July 15, 2025

Alberta Transportation and Economic Corridors
Main Floor, Provincial Building
9621 – 96th Avenue
Peace River, Alberta
T8S 1T4

Robert Senior
Construction Technologist

Dear Mr. Senior:

CON0022166 Peace Region (Grande Prairie District – South) GRMP Instrumentation Monitoring Site GP042; H40:36, km 37.524 Wanyandie Creek Embankment Slide
Section C – 2025 Spring Readings

1 GENERAL

Six slope inclinometers (SIs) (SI22-W2 through W7), nine vibrating wire piezometers (VWPs) (VW20-S1/S3, VW20-D3/D4, and VW20-DS1A/1B/2A/2B/6A), one shape accelerometer array (SAA) (SAA22-P15), and seven vibrating wire load cells (load cells) (Anchor 3U, 5L, 15U/L, 27U/L, and 37U) were read at the GP042 site (includes the GP050 site as well) in the Peace Region (Grande Prairie District – South) (GP South Region) on June 4, 2025, by Evan Hergott E.I.T. and Min Hou, E.I.T. of Klohn Crippen Berger Ltd. (KCB). These instruments were read as part of the GP South Region Geohazard Risk Management Program (GRMP). The site is located on Hwy 40:36, km 37.524. The approximate site coordinates are 5996853 N, 379884 E (UTM Zone 11, NAD 83). A site plan is presented on Figure 1.

The geohazard at the GP042 site consists of landslides on the east side of Hwy 40:36 along the north valley slope of the Smoky River. Seepage and high groundwater levels appear to have exacerbated slide movements.

Remedial work completed at the GP042 site between September 2021 and July 2023 included:

- excavating and reconstructing the slope on the east side of the highway impacted by the slide near the south end of the site with granular fill, a shear key, and a buried perforated pipe subdrains;
- installing three drilled cast-in-place concrete pile walls on the east side of the highway, with concrete walers and buried perforated pipe subdrains that discharge into riprap swales, as follows:
  - pile wall 1 (73 piles, 1.2 m diameter, 13.5 m to 17.5 m deep) installed south of the existing binwall with tie-back anchors along the south half of the wall,

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  - pile wall 2 (83 piles, 1.5 m diameter, 12.4 m deep) installed downslope of the existing binwall, and
  - Pile wall 3 (37 piles, 1.2 m diameter, 13.9 m deep) installed north of the existing binwall;
- flattening the backslope on the west side of the highway and constructing finger drains, French drains, and swales on the backslope;
- installing a subdrain with two 1.2-m-diameter corrugated steel pipe (CSP) manholes in the west highway ditch; and
- installing a 1-m-diameter CSP culvert below the highway with a riprap swale on either end.

This remedial work is shown on Figure 2 prepared by Thurber Engineering Ltd. (Thurber) but is not shown in the available imagery shown on Figure 1.

A geotechnical site investigation was conducted at the GP042 site in 2020 by the previous consultant. The stratigraphy encountered during the 2022 investigation varied but generally consisted of highway fill (clay or gravel), clay, till, or some combination thereof, overlying bedrock (clay shale, sandstone, and siltstone).

1.1 Instrumentation

KCB read the instruments at this site in the spring and fall of 2021, before resuming readings in the fall of 2024. Between the fall of 2021 and fall of 2024, the instruments were read by another consultant during construction. Instrumentation installation details are tabulated in Table 1.1. Instrument locations are shown on Figure 1. Any instruments not included in Table 1.1 or shown on Figure 1 are assumed to be inoperable and are not presented or discussed herein.

Before construction, 2 SIs, 24 VWPs, and 6 SPs were installed by the previous consultant to monitor movement of the slide mass and groundwater conditions, respectively. During construction, 6 SIs and 1 SAA were installed to monitor deflection of the three pile walls and 7 load cells were installed to monitor anchor loads at pile wall 1. Some of these instruments are now inoperable (e.g., sheared or damaged) as detailed in Table 1.1 (see table notes).

The operable instruments are protected by above-ground casing protectors. The datalogger for the SAA and the load cells is protected by a locked stainless-steel enclosure.

The operable SIs were read using the same metric RST Digital MEMS Inclinometer System that was previously used to read the SIs by KCB in 2021. The SAA and load cells were read using Campbell Scientific Device Configuration software. The operable VWPs were read using a GEOKON GK-404 vibrating wire readout.

Table 1.1 Instrumentation Installation Details[1]

Instrument Type	Instrument ID (Pile No.)		Date Installed	UTM Coordinates (m)		Ground Surface Elevation[2] (m)	Stick Up (m)	Depth (mbgs[2])	Condition
				Northing	Easting				
SI	~~TH20-DS2~~		~~Jul. 06, 2020~~	~~5997067~~	~~380002~~	~~1134.4~~	~~0.8~~	~~23.4~~	~~Inoperable[3]~~
	~~TH20-DS5~~		~~Jul. 09, 2020~~	~~5997209~~	~~380061~~	~~1141.4~~	~~1.0~~	~~17.3~~	~~Inoperable[4]~~
	Pile Wall 1	SI22-W2 (P37)	Sep. 14, 2022	5997081	379996	1139.5	1.0	16.3	Operable
		SI22-W3 (P57)	Oct. 26, 2022	5997102	380006	1141.2	1.1	14.2	Operable
	Pile Wall 2	SI22-W4 (P100)	Jul. 20, 2022	5997147	380038	1139.6	1.0	12.7	Operable
		SI22-W5 (P117)	Jul. 20, 2022	5997170	380049	1140.6	1.1	13.2	Operable
		SI22-W6 (P132)	Jul. 20, 2022	5997190	380058	1141.5	1.0	12.3	Operable
	Pile Wall 3	SI22-W7 (P174)	Jul. 20, 2022	5997272	380082	1151.7	1.2	14.1	Operable
SAA[5]	Pile Wall 1	SAA22-P15 (P15)	Nov. 24, 2022	Pile P15		1137.5	N/A	21.1	Operable
VWP	~~VW20-P1A~~		~~Jun. 23, 2020~~	~~5996932~~	~~379925~~	~~1128.1~~	~~N/A~~	~~6.4~~	~~Inoperable[4]~~
	~~VW20-P1B~~						~~N/A~~	~~17.7~~	~~Inoperable[4]~~
	~~VW20-P2~~		~~Jun. 25, 2020~~	~~5997067~~	~~379983~~	~~1138.0~~	~~N/A~~	~~9.8~~	~~Inoperable[4]~~
	~~VW20-P3~~		~~Jun. 26, 2020~~	~~5997093~~	~~379994~~	~~1141.0~~	~~N/A~~	~~14.9~~	~~Inoperable[4]~~
	~~VW20-P4~~		~~Jun. 29, 2020~~	~~5997156~~	~~380022~~	~~1142.0~~	~~N/A~~	~~7.9~~	~~Inoperable[4]~~
	~~VW20-P5~~		~~Jul. 03, 2020~~	~~5997194~~	~~380040~~	~~1148.2~~	~~N/A~~	~~13.1~~	~~Inoperable[4]~~
	~~VW20-P6~~		~~Jul. 04, 2020~~	~~5997221~~	~~380051~~	~~1149.8~~	~~N/A~~	~~8.8~~	~~Inoperable[4]~~
	VW20-S1		Jun. 28, 2020	5996995	379955	1133.0	N/A	16.8	Operable
	~~VW20-S2~~		~~Jul. 10, 2020~~	~~5997282~~	~~380085~~	~~1152.3~~	~~N/A~~	~~12.5~~	~~Inoperable[4]~~
	VW20-S3		Jul. 11, 2020	5997343	380125	1152.9	N/A	12.7	Operable
	~~VW20-D1~~		~~Jun. 23, 2020~~	~~5996938~~	~~379991~~	~~1127.8~~	~~N/A~~	~~6.4~~	~~Inoperable[4]~~
	~~VW20-D2~~		~~Jun. 27, 2020~~	~~5997078~~	~~379971~~	~~1145.0~~	~~N/A~~	~~5.2~~	~~Inoperable[4]~~
	VW20-D3		Jun. 27, 2020	5997154	380008	1144.0	N/A	10.7	Operable
	VW20-D4		Jun. 30, 2020	5997200	388028	1148.1	N/A	11.6	Operable
	VW20-DS1A		Jun. 24, 2020	5996898	379928	1121.8	N/A	4.6	Operable
	VW20-DS1B						N/A	11.4	Operable
	VW20-DS2A		Jul. 12, 2020	5997067	380002	1134.2	N/A	8.2	Operable
	VW20-DS2B						N/A	22.2	Operable
	~~VW20-DS3A~~		~~Jul. 06, 2020~~	~~5997151~~	~~380041~~	~~1139.4~~	~~N/A~~	~~10.7~~	~~Inoperable[4]~~
	~~VW20-DS4A~~		~~Jul. 07, 2020~~	~~5997188~~	~~380057~~	~~1140.4~~	~~N/A~~	~~4.9~~	~~Inoperable[4]~~
	~~VW20-DS4B~~						~~N/A~~	~~20.7~~	~~Inoperable[4]~~
	~~VW20-DS5~~		~~Jul. 09, 2020~~	~~5997209~~	~~380061~~	~~1141.4~~	~~N/A~~	~~5.0~~	~~Inoperable[4]~~
	VW20-DS6A		Jul. 05, 2020	5997159	380098	1121.0	N/A	6.1	Operable
	~~VW20-DS6B~~						~~N/A~~	~~21.3~~	~~Inoperable[4]~~
SP	~~TH20-D5~~		~~Jun. 30, 2020~~	~~5997232~~	~~380040~~	~~1150.3~~	~~0.8~~	~~3.1~~	~~Inoperable[4]~~
	~~TH20-D6~~		~~Jul. 01, 2020~~	~~5997360~~	~~380102~~	~~1156.6~~	~~0.9~~	~~8.6~~	~~Inoperable[4]~~
	~~TH20-B1~~		~~Jul. 09, 2020~~	~~5996956~~	~~379865~~	~~1148.2~~	~~0.9~~	~~12.2~~	~~Inoperable[4]~~
	~~TH20-B2~~		~~Jul. 09, 2020~~	~~5997032~~	~~379925~~	~~1150.2~~	~~0.9~~	~~13.6~~	~~Inoperable[4]~~
	~~TH20-B3~~		~~Jul. 10, 2020~~	~~5997176~~	~~379968~~	~~1165.3~~	~~1.1~~	~~3.7~~	~~Inoperable[4]~~
	~~TH20-B4~~		~~Jul. 10, 2020~~	~~5997244~~	~~380009~~	~~1168.7~~	~~1.0~~	~~4.5~~	~~Inoperable[4]~~
Load Cell[5]	Pile Wall 1	VC2421 (3U)	2022	Pile Wall 1 Anchors		N/A			Operable
		VC2422 (5L)	2022						Operable
		VC2419 (15U)	2022						Operable
		VC2420 (15L)	2022						Operable
		VC2417 (27U)	2022						Operable
		VC2418 (27L)	2022						Operable
		VC2416 (37U)	2022						Operable

Notes:

[1] Instrument installation details were taken from reports and data files prepared or provided by the previous consultant(s) or TEC. It is noted that the ground surface elevations reported by the previous consultant in their data files and borehole logs are inconsistent. KCB has taken the ground surface elevations from the data files as they have been more recently updated and averaged the values reported for VW20-DS1A/B, which are nested in the same borehole. Instrument coordinates and stick ups (where applicable) were confirmed by KCB using a handheld GPS (accuracy of ± 5 m) and a tape measure, respectively.

