



January 17, 2008

File: 15-85-73

Alberta Infrastructure and Transportation
Room 301, Provincial Building
9621 - 96 Avenue
Peace River, Alberta
T8S 1T4

Attention: Mr. Ed Szmata

**PEACE REGION (SWAN HILLS AREA) GEOHAZARD ASSESSMENT
HWY 2A:54 (SH 17, SITES #1 & #1A, WEST OF GUNN'S CREEK)
2007 ANNUAL INSPECTION REPORT**

Dear Sir:

This letter documents the 2007 annual site inspection of areas of erosion located along Hwy 2A:54 on both sides of the highway about 8.5 km east of Hwy 49 just west of Gunn's Creek, west of High Prairie, Alberta. Thurber Engineering Ltd. (Thurber) undertook this inspection in partial fulfillment of our Geotechnical Services for Geohazard Assessment, Instrumentation Monitoring and Related Work contract (CE047/2004) with Alberta Infrastructure and Transportation (INFTRA).

Mr. Barry Meays, P.Eng. and Mr. Gurpreet Bala, M.Sc. of Thurber undertook the inspection on June 13, 2007 in the presence of Mr. Roger Skirrow, P. Eng., Mr. Rocky Wang, Mr. Ron Konowalyk, Mr. Brett McPhedran and Mr. Bruce Henderson, all of INFTRA.

1. BACKGROUND

The previous assessments covered two areas of erosion located about 400 m west of the former Gunn's Creek Slide area. The erosion for Site #1 was located at the base of the south facing sideslope of a 4 m high embankment fill, at the outlet of a 1200 mm diameter centerline culvert. High spring runoff flows in 2003 had created a scour hole and eroded a channel downstream of the culvert.

Site #1A was located in the ditch on the north side of the highway, directly opposite Site #1. It is understood that an abandoned 600 mm diameter culvert was

covered with geotextile and buried below the north ditch in 1996. During the heavy spring runoff period in 2003 the ditch bottom was subject to erosion partially exposing the abandoned culvert. The inlet of the 1200 mm diameter culvert on the north side of the highway at Site #1A was badly rusted and perforated.

A call-out was completed on April 21, 2005, due to the continued degradation of Site #1 on the south side of the highway. Observations at that time indicated that piping beneath the base of the culvert may have occurred and contributed to debased conditions, due to water bubbling up inside the pipe just past the inlet and to the upward tilted detached culvert outlet. The backscarp above the detached culvert at that time was almost vertical with the top edge the scarp measured to be only 3.5 m from the edge of the pavement, and embankment stability on the south side of the highway was threatened. This call-out report was dated May 24, 2005 and is included in the Site Binder.

The erosion sites were repaired under Contract No. 7172/05 and Job No. Y967S from January 21 to February 11, 2006. However the seeding and grouting of the culvert liner was undertaken in May 2006. The work at Site 1A involved the removal of the damaged section of existing 600 mm CSP, installing the new 500 mm CSP and its extension, and construction of a surface swale. At Site 1, the work involved excavation of the upper part of the slide, installing a SWSP culvert liner and its extension, grouting of the liner, rebuilding of the upper slope with compacted clay/gravel fill, construction of a surface swale, placement of riprap armour at the culvert inlet and outlet, and top-soiling and seeding the finished slope and disturbed areas. A copy of the construction drawings were previously included in Section G of the binder.

2. SITE OBSERVATIONS

The changes in condition since last year are shown on the attached site sketch plan and discussed below. Selected photographs taken during the visit are also attached.

The reconstructed slope was performing to satisfaction. The grass growth was very thick and lush green with primarily clover growing through the entire site. The silt fences were sitting loose at couple of spots and were torn at other spots.

Slight seepage was observed to be coming out of the beaver dam on the north side of the highway. There was trace amount of flow from the sub-drain installed at Site 1A. The drainage bowl at the culvert outlet had ponded water and was performing as anticipated. No significant flow was however observed along the swale.

3. ASSESSMENT

The reconstructed slope and erosion repairs appeared to be working satisfactorily.

4. RISK LEVEL

The risk level for this site has been assessed as follows:

$$PF(1) * CF(3) = 3$$

A Probability Factor of 1 is considered appropriate since the slide is inactive with a low probability of remobilization. A Consequence Factor of 3 is still considered appropriate since the embankment fill is fairly high and at a culvert crossing but the repaired failure is currently not affecting the pavement and the risk of total closure of both highway lanes is relatively small.

5. RECOMMENDATIONS

Since repairs have been only been in place for a little over a year it is recommended that periodic visual inspections of the site be carried out by INFTRA's Maintenance Contract Inspector to gauge how well they are working and to quickly identify if any further maintenance items arise. However, this site could be removed from the geohazard monitoring program.

The silt fences can now be removed from all the locations.



6. CLOSURE

We trust this assessment and recommendations meet with your needs at this time. Please contact the undersigned should questions arise or if the slide condition worsens.

