



THURBER ENGINEERING LTD.

**ALBERTA TRANSPORTATION
PEACE REGION (PEACE RIVER / HIGH LEVEL)
INSTRUMENTATION MONITORING RESULTS**

SPRING 2012

SECTION C

SITE PH47: HWY 690:02, DEADWOOD SLIDE

1. OBSERVATIONS

1.1 Field Program and Instrumentation Status

Two slope inclinometers (SI10-1 and SI10-2), three standpipe piezometers (SP10-1, SP10-3, and SP10-5) and two vibrating wire piezometers (VW10-1 and VW10-2) were monitored at the Hwy 690:02, Deadwood Slide site on June 11, 2012 by Mr. Chad Gray, C.E.T. and Ms. Jessica Pryer, T.T., of Thurber Engineering Ltd. (Thurber). SI10-1 and SI10-2 have sheared at 10.7 m and 6.4 m depth, respectively, since the last readings on November 11, 2011.

The following instruments were installed between September 10, 2010 and November 9, 2010 by Hoggan Engineering & Testing (1980) Ltd. (Hoggan) to monitor the Deadwood slide:

- Two slope inclinometers (SI10-1 and SI10-2)
- Three standpipe piezometers (SP10-1, SP10-3 and SP10-5)
- Two vibrating wire piezometers (VW10-1 and VW10-2)

The SIs were read using a RST Digital Inclinometer probe with 2 ft wheelbase and a RST Pocket PC readout. Inclinometer reading depths were defined as per cable markings with



respect to the top of the inclinometer clamps. A Sinco dip meter was used to read the standpipe piezometers. The vibrating wire piezometers were read using a GEO-KON GK-404 digital VW data recorder device.

2. INTERPRETATION

2.1 Zones of Movement

Zones of old movement are summarized in Table PH47-1 at the end of this report. This table also provides a historical account of the total movement, the depth of movement, and the maximum rate of movement that has occurred at this site since the initialization of the slope inclinometers.

2.2 Interpretation of Monitoring Results

Slope inclinometer SI10-1 and SI10-2 have sheared at 10.7 m and 6.4 m depth, respectively, since the last readings on November 4, 2011 by Hoggan.

The water level decreased in standpipe piezometer SP10-1 by 0.04 m since the previous reading on November 4, 2010. The water level in SP10-3 has decreased by 0.24 m since the previous reading on July 27, 2011. The water level in SP10-5 has decreased by 0.70 m since the previous reading on July 27, 2011. The results of the standpipe piezometers are summarized in Table PH47-2.

Since the previous reading on July 27, 2011, the water level in vibrating wire piezometer VW10-1 increased by 0.62 m and the water level in VW10-2 decreased by 0.14 m. Table PH47-3 summarizes the vibrating wire piezometer readings.

3. RECOMMENDATIONS

3.1 Future Work

The instruments should be read again during the fall 2012 program.

3.2 Instrumentation Repairs

No Instrumentation repairs are required at this time.



**TABLE PH47-1
 SPRING 2012 – DEADWOOD SLIDE
 INSTRUMENTATION READING SUMMARY**

Date Monitored: June 11, 2012

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AT NOTED DEPTH SINCE INITIAL READING (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING	RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
<i>SI10-1</i>	<i>March 26, 2011</i>	<i>5 mm at 8.5 m in 172° direction</i>	<i>30 mm/yr</i>	<i>Sheared at 10.7 m</i>	<i>November 4, 2011*</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
<i>SI10-2</i>	<i>March 26, 2011</i>	<i>8 mm at 6.7 m in 161° direction</i>	<i>48 mm/yr</i>	<i>Sheared at 6.4 m</i>	<i>November 4, 2011*</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Figure PH47-1 in section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.

Note: * Previously read by Hoggan Engineering & Testing (1980) Ltd as impassable by the SI probe.



**TABLE PH47-2
 SPRING 2012 – DEADWOOD SLIDE
 STANDPIPE PIEZOMETERS
 INSTRUMENTATION READING SUMMARY**

Date Monitored: June 11, 2012

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM WATER LEVEL BGS (m)	MEASURED WATER LEVEL BGS (m)	PREVIOUS READING (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
SP10-1	November 4, 2010	9.66	559.54	Active	4.60 on November 4, 2010	4.64	4.60	-0.04
SP10-3	November 4, 2010	8.90	565.44	Active	1.14 on May 27, 2011	2.46	2.22	-0.24
SP10-5	April 27, 2010	2.92	561.27	Active	0.63 on July 27, 2011	1.33	0.63	-0.70

Figure PH47-1 in section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.



**TABLE PH47-3
 SPRING 2012 – DEADWOOD SLIDE
 VIBRATING WIRE PIEZOMETERS
 INSTRUMENTATION READING SUMMARY**

Date Monitored: June 11, 2012

INSTRUMENT	DATE INITIALIZED	TIP ELEV. (m)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEVATION (m)	GROUNDWATER ELEV. (m) (SPRING 2012)	GROUNDWATER ELEV. (m) (July 27, 2011)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW10-1 (100D10918)	April 27, 2011	553.50	562.00	Operational	560.49 m on June 11, 2012 (1.51 mBGS)	560.49 (1.51 mBGS)	559.87 (2.13 mBGS)	0.62
VW10-2 (100D10917)	April 27, 2011	555.17	560.96	Operational	558.89 m on May 27, 2011 (2.07 mBGS)	558.74 (2.22 mBGS)	558.88 (2.08 mBGS)	-0.14

Figure PH47-1 in section D provides a sketch of the approximate locations of the monitoring instrumentation for this site.