[2] Meters below ground surface (mbgs). Bottom reading depth for operable SIs, and tip or screen depth for piezometers.

[3] TH20-DS2 has sheared at an approximate depth of 8.5 m below ground surface. Instrument last read in September 2021.
[4] Instrument reported as inoperable during construction.
[5] SAA and load cells connected to a multi-channel data logger (Model CR6 from Campbell Scientific), which is programmed to record a reading of the SAA and load cells hourly.

2 INTERPRETATION

2.1 General

For the operable SIs and SAA, the cumulative displacement, incremental displacement, and displacement-time data was plotted in the A-direction (i.e., the direction of the A0-grooves).

For the operable VWPs, the recorded porewater pressures were converted to an equivalent water/piezometric elevation and plotted relative to ground surface elevation and the tip elevation for each instrument.

For the operable load cells, the recorded loads were plotted relative to daily air temperature. Note load cell data was only available from March 3, 2024, onwards.

The instrument data plots are included in Appendix I, and a summary of the instrument data is provided in Table 2.1 through Table 2.4. Since the previous consultant used imperial SI equipment and we used metric SI equipment to read the SIs, we had to re-initialize the SIs to the October 2024 readings. The SI data plots presented herein only include data taken with KCB's SI reading equipment. The data logger records a reading of the SAA hourly, but only one reading every two months is shown on the cumulative and incremental displacement plots and only one reading per week is shown on the displacement-time plot to reduce noise reading to reading.

2.2 Zones of Movement

Discrete movement (i.e., movement occurring on a defined failure plane) was being recorded in

- TH20-DS2 between an approximate depth of 7.4 m and 8.4 m (elevation 1126.8 m to 1125.8 m) below ground surface before it sheared; and
- TH20-DS5 between an approximate depth of 3.3 m and 4.3 m (elevation 1138.2 m to 1137.7 m) below ground surface before the instrument became inoperable.

Some distributed movement has been recorded in the pile wall SIs, but otherwise no discernible discrete movement has been recorded in the pile wall SIs or the SAA.

Table 2.1 Slope Inclinometer Reading Summary

Pile Wall	Instrument ID (Pile No.)	Date				Ground Surface Elevation (m)	Depth of Movement[2] (mbgs[1])	Direction of Movement, Skew Angle[2]	Movement (mm)				Rate of Movement (mm/year)		
		Initialized (Re-initialized)	Previous Maximum Cumulative Movement Recorded	Previous Reading	Most Recent Reading				Maximum Cumulative			Incremental Since Previous Maximum Cumulative	Previous Maximum	Most Recent Reading	Change from Previous Reading
									Before Re-Initialization	After Re-Initialization	Total				
1	SI22-W2 (P37)	Sep. 14, 2022 (Oct. 17, 2024)[3]	N/A – Not provided by previous consultant.	Oct. 17, 2024	Jun. 04, 2025	1139.5	0.0 – 16.4	X-Direction, 181°	-5.1	N/A – No discernible discrete movement. Only read two times since re-initialization. Need more data to assess.					
	SI22-W3 (P57)	Oct. 26, 2022 (Oct. 17, 2024)[3]		Oct. 17, 2024	Jun. 04, 2025	1141.2	1.7 – 13.3	X-Direction, 146°	-1.6						
2	SI22-W4 (P100)	Jul. 20, 2022 (Oct. 17, 2024)[3]		Oct. 17, 2024	Jun. 04, 2025	1139.6	0.0 – 13.3	X-Direction, 182°	0.3						
	SI22-W5 (P117)	Jul. 20, 2022 (Oct. 17, 2024)[3]		Oct. 17, 2024	Jun. 04, 2025	1140.6	1.1 – 13.3	X-Direction, 177°	4.3						
	SI22-W6 (P132)	Jul. 20, 2022 (Oct. 17, 2024)[3]		Oct. 17, 2024	Jun. 04, 2025	1141.5	0.0 – 12.7	A-Direction	7.1						
3	SI22-W7 (P174)	Jul. 20, 2022 (Oct. 17, 2024)[3]		Oct. 17, 2024	Jun. 04, 2025	1151.7	0.9 – 14.3	X-Direction, 161°	1.9						

Notes:
[1] Meters below ground surface (mbgs).
[2] Skew angle of the X-direction measured clockwise from the A-direction by the previous consultant and will be confirmed by KCB during subsequent readings. Same as the depth of movement previously being monitored by the previous consultant.
[3] Instruments re-initialized to the October 2024 reading when the SI reading equipment was changed from an imperial to a metric probe and reel.

Table 2.2 Shape Accelerometer Array Reading Summary

Pile Wall	Instrument ID (Pile No.)	Date				Ground Surface Elevation (m)	Depth of Movement (mbgs[1])	Direction of Movement	Movement (mm)		Rate of Movement (mm/year)		
		Initialized	Previous Maximum Cumulative Movement Recorded	Previous Reading	Most Recent Reading				Maximum Cumulative	Incremental Since Previous Maximum Cumulative	Previous Maximum	Current	Change from Previous Reading
1	SAA22-P15 (P15)	Nov. 24, 2022 (Jan. 18, 2023)[3]	N/A – No discernible movement recorded.	Oct. 17, 2024	Jun. 04, 2025	1137.5	N/A – No discernible movement recorded.						

Notes:
[1] Meters below ground surface (mbgs).
[3] Instrument re-initialized to the January 2023 reading when KCB began downloading the data for the instrument.

Table 2.3 Vibrating Wire Piezometer Reading Summary

Instrument ID	Serial No.	Approximate Location	Date			Ground Surface Elevation (m)	Tip Depth (mbgs[1])	Water Level		
			Installed	Previous Reading	Most Recent Reading			Previous Reading (mbgs[1])	Most Recent Reading (mbgs[1])	Change from Previous Reading (m)
VW20-S1	67106	Within Slide	Jun. 28, 2020	Oct. 17, 2024	Jun. 04, 2025	1133.0	16.8	12.6	12.0	0.6
VW20-S3	67102		Jul. 11, 2020	Oct. 17, 2024	Jun. 04, 2025	1152.9	12.7	8.7	8.4	0.3
VW20-D3	67073	Ditch	Jun. 27, 2020	Oct. 17, 2024	Jun. 04, 2025	1144.0	10.7	9.2	8.7	0.5
VW20-D4	67076		Jun. 30, 2020	Oct. 17, 2024	Jun. 04, 2025	1148.1	11.6	11.6	11.5	0.1
VW20-DS1A	67086	Highway Embankment Slope	Jun. 24, 2020	Oct. 17, 2024	Jun. 04, 2025	1121.8	4.6	4.8	4.6	0.2
VW20-DS1B	67089		Jun. 24, 2020	Oct. 17, 2024	Jun. 04, 2025	1121.8	11.4	11.6	11.0	0.6
VW20-DS2A	67092		Jul. 12, 2020	Oct. 17, 2024	Jun. 04, 2025	1134.2	8.2	3.6	2.8	0.8
VW20-DS2B	67097		Jul. 12, 2020	Oct. 17, 2024	Jun. 04, 2025	1134.2	22.2	19.0	18.9	0.1
VW20-DS6A	67077		Jul. 05, 2020	Oct. 17, 2024	Jun. 04, 2025	1121.0	6.1	5.2	4.2	1.0

Notes:
[1] Meters below ground surface (mbgs).

Table 2.4 Vibrating Wire Load Cell Reading Summary

Pile Wall	Instrument ID / Anchor No.	Load Cell Serial No.	Date				Serviceability Limit State (SLS) Design Load / Lock-Off Load (kN)	Load (kN)			
			Installed	Previous Maximum Recorded Load	Previous Reading	Most Recent Reading		Maximum Load	Previous Reading	Most Recent Reading	Change from Previous Reading
1	3U	VC2421	2022	Jul. 10. 2024	Oct. 17, 2024	Jun. 04, 2025	255/125	127.6	116.2	122.4	6.2
	5L	VC2422	2022	Jun. 18, 2024	Oct. 17, 2024	Jun. 04, 2025	265/75	96.3	83.8	89.7	5.9
	15U	VC2419	2022	Jul. 09, 2024	Oct. 17, 2024	Jun. 04, 2025	255/125	122.9	113.8	118.8	5.0
	15L	VC2420	2022	Jul. 18, 2024	Oct. 17, 2024	Jun. 04, 2025	265/75	91.3	78.7	84.9	6.2
	27U	VC2417	2022	May 28, 2025	Oct. 17, 2024	Jun. 04, 2025	255/125	114.5	105.5	111.1	5.6
	27L	VC2418	2022	Jul. 17, 2024	Oct. 17, 2024	Jun. 04, 2025	265/75	93.8	83.1	88.2	5.1
	37U	VC2416	2022	Jul. 07, 2024	Oct. 17, 2024	Jun. 04, 2025	255/110	99.3	89.3	94.6	5.3

2.3 Interpretation of Monitoring Results

Slope Inclinometer Data

The distributed movement recorded in the pile wall SIs before they were re-initialized in October 2024 indicates the piles have intercepted the failure plane and are transferring load to depths below the failure plane as the piles stabilize the slide mass. Based on the data obtained by the previous consultant up to May 2024, the tops of pile wall 1, 2, and 3 have deflected up to approximately 3.6 mm, 7.1 mm, and 1.9 mm, respectively, since installation. The walls will likely continue to deflect as they stabilize the slide mass, with increased deflection may occur in response to seasonal variations in freshet and precipitation infiltration. Monitoring zones and skew angles will be added to the re-initialized data plots when defined movement trends are recorded.

Shape Accelerometer Array Data

The SAA installed in the Pile Wall 1 has shown no discernible movement, except for some fluctuations in the top 4.5 m likely due to seasonal thermal variations (e.g., positive movement during colder months and negative movement during warmer months).

Piezometer Data

The operable piezometers have only been read four times since January 2022, and more data is needed to assess trends. However, based on the available data, the water levels recorded in the piezometers appear to be either relatively steady (± 1 m) or dry (i.e., water level at or below instruments tip elevation) since June 2023. An increase in water level (up to approximately 1 m) was recorded in the piezometers between the fall 2024 and spring 2025 readings, however the increase is consistent with previous readings for these instruments.

