

Site Number	Location	Name	Hwy	km
PH080	Hwy 688:02 C1 15.4	McKinney Creek Slide	688:02	Km 15.4
Legal Description: 16-16-84-20 W5		UTM Co-ordinates		
		11U E 494733	N	6238402

Current Monitoring:	09-Jun-2025	Previous Monitoring	19-Sep-2024
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Godfred Etiendem, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs):	Pneumatic Piezometers (PN):	Vibrating Wire Piezometers (VW): VW18-1, VW18-2, and VW18-3	Standpipe Piezometers (SP):
Load Cell (LC):	Strain Gauges:	SAAs:	Others:

Readout Equipment Used			
Slope Inclinometers:	Pneumatic Piezometers:	Vibrating Wire Piezometers: Geokon GK404 vibrating wire readout	Standpipe Piezometers:
Load Cell:	Strain Gauges:	SAAs:	Others:

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	Vibrating wire piezometer VW18-1 showed an increase in groundwater level of 0.02 m since the fall of 2024 readings. VW18-2 and VW18-3 showed a decrease in groundwater level of 0.72 m and 0.44 m, respectively, since the fall of 2024 readings. VW18-1, VW18-2 and VW18-3 showed a prior trend of diminishing groundwater levels since the completion of construction. The groundwater levels at VW18-1, VW18-2 and VW18-3 locations appear to have levelled out with some seasonal variations. The piezometers had all previously shown their highest groundwater levels during construction as fill was placed at their respective locations. Figures PH080-1, PH080-2 and PH080-3 show the response of each of the piezometers relative to fill height during construction as well as the subsequent decrease in pore water pressure. Figure PH080-4 shows a combined plot of the groundwater elevations of all three vibrating wire piezometers.
Future Work:	These piezometers were installed to monitor pore water pressure responses during fill placement of the culvert replacement project in 2019. The piezometers all show stable water levels that are well below peaks reached during construction. These instruments have served their purpose, and it suggested to remove them from the instrumentation monitoring program.

Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	• Table PH080-1: Spring 2025 – HWY 688:02 McKinney Creek Culvert (Km 15.4) - BF72477 Vibrating Wire Piezometer Instrumentation Reading Summary • Statement for Use and Interpretation of Report • APPENDIX A - PH080-1 SPRING 2025 - o Field Inspector's report - o Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 PH080) - o Figure PH080-1 (VW18-1 Readings) - o Figure PH080-2 (VW18-2 Readings) - o Figure PH080-3 (VW18-3 Readings) - o Figure PH080-4 (Combined VW Piezometer Readings)
---------------------	--

We trust this report meets your requirements at present. If you have any questions, please contact the undersigned at your convenience.

Yours very truly,
Thurber Engineering Ltd.
Tarek Abdelaziz, Ph.D., P.Eng.
Partner | Senior Geotechnical Engineer

Yasir Khan, E.I.T.
Geotechnical Engineer-In-Training

Table PH080-1: Spring 2025 – HWY 688:02 McKinney Creek Culvert (Km 15.4) - BF72477 Vibrating Wire Piezometer Instrumentation Reading Summary

Date Monitored: June 09, 2025

INSTRUMENT	DATE INITIALIZED	TIP Elevation (m)	CURRENT STATUS	MAXIMUM GROUNDWATER ELEVATION (M)	CURRENT GROUNDWATER ELEVATION (m)	PREVIOUS GROUNDWATER ELEVATION (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW18-1 (VW47342)	July 26, 2018	545.59	Operational	551.90 on October 30, 2018	547.82	547.80	0.02
VW18-2 (VW47343)	July 26, 2018	545.82	Operational	560.50 on August 16, 2019	548.88	549.60	-0.72
VW18-3 (VW45176)	August 8, 2018	559.84	Operational	554.93 on July 24, 2019	548.97	549.41	-0.44

Drawing 32121-PH080 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

STATEMENT FOR USE AND INTERPRETATION OF REPORT

1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE OF THE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives, and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT.** Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

5. INTERPRETATION OF THE REPORT

- a) **Nature and Exactness of Soil and Contaminant Description:** Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors is inherently judgement-based. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other parties making use of such documents or records with or without our express written consent need to be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b) **Reliance on Provided Information:** The evaluation and conclusions contained in the Report have been prepared based on conditions in evidence at the time of site inspections and based on information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) **Design Services:** The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber is recommended to be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design need to be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) **Construction Services:** During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions to confirm and document that the site conditions do not materially differ from those conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or other parties who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes, but is not limited to, decisions made to develop, purchase, or sell land, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.



