GPS COORDINATE (UTM NAD83) 11U N6122311, E651653

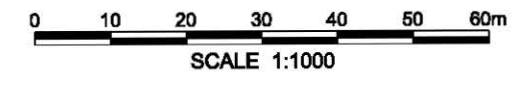


FIGURE NC6-1A SITE PLAN
NC6 - HWY2:46 km 47.5 MITSUE LAKE
NW 7-72-4-W5M



Photo#1 General view of highway surface conditions, looking northeast



Photo#2 General view of the highway surface at the sealed crack location, looking northeast



Photo#3 Looking towards the riprap-lined swale from the crest of the slope (looking west)



Photo#4 Looking inside the drainage collection manhole



Photo#5 Looking at the outlet flow pipe from the bottom of the slope