A large decrease in water level (between approximately 1.8 m and 25.5 m) was recorded in several of the piezometers (e.g., VW20-D3, D4, DS1B, DS2A/B, DS6A) within the first month after the instruments were installed in June/July 2020. The recorded decreases were likely due to post-installation stabilization of these instruments.

Load Cell Data

The loads measured in the load cells installed in pile 1 (range from approximately 85 kN to 122 kN) are below the Serviceability Limit State (SLS) design loads provided in the Spring 2024 instrumentation report prepared by Thurber (range from 255 kN to 265 kN). Loads measured in the loads cell appear to fluctuate (± 20 kN) with temperature, with higher loads measured during warmer weather and lower loads measured during cooler weather, but more data is needed to assess.

3 RECOMMENDATIONS

3.1 Future Work

All operable instruments should continue to be read twice per year (spring and fall). Spring readings should be completed after late-May or early-June, due to the risk of water inside the instrument casings being frozen earlier in the year.

Now that construction is complete at the site, the site should again be inspected by the Maintenance Contract Inspector (MCI) and as part of the GP South Region GRMP Section B inspections. The designers should also review the monitoring data and reports for the site to verify the repairs, including the pile walls, are performing as expected.

3.2 Instrument Installs, Repairs, and Maintenance

No instrument installs, repairs, or maintenance is required, but the reading frequency of the SAA and load cells will be reduced from daily to weekly and monthly, respectively, to reduce noise between readings.

4 CLOSING

This report is an instrument of service of Klohn Crippen Berger (KCB). The report has been prepared for the exclusive use of Alberta Transportation and Economic Corridors (Client) for the specific application to the Peace Region (Grande Prairie District – South) Geohazard Risk Management Program (Contract No. CON0022166), and it may not be relied upon by any other party without KCB's written consent.

KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.

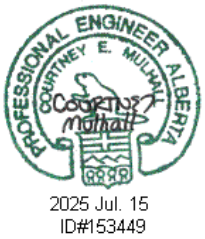
Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

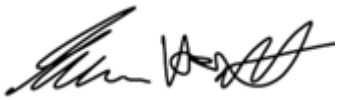
1. The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
2. The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.
3. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.

4. KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.
5. This report is electronically signed and sealed and its electronic form is considered the original. A printed version of the original can be relied upon as a true copy when supplied by the author or when printed from its original electronic file.

Yours truly,

KLOHN CRIPPEN BERGER LTD.



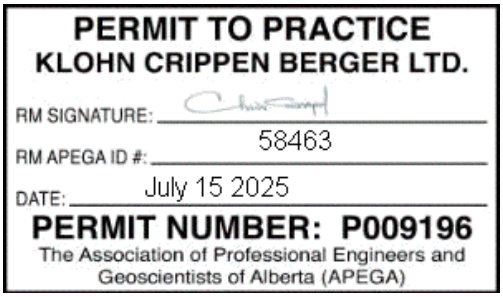


Courtney Mulhall, M.Sc., P.Eng.
Geotechnical Engineer

Evan Hergott, E.I.T.
Civil Engineer-in-Training

CM/EH:bb

Cc: Chris Gräpel, M.Eng., P.Eng.



ATTACHMENTS
Figure
Appendix I Instrumentation Plots

FIGURE

Legend

- Slope Inclinometer (TH-DS#, SI22-W#, SAA22-P#)
- Standpipe Piezometer (TH20-B#, TH20-D#)
- Vibrating Wire Piezometer (VW)

0 — 250 Metres

NOTES:

1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM Zone 11N
3. IMAGE SOURCE:
IMAGE SOURCE: 2025 MICROSOFT CORPORATION, 2025 MAXAR, CNES
4. STRIKETHROUGH INDICATES INSTRUMENT IS INOPERABLE. INSTRUMENT LOCATIONS APPROXIMATE. INSTRUMENTS INOPERABLE PRIOR TO 2021 MAY NOT BE SHOWN.

CLIENT: Alberta

Klohn Crippen Berger

PROJECT: PEACE REGION (GRANDE PRAIRIE DISTRICT-SOUTH) GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE: Site Plan
GP042 - Wanyandie Creek Embankment Slide
Hwy 40:36, km 37.524

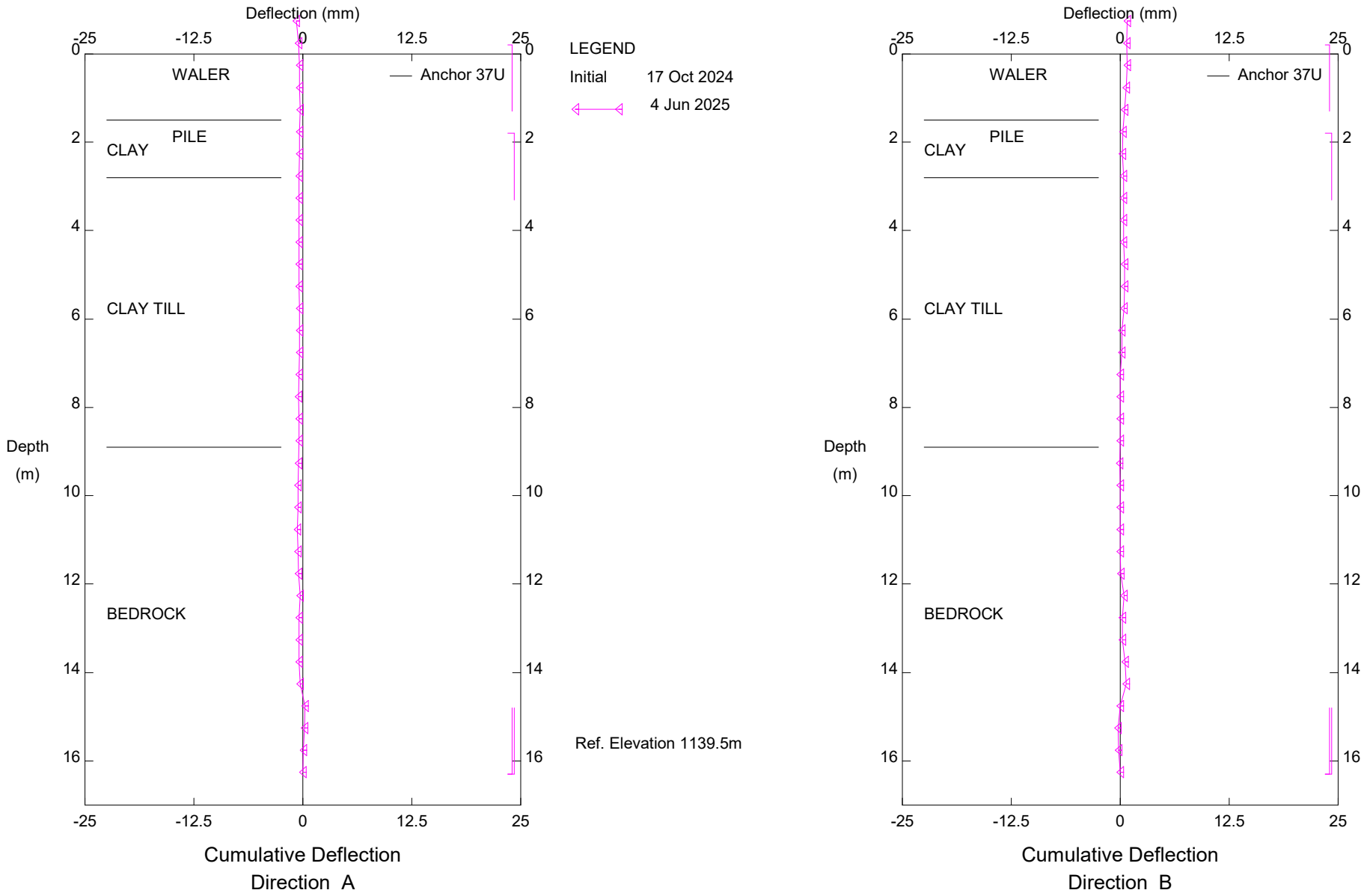
SCALE	PROJECT No.	FIG No.
1:3,000	A05116A01	1

Last updated on *July 10, 2025* by *NMirhadi*
File: *"Z:\AIED\MA\05116\A01 ABT Grande Prairie South GRMP\400 Drawings\GIS\MXD\2024\Section C\ABT_GPSouth_SectionC_241202\ABT_GPSouth_SectionC_241202.aprx"*

APPENDIX I

Instrumentation Plots

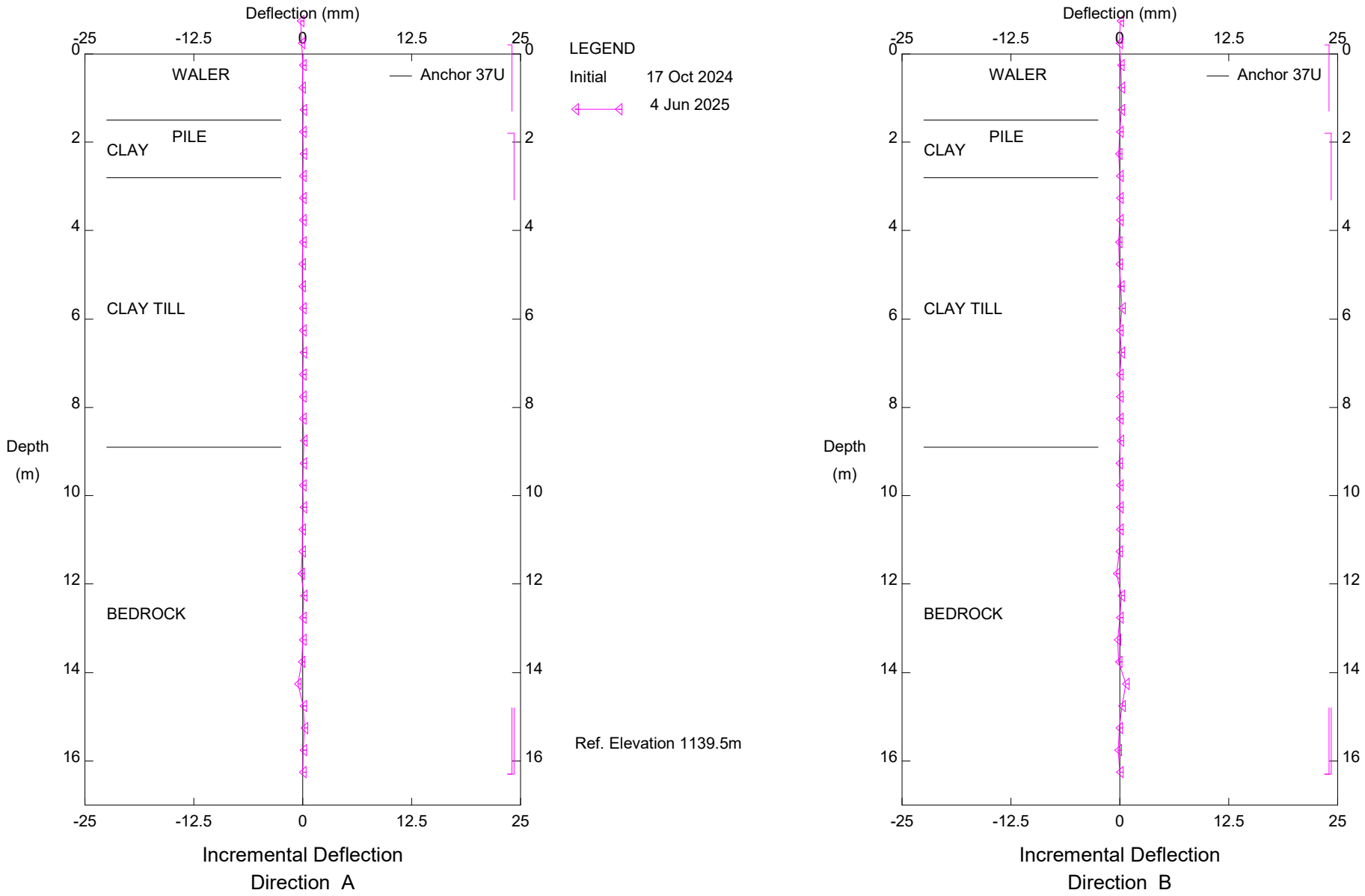
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W2