**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING RESULTS**

SPRING 2025

**APPENDIX A
DATA PRESENTATION**

SITE PH080: HWY 688:02 McKINNEY CREEK SLIDE (KM 15.4) - BF72477

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
PEACE REGION (PEACE RIVER DISTRICT)
INSTRUMENTATION MONITORING FIELD SUMMARY (PH080)
SPRING 2025**

Location: McKinney Creek Slide (Hwy 688:02 C1 15.422) - BF72477
File Number: 32121

Readout: GK 404, SN 364
Temp: 14
Read by: NKR/GE

VIBRATING WIRE PIEZOMETER (VW) READINGS

VW #	Serial Number	GPS Location (UTM 11)		Date	Reading Dg	Temperature (deg C)
		Easting (m)	Northing (m)			
VW18-1	VW47342	494733	6238402	09-Jun-25	8666.6	3.1
VW18-2	VW47343	494733	6238402	09-Jun-25	8656	3
VW18-3	VW45176	494859	6238380	09-Jun-25	8542.3	2.9

INSPECTOR REPORT

VW18-1 and VW18-2 cables are west of the highway, north of the culvert outlet near the bush line. VW18-3 cable is east of the highway, north of the creek near the crest of the hill
VW 18-1,18-2 and 18-3 needs stickup protector or enclosure box. Currently the wires are lying on ground. See photographs

FIGURE PH080-1
HWY 688:02 McKINNEY CREEK CULVERT SLIDE - VW18-1
(WEST SIDE OF CULVERT)

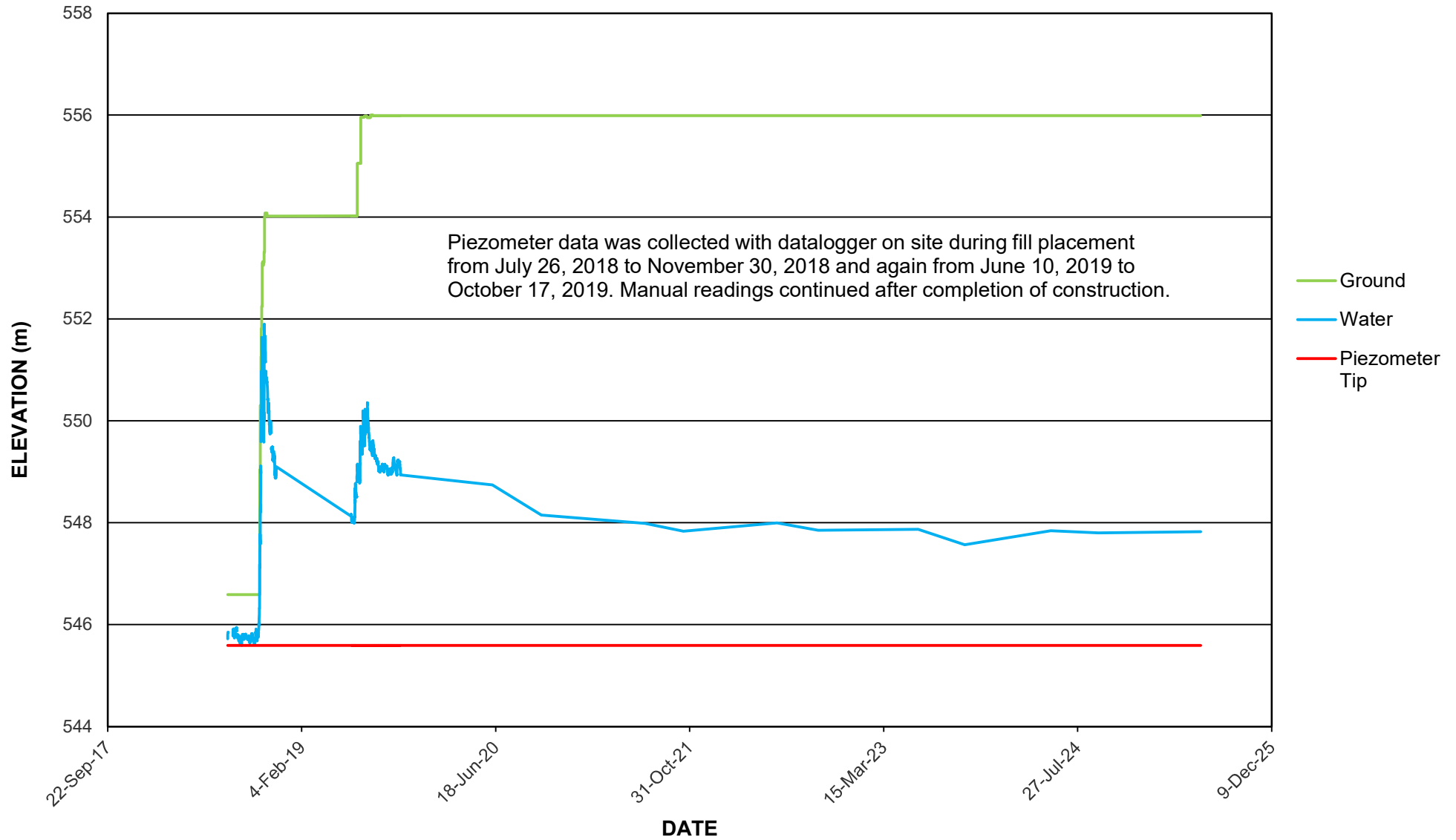


FIGURE PH080-2
HWY 688:02 McKINNEY CREEK CULVERT SLIDE - VW18-2
(CENTER OF CULVERT)

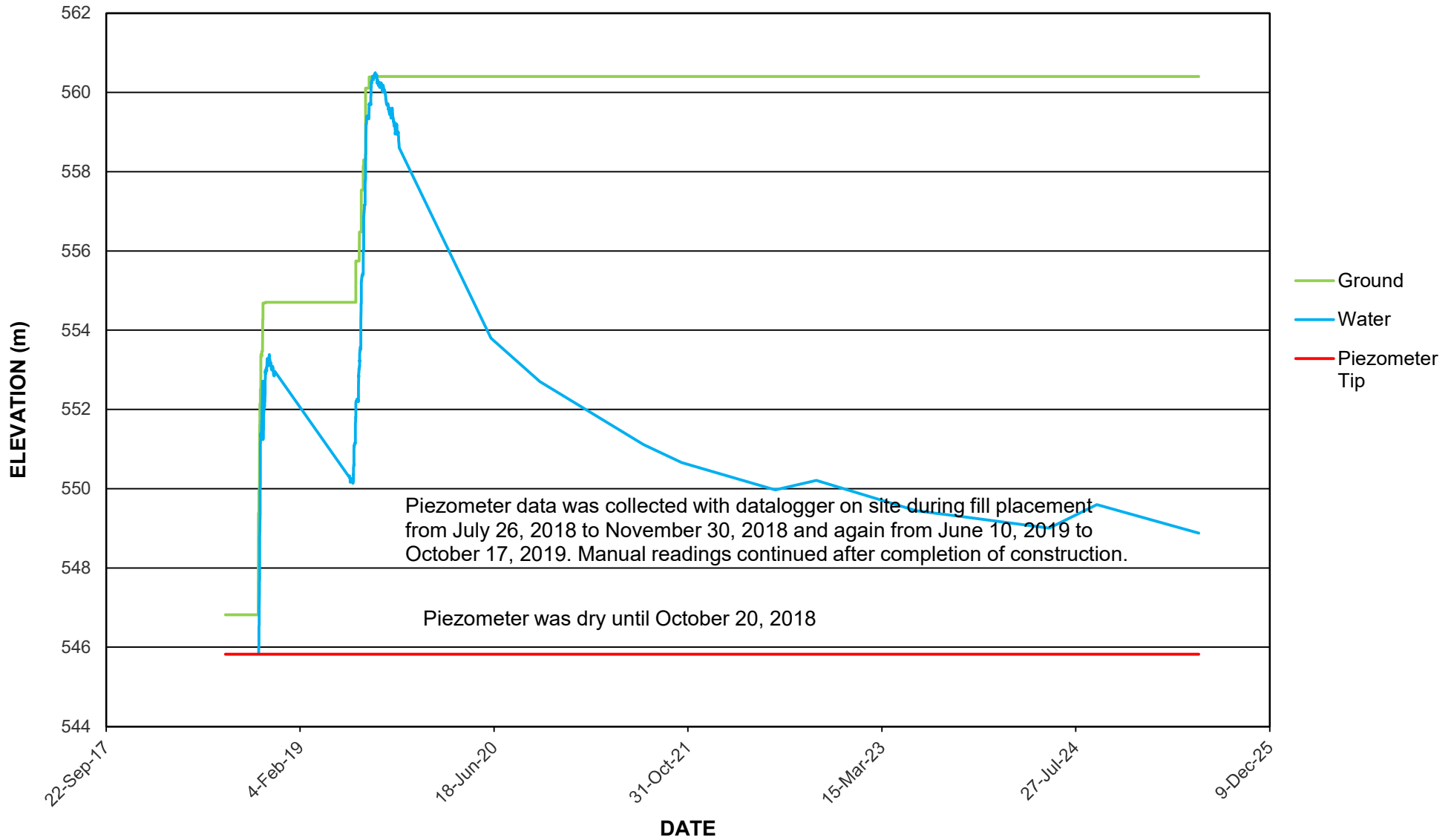


FIGURE PH080-3
HWY 688:02 McKINNEY CREEK CULVERT SLIDE - VW18-3
(EAST SIDE OF CULVERT)

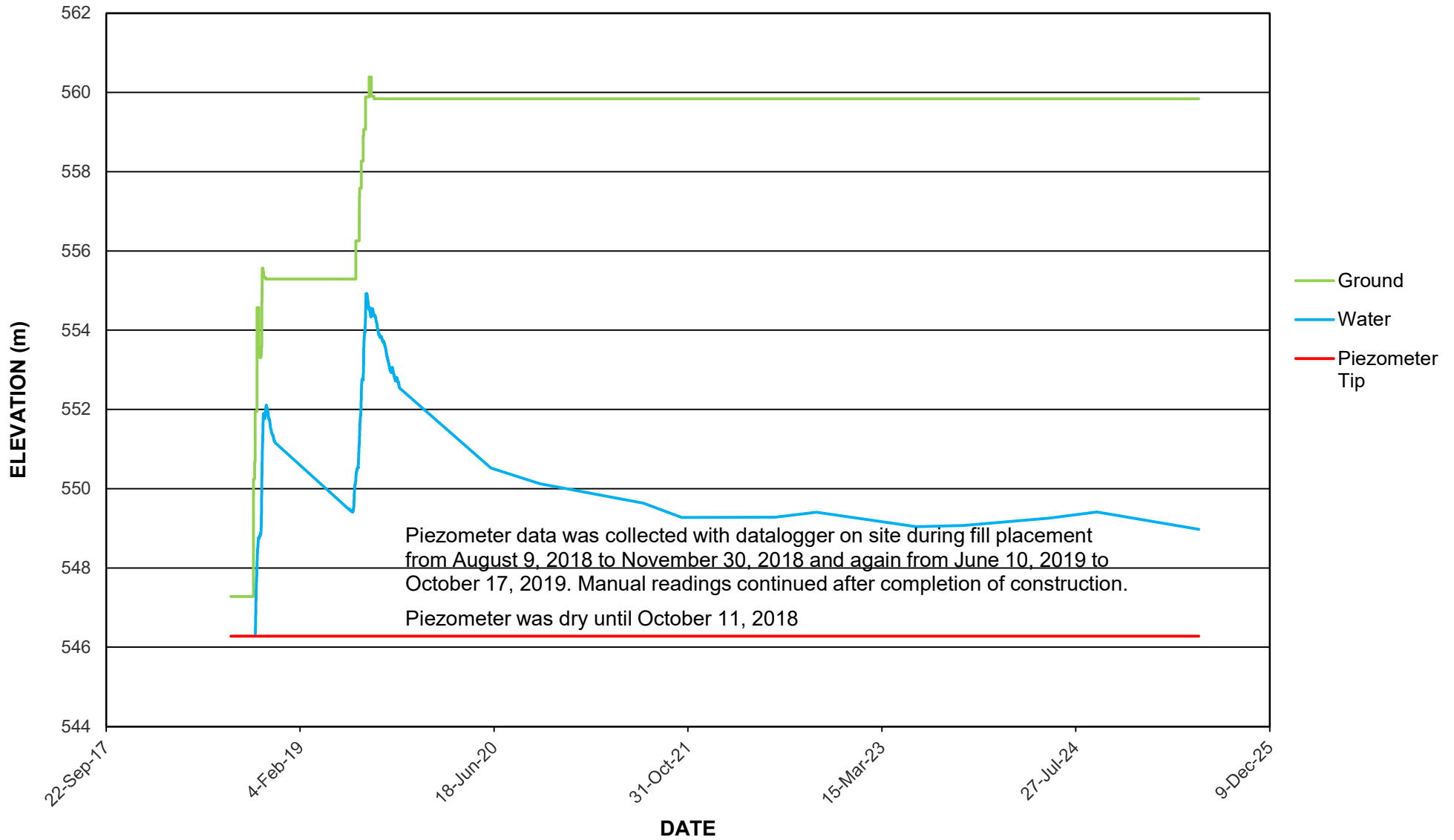


FIGURE PH080-4
HWY 688:02 MCKINNEY CREEK CULVERT SLIDE
(COMBINED PIEZOMETER READINGS)

