

GEOHAZARD ASSESSMENT PROGRAM
PEACE RIVER / HIGH LEVEL AREA
2011 INSPECTION



**Government
of Alberta** ■
Transportation

THURBER ENGINEERING LTD.

| Site Number | Location | Name | Hwy | km |
|---------------------|------------------------|------------------------|----------|---------------|
| PH57 | North of Red Earth, AB | Wabasca River Crossing | 88:16 | Approx. 52 |
| Legal Description | | UTM Co-ordinates | | |
| NW1/4 22-102-09-W4M | | 11V N 6415765 | E 595814 | |

| | Date | PF | CF | Total |
|-----------------------------|--|--------------|------|-------|
| Previous Inspection: | June 4, 2010 | 12 | 2 | 24 |
| Current Inspection: | June 7, 2011 | 11 | 2 | 22 |
| Road AADT: | 260 | Year: | 2010 | |
| Inspected By: | (Don Proudfoot and Harjeet Panesar, Thurber Engineering) (Neil Kjelland and Ed Szmata, Alberta Transportation) | | | |
| Report Attachments: | <input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items | | | |

| | | | |
|--|---|-------------------------------------|-------------------------------------|
| Primary Site Issue: | Back slope failures | | |
| Dimensions: | See drawing | | |
| Date of any remediation: | None in the last year | | |
| Maintenance: | None in the last year | | Worsened? |
| Observations | Description | Yes | No |
| <input type="checkbox"/> Pavement Distress | | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Slope Movement | Shallow slope failures in backslope | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Erosion | Erosion caused by water runoff and continued seepage has attenuated due to growth of vegetation | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Seepage | Continued seepage from the water bearing sand and gravel layer located at the top of the slide | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Bridge/Culvert Distress | | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Other | | <input type="checkbox"/> | <input type="checkbox"/> |