Alberta Transportation

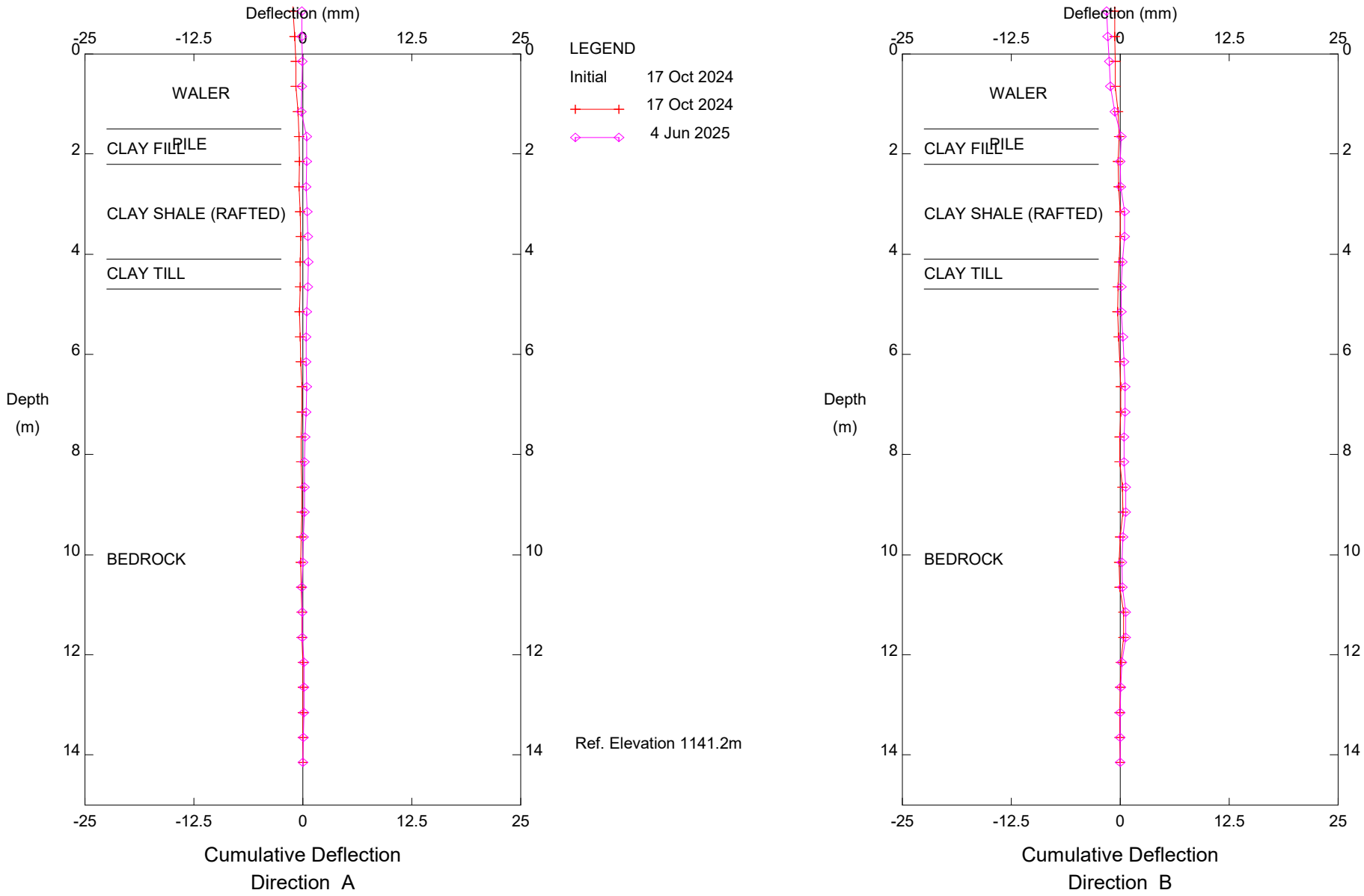
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W2

Alberta Transportation

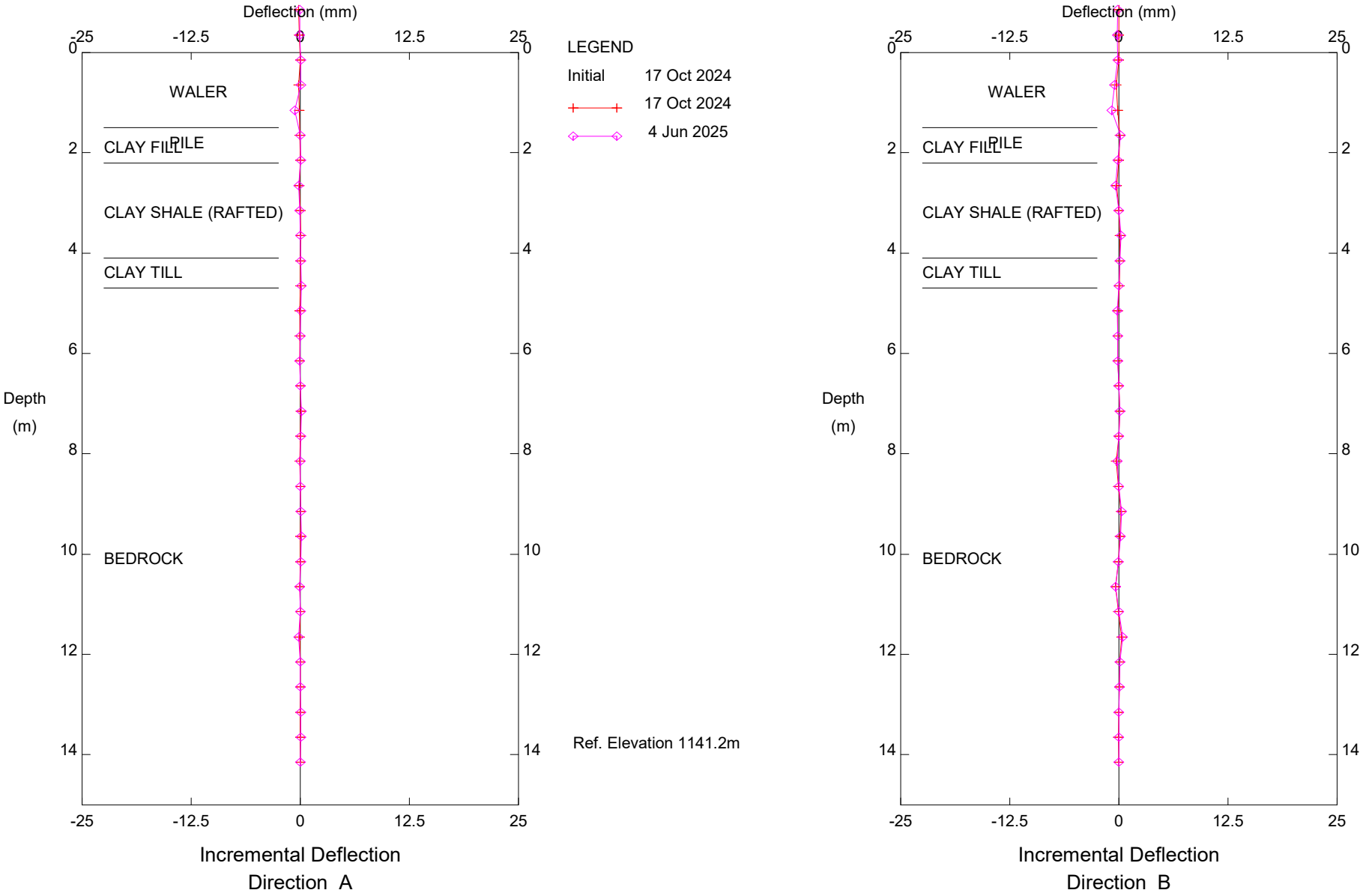
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W3

Alberta Transportation

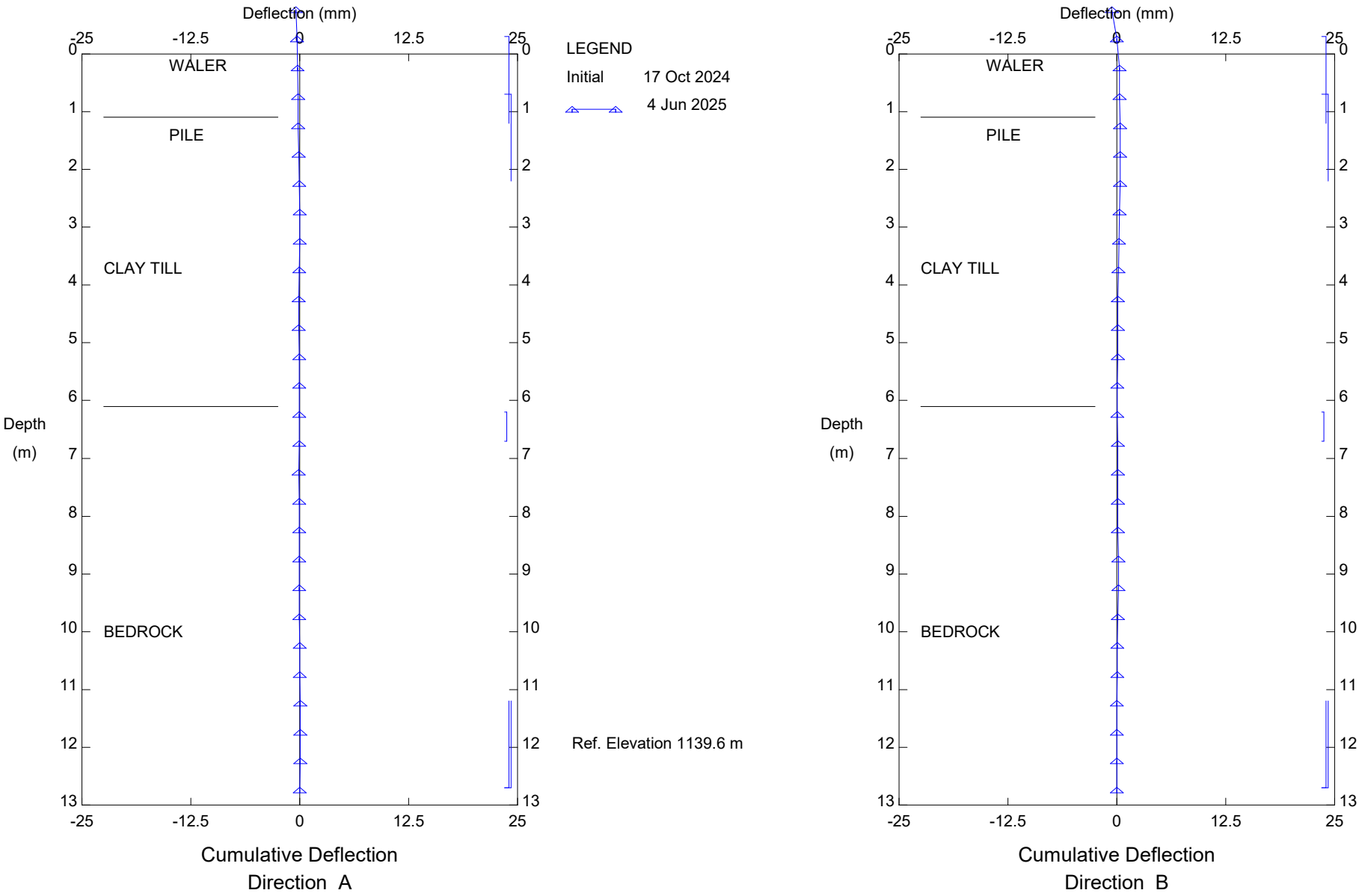
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W3

Alberta Transportation

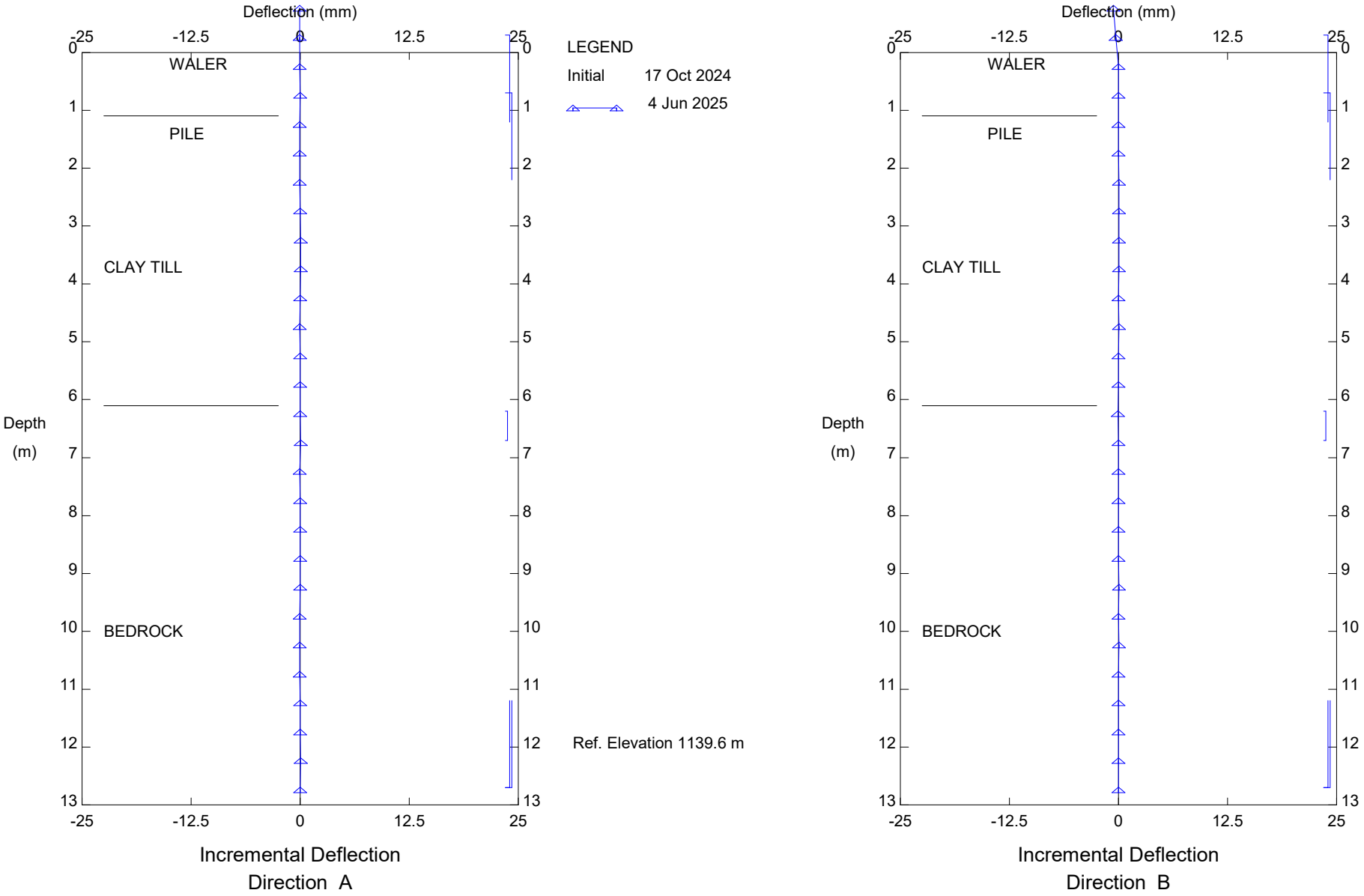
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W4