Yours very truly,
Thurber Engineering Ltd.
Don Proudfoot, P.Eng.
Review Principal

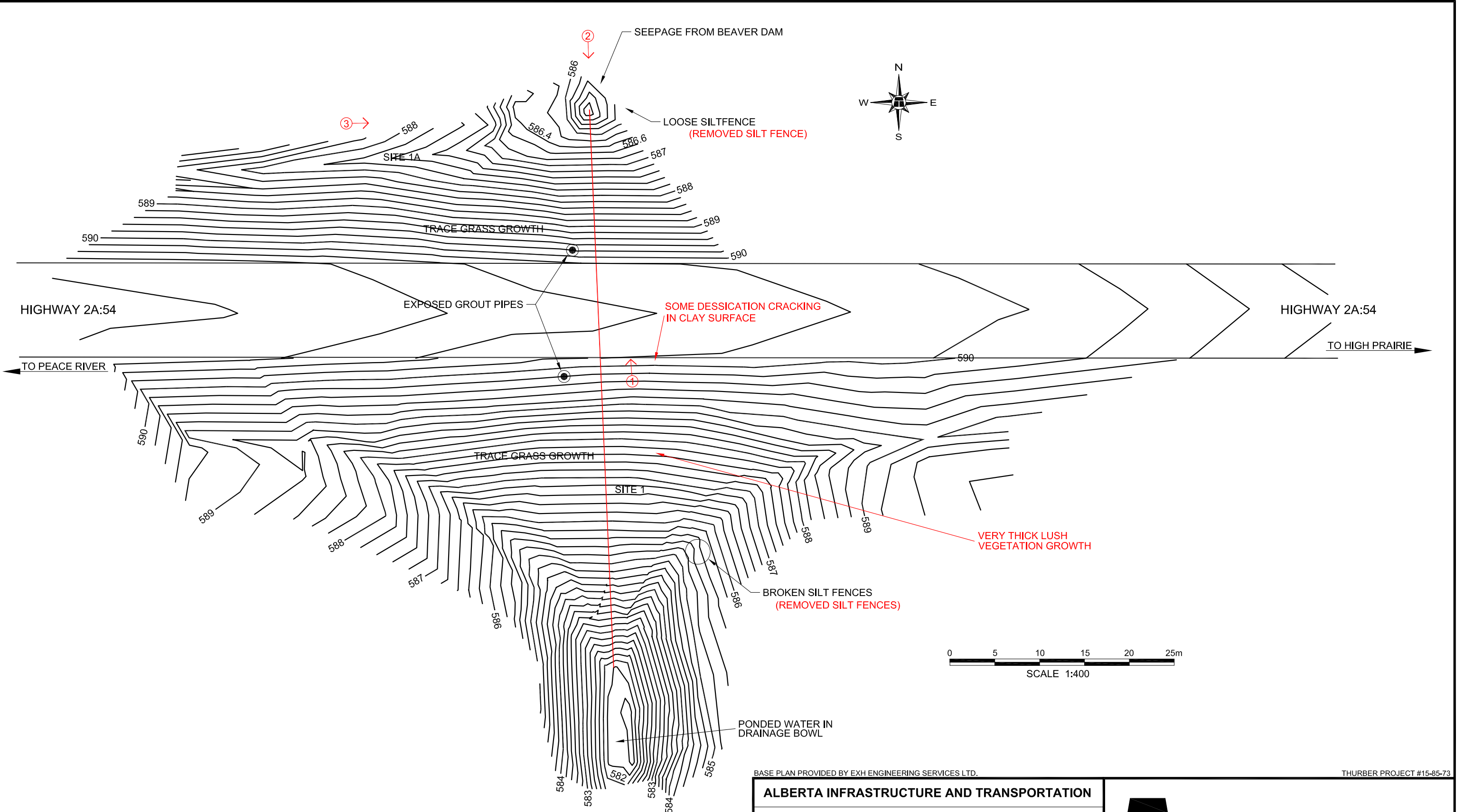
Barry Meays, P.Eng.
Project Engineer

Gurpreet Bala, M.Sc.
Project Coordinator
/dw

Attachments

cc: Mr. Roger Skirrow, P. Eng.
Director of Geotechnical Services, INFTRA

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LEGEND
 ① → PHOTO AND DIRECTION

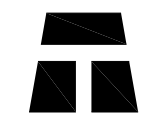
NOTE
 JUNE 13, 2007 OBSERVATIONS ARE SHOWN IN RED

BASE PLAN PROVIDED BY EXH ENGINEERING SERVICES LTD.

THURBER PROJECT #15-85-73

ALBERTA INFRASTRUCTURE AND TRANSPORTATION

**AS-BUILT SITE PLAN SHOWING
 VARIOUS CONSTRUCTED FEATURES**



THURBER ENGINEERING LTD.
 GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

Highway 2A:54 West of Gunn's Creek WEST OF HIGH PRAIRIE, AB

ENGINEER: GSB/BHM	DRAWN: PS	APPROVED:
DATE: JANUARY 2008	SCALE: 1:400	DRAWING No. 15-85-73-SH17-1



Photo 1 - Looking south at the culvert outlet, swale and reconstructed slope,
June 13, 2007.



Photo 2 - Looking south at the culvert inlet, June 13, 2007.



Photo 3 - Looking east towards culvert inlet, sub-drain outlet and swale riprap of Site #1A, June 13, 2007.