Instrumentation:
None

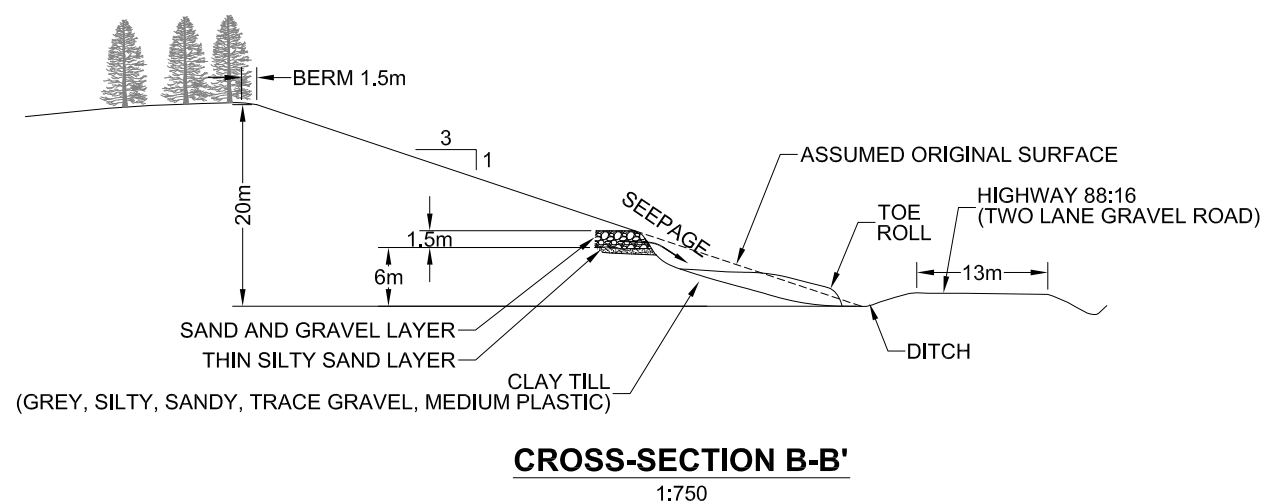
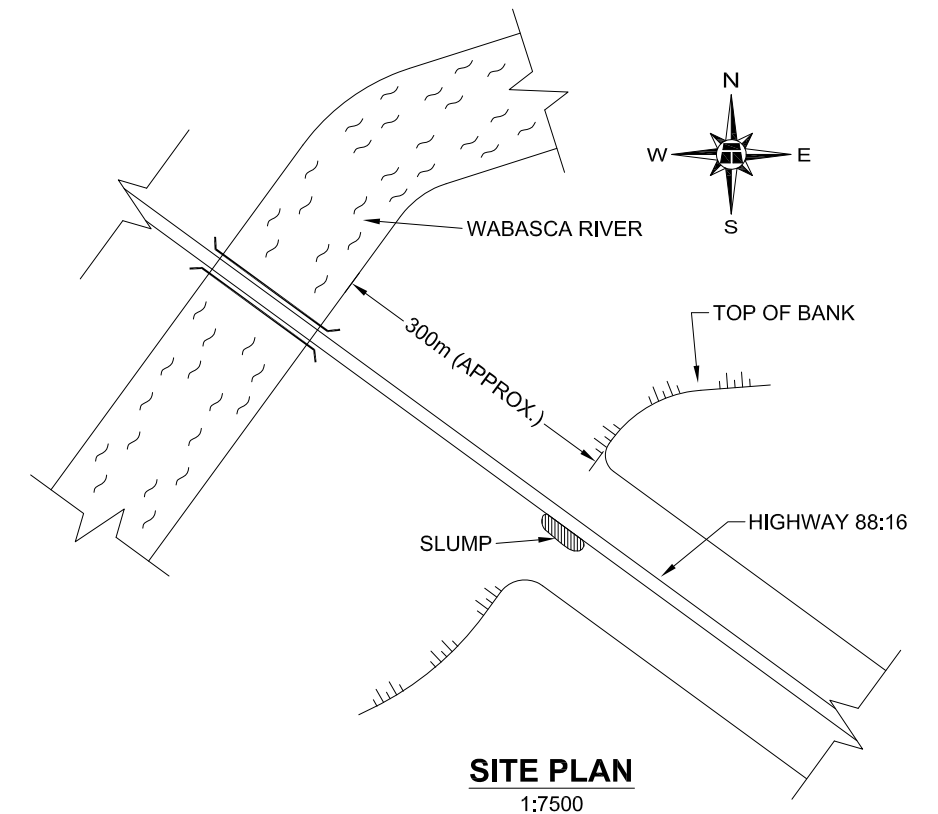
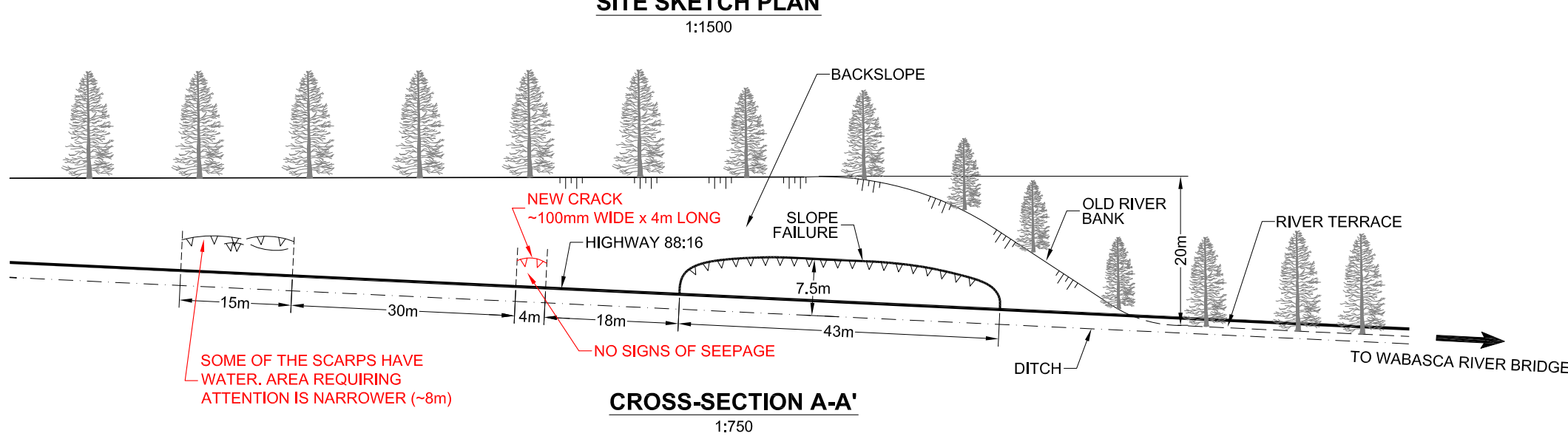
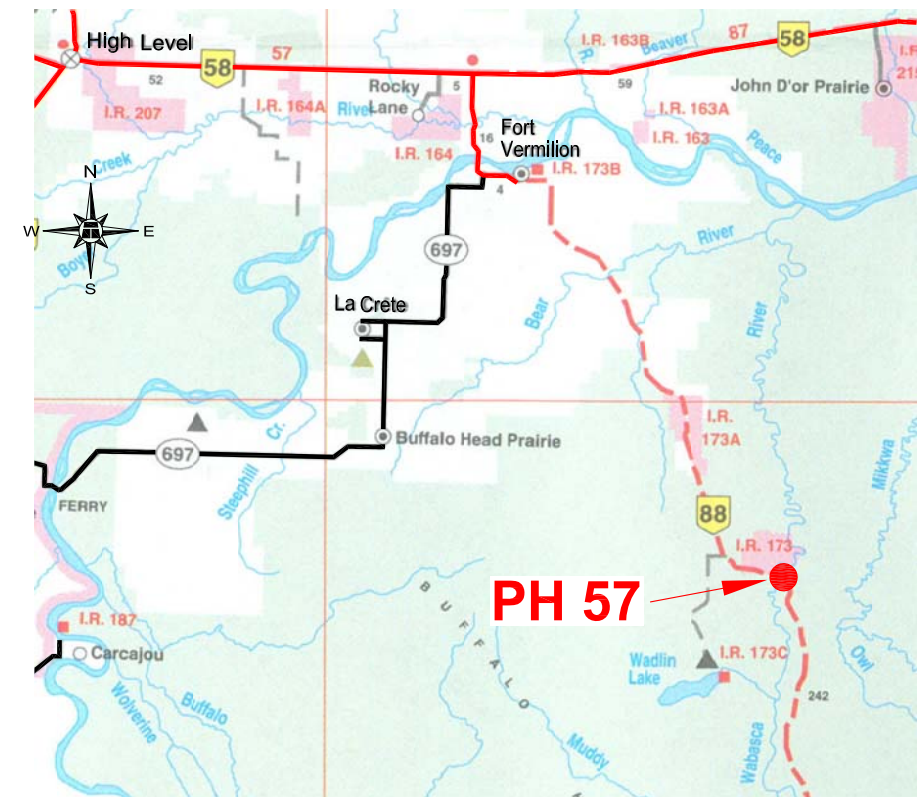
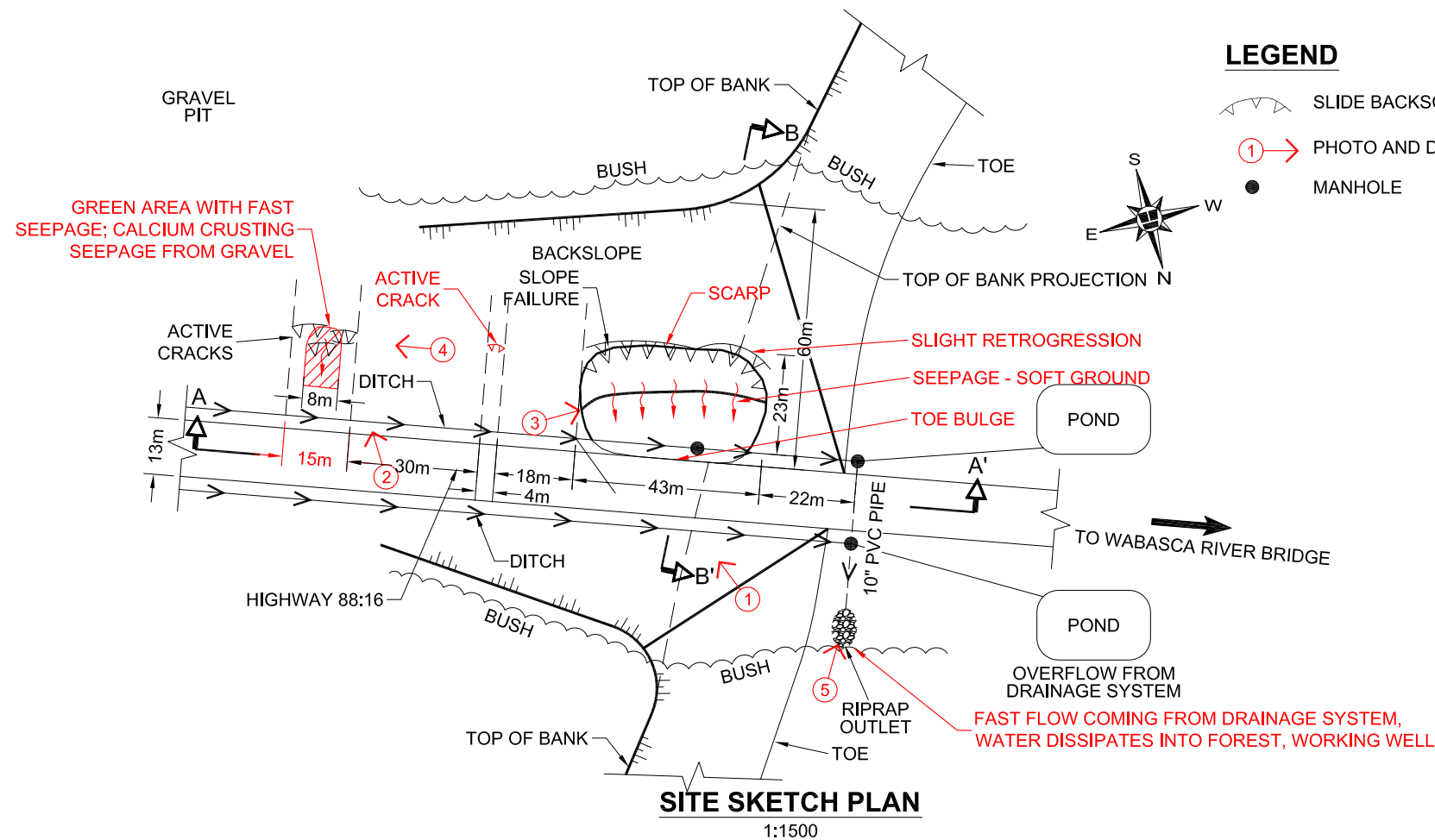
Assessment (Refer to Figure PH57-1):
The slump appears to be a shallow slope failure produced by erosion and saturation of the clay till caused by seepage from water bearing sand and gravel layers located over the clay till. Calcium crusting seepage was observed on active cracks east of the main scarp. The seepage that drains from the gravel pit to the north towards the Wabasca River appears to be intercepted by the south backslope of Highway 88. This condition is supported by the observation of the discharge draining in the south highway ditch and subdrain system, which was considerably greater than the discharge draining on the north ditch and subdrain. Fast water flow was observed through the subdrain system north of the highway and the water dissipates fast into the forest. The subsurface drainage system appears to be working well.