Alberta Transportation

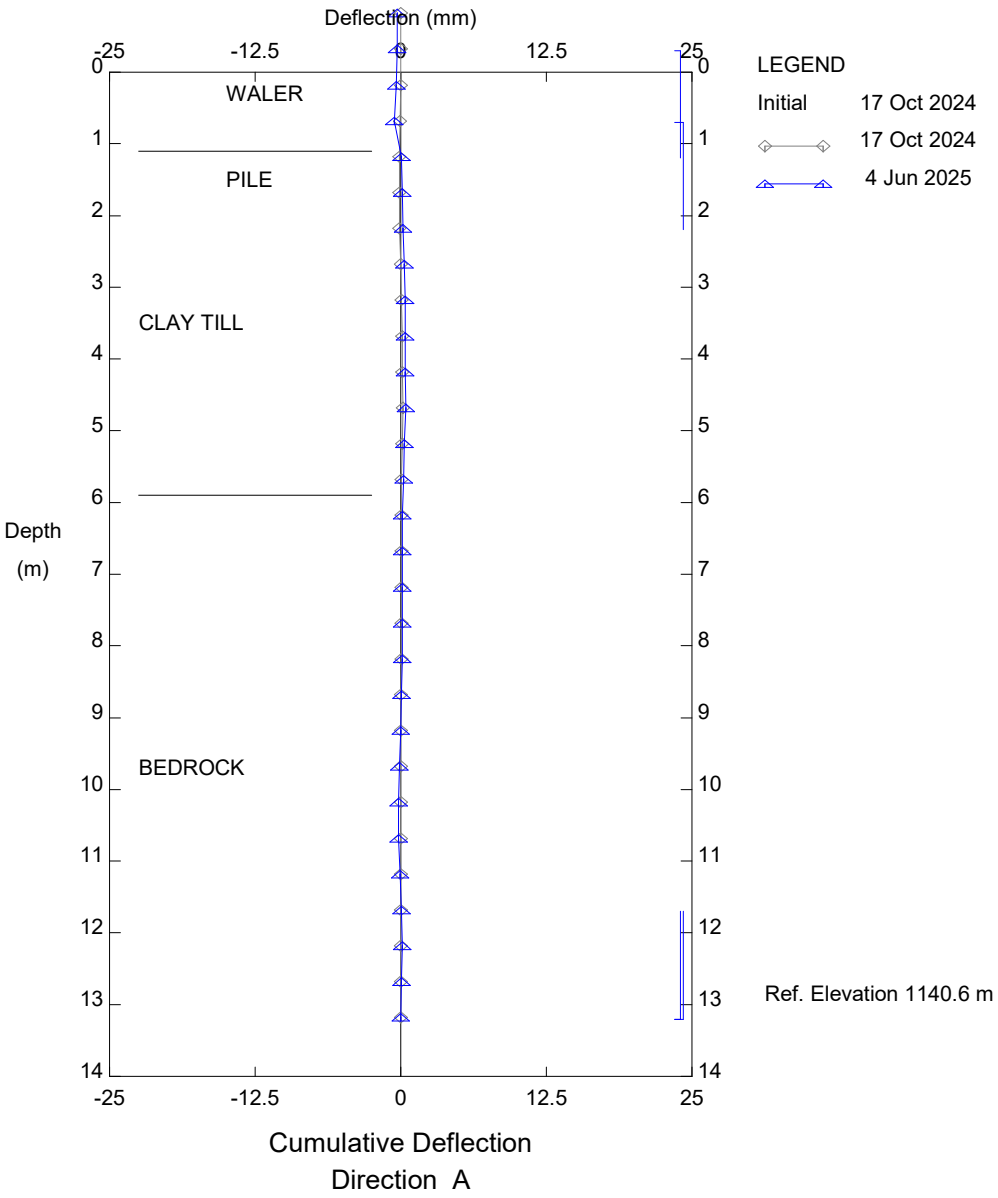
Klohn Crippen Berger - Edmonton

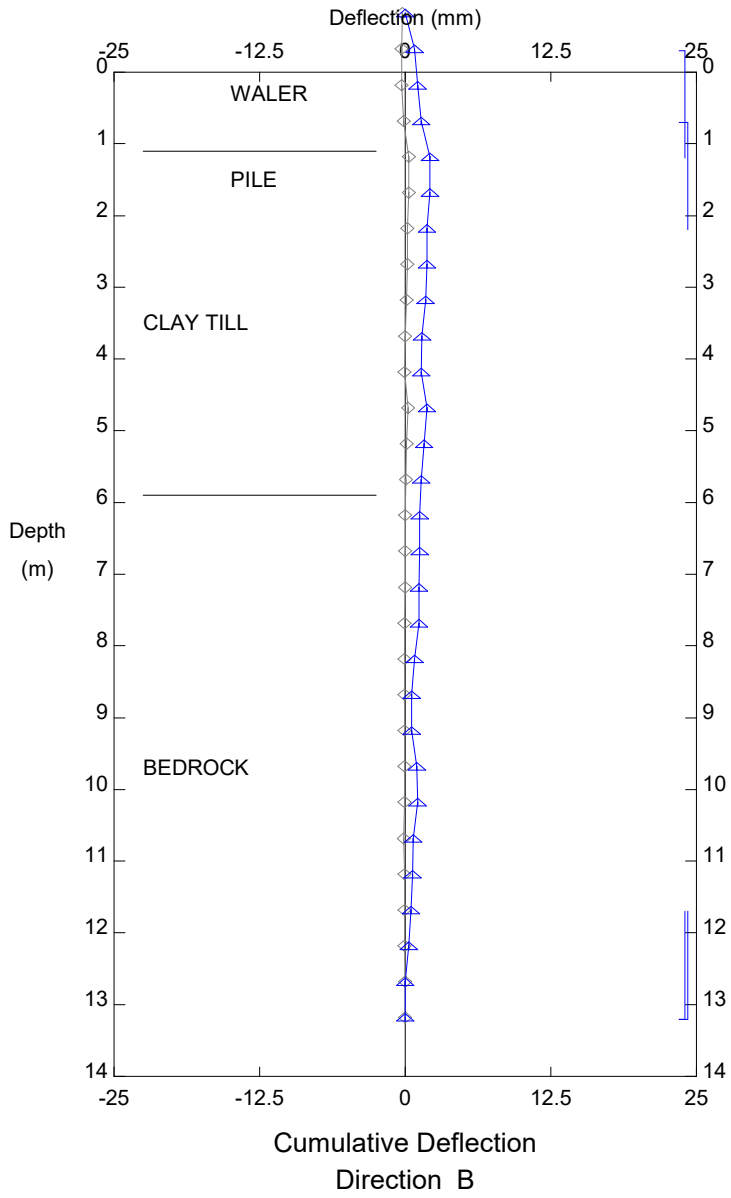


GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W4

Alberta Transportation

Klohn Crippen Berger - Edmonton

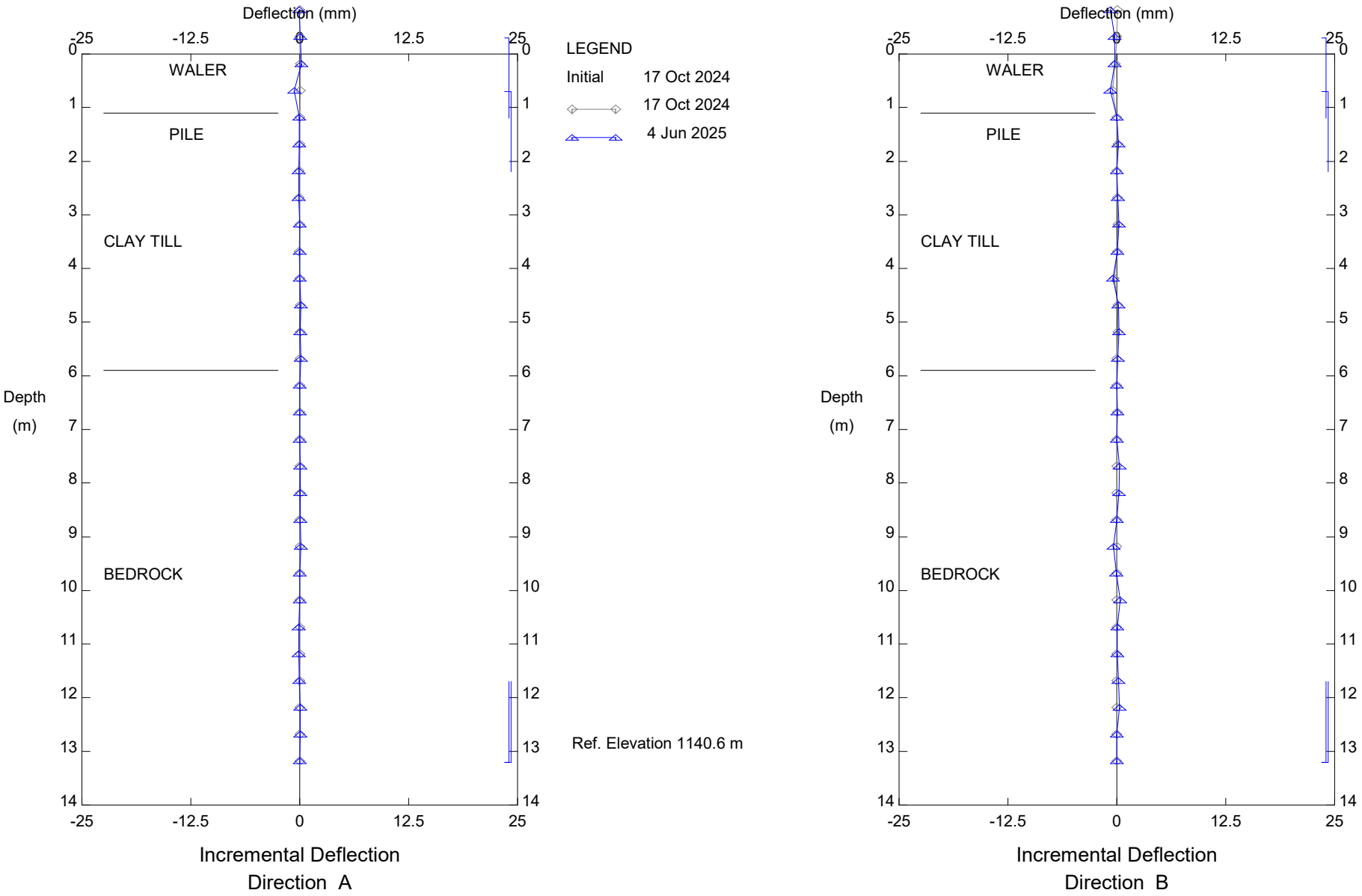




GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W5

Alberta Transportation

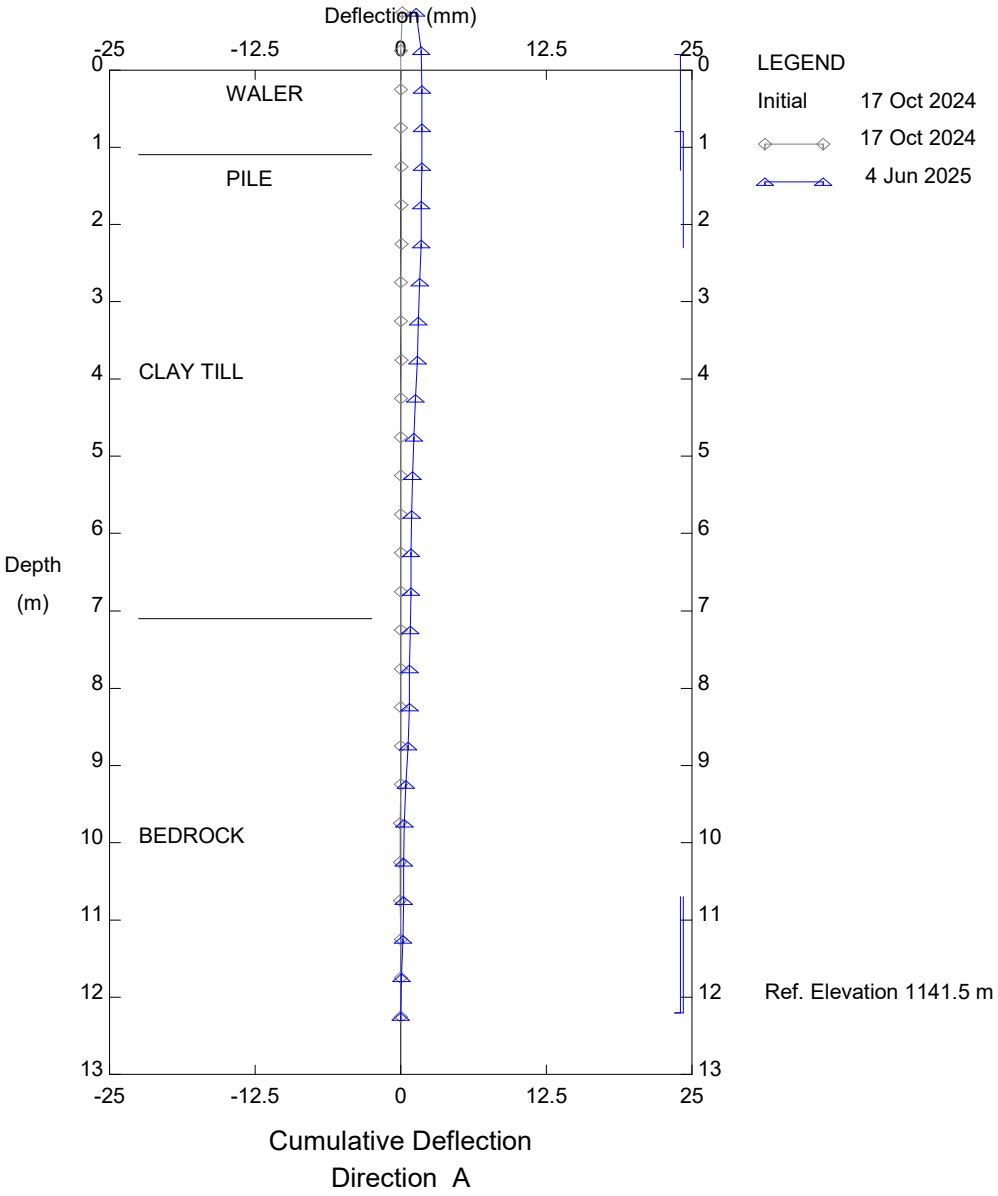
Klohn Crippen Berger - Edmonton

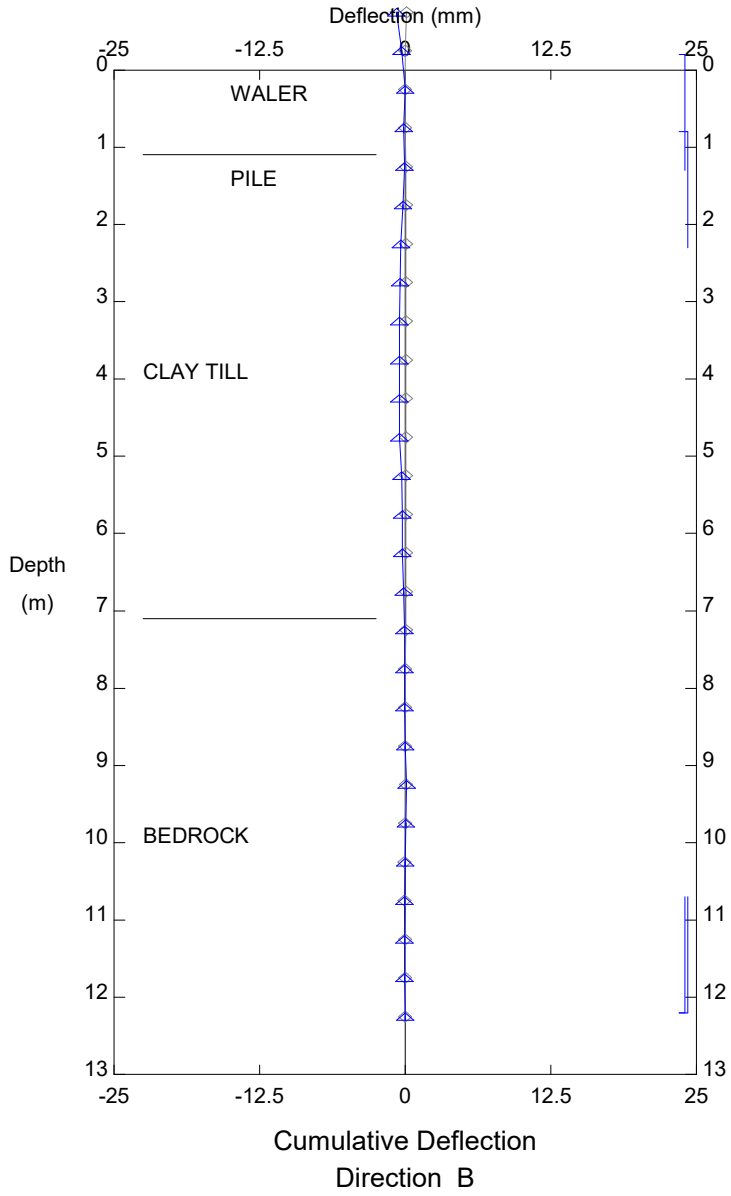


GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W5

Alberta Transportation

Klohn Crippen Berger - Edmonton

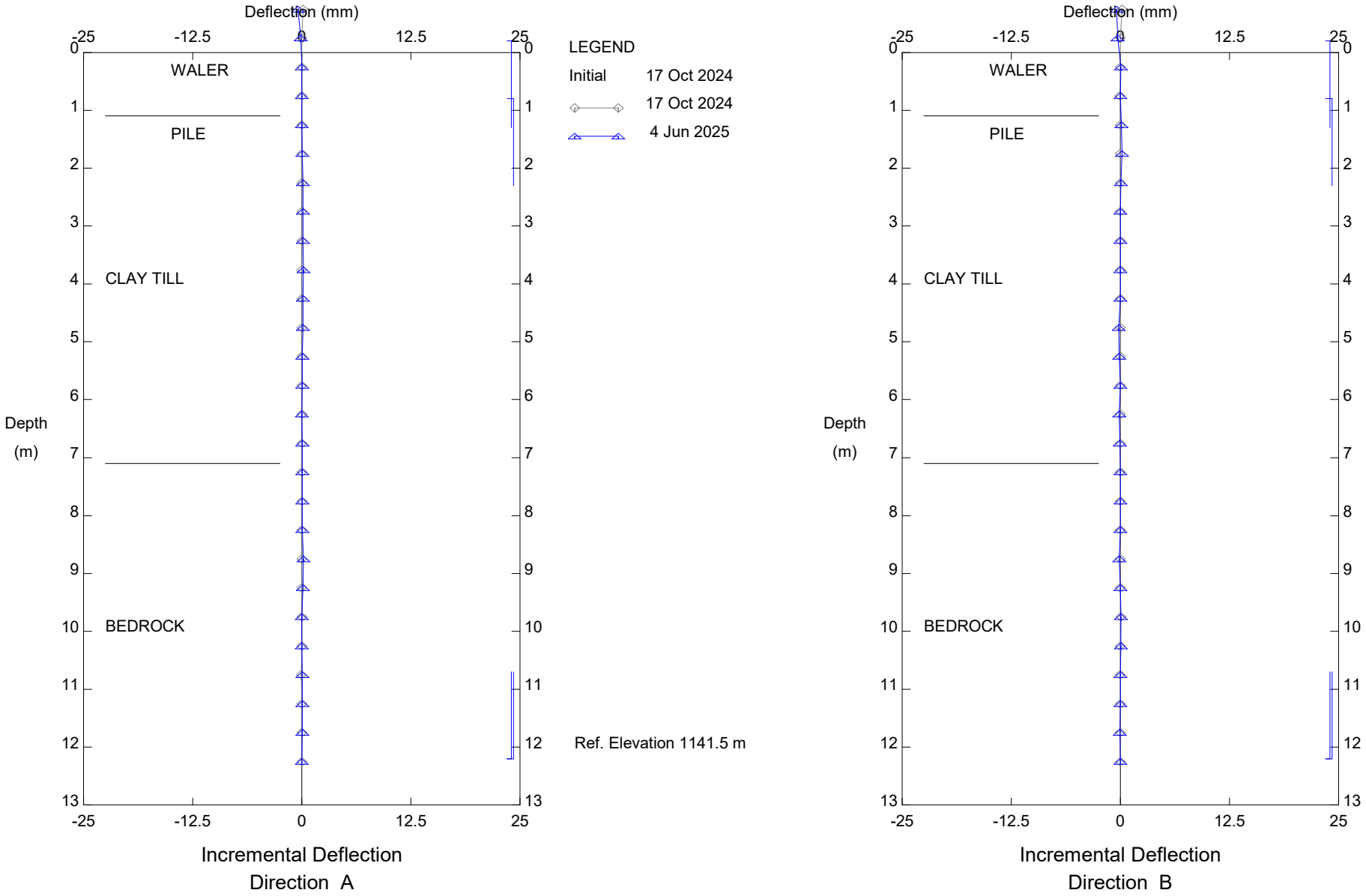




GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W6

Alberta Transportation

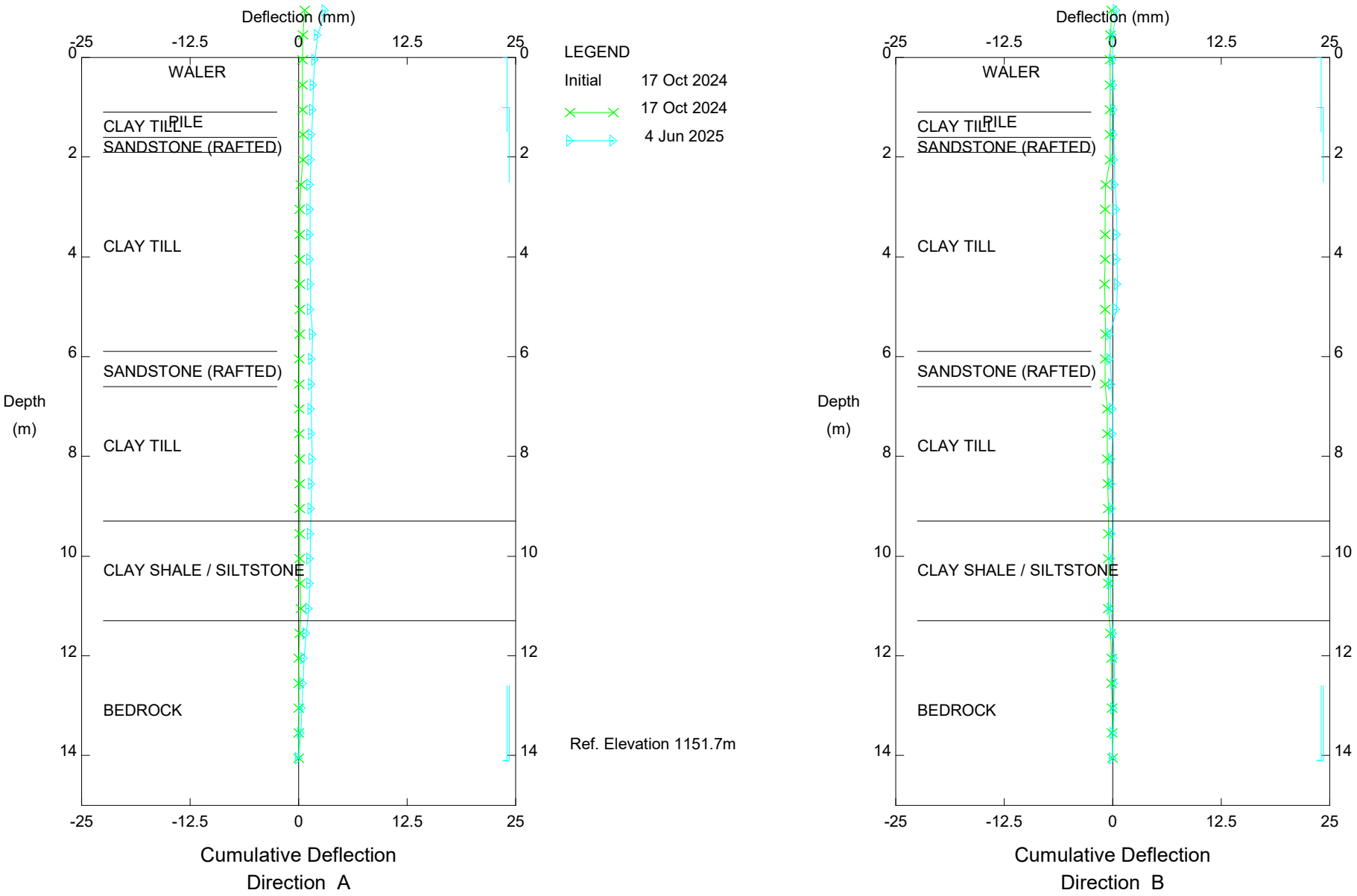
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W6

Alberta Transportation

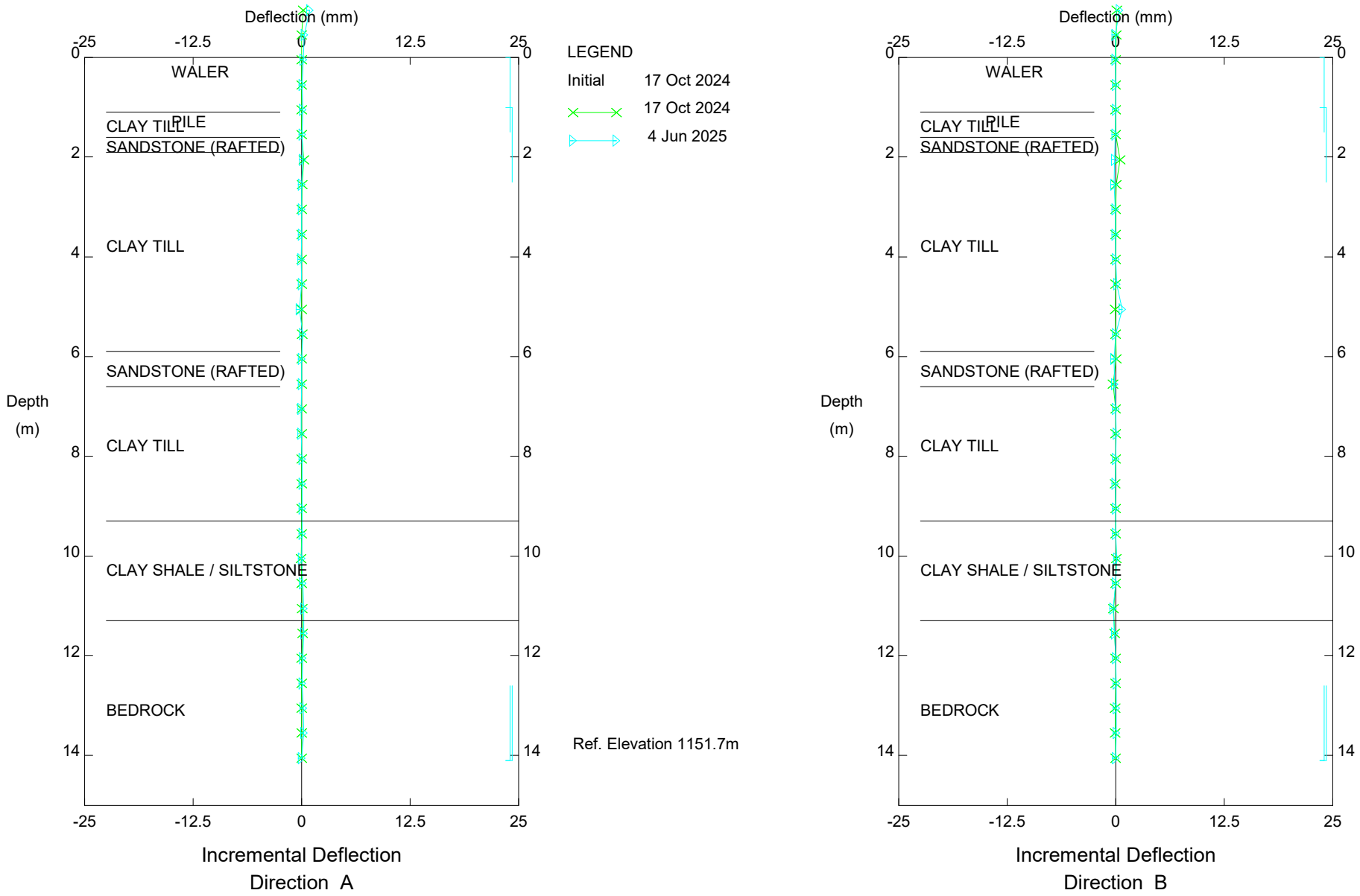
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W7

Alberta Transportation

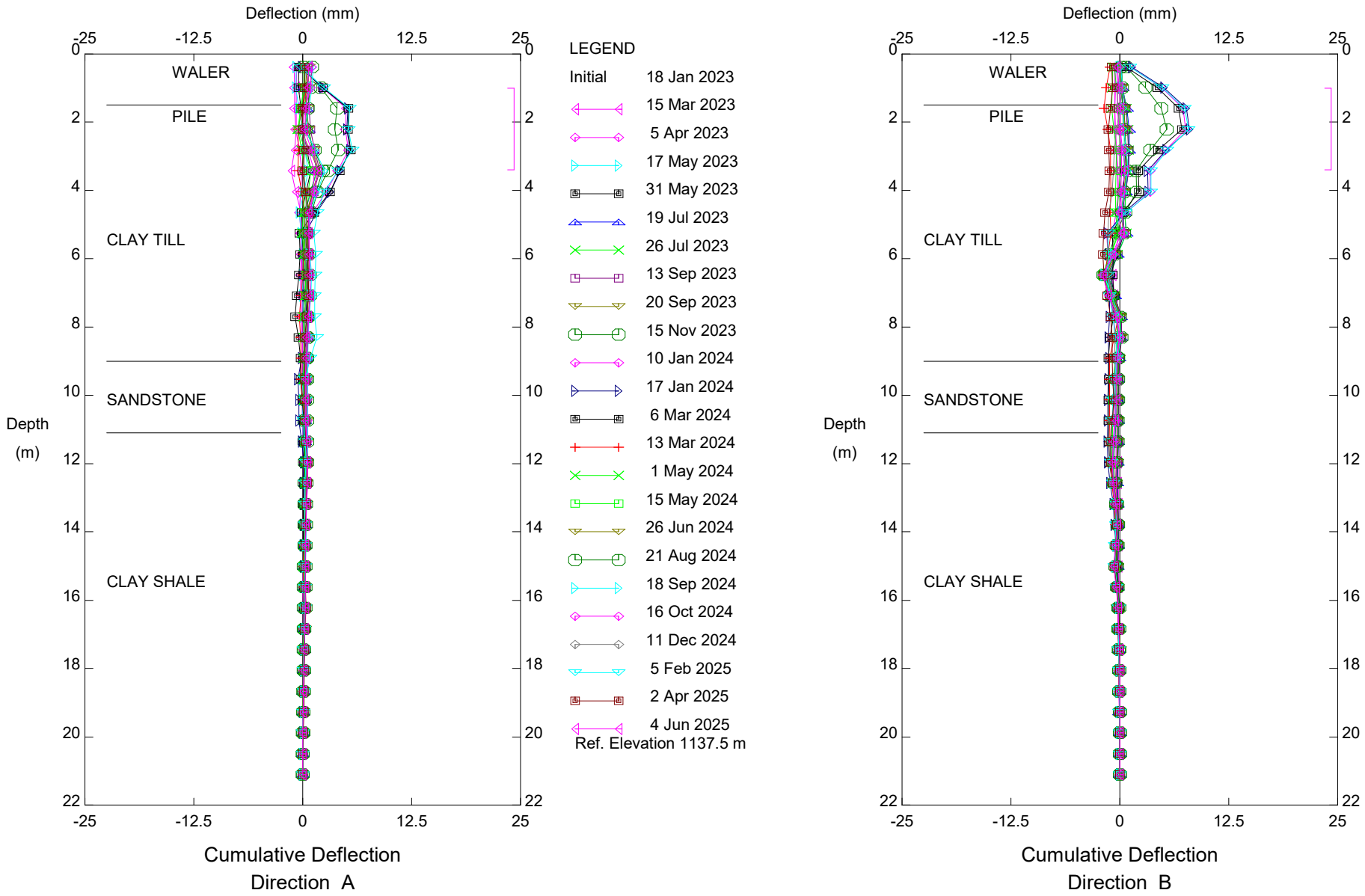
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SI22-W7

Alberta Transportation

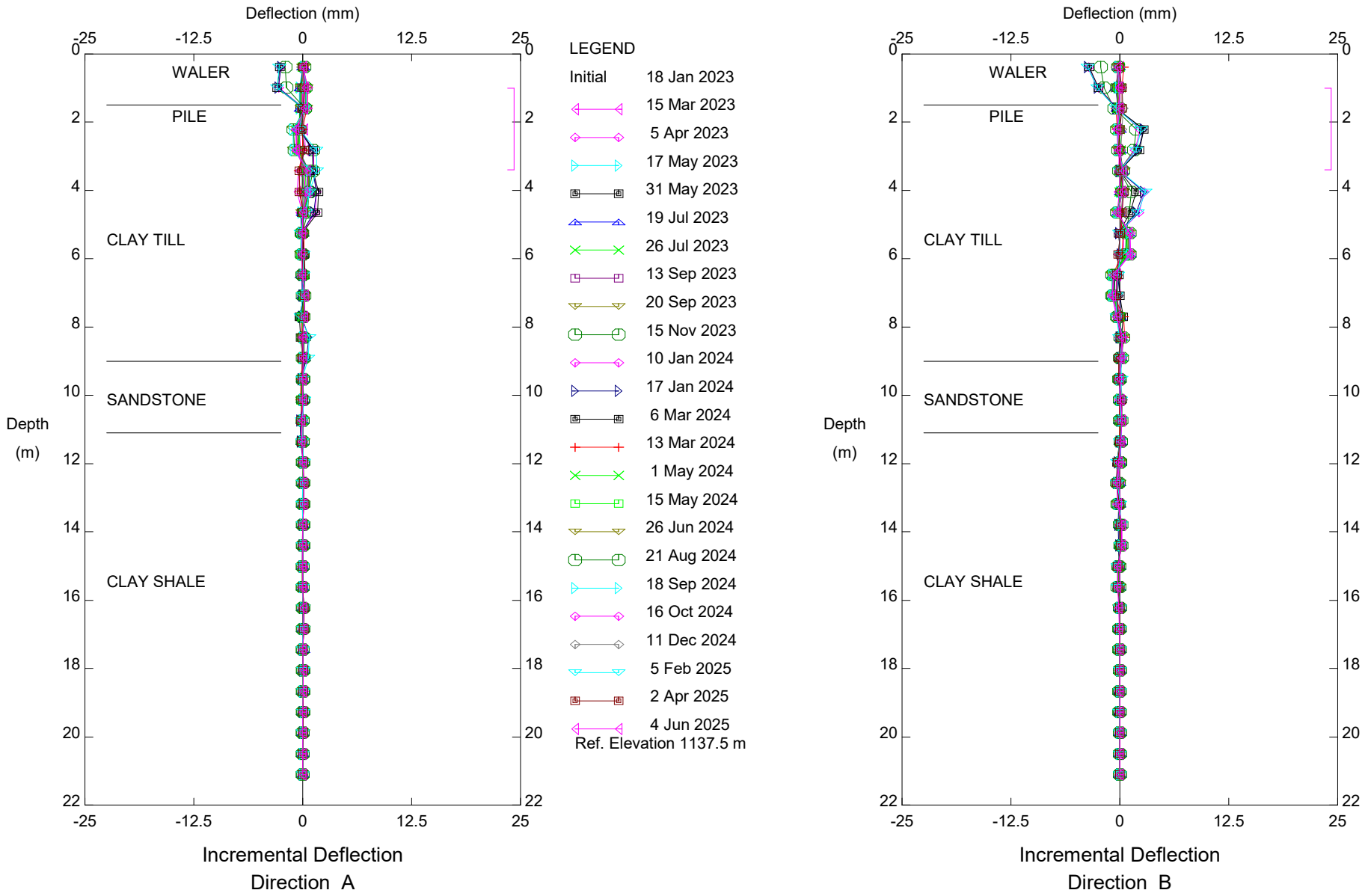
Klohn Crippen Berger - Edmonton



GP042; H40:36, Wanyandie Creek Slide, Inclinometer SAA22-P15

Alberta Transportation

Klohn Crippen Berger - Edmonton



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