Recommendations:

Seepage mitigation measures are recommended. These may consist of gravel drains installed in the south backslope to conduct the water downslope from the gravel and sand layer into the south subdrain system. For this purpose, five drains are recommended which may consist of trenches 1 m wide and 1.5 m deep excavated and backfilled with washed gravel enveloped in non-woven geotextile. The surficial 0.3 m of the excavated trenches should be backfilled with clay and topsoil and seeded. The gravel drains should be spaced about 7.5 m center-to-center across the backslope through the slump area. The upslope end of the gravel drain should extend at least 6 m (on 3H:1V inclination) upslope of the observed seepage zone. The water from the gravel drains would discharge into perforated stub pipes connecting into the top of the south ditch subdrain system at an estimated depth of about 1.5 m to 2 m. Details of the existing drainage system should be reviewed in developing the design.

After the slope drains have been installed and the slide area has dried, the slide material should be removed (taking care not to disturb the drains) and the lower slope benched and rebuilt to its original line with salvaged, moisture conditioned clay till. It should then be promptly topsoiled and seeded.

It is understood that Focus is to design remedial measures in conjunction with a base paving project and will follow Thurber's recommendations for gravel drains. AT suggests not to tie drains into the storm pipe system and would prefer to daylight drains into the ditch and then deal with ice in the ditch, if required.



NOTES :

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. PREVIOUS OBSERVATIONS SHOWN IN BLACK
3. JUNE 2011 OBSERVATIONS SHOWN IN RED

FIGURE PH57-1
PH57 : HWY 88:16 - EAST OF WABASCA RIVER CROSSING
PEACE REGION (PEACE RIVER / HIGH LEVEL) GEOHAZARD ASSESSMENTS

DATE : JUNE 2011
THURBER PROJECT # 15-16-264



Photo 1 - View of slope failure on south backslope, looking south.



Photo 2 - View of active cracks east of main slump, looking south.



Photo 3 - View of backslope, looking west.



Photo 4 - View of cracks east of the site, looking east.



Photo 5 – Fast flow through subdrain, looking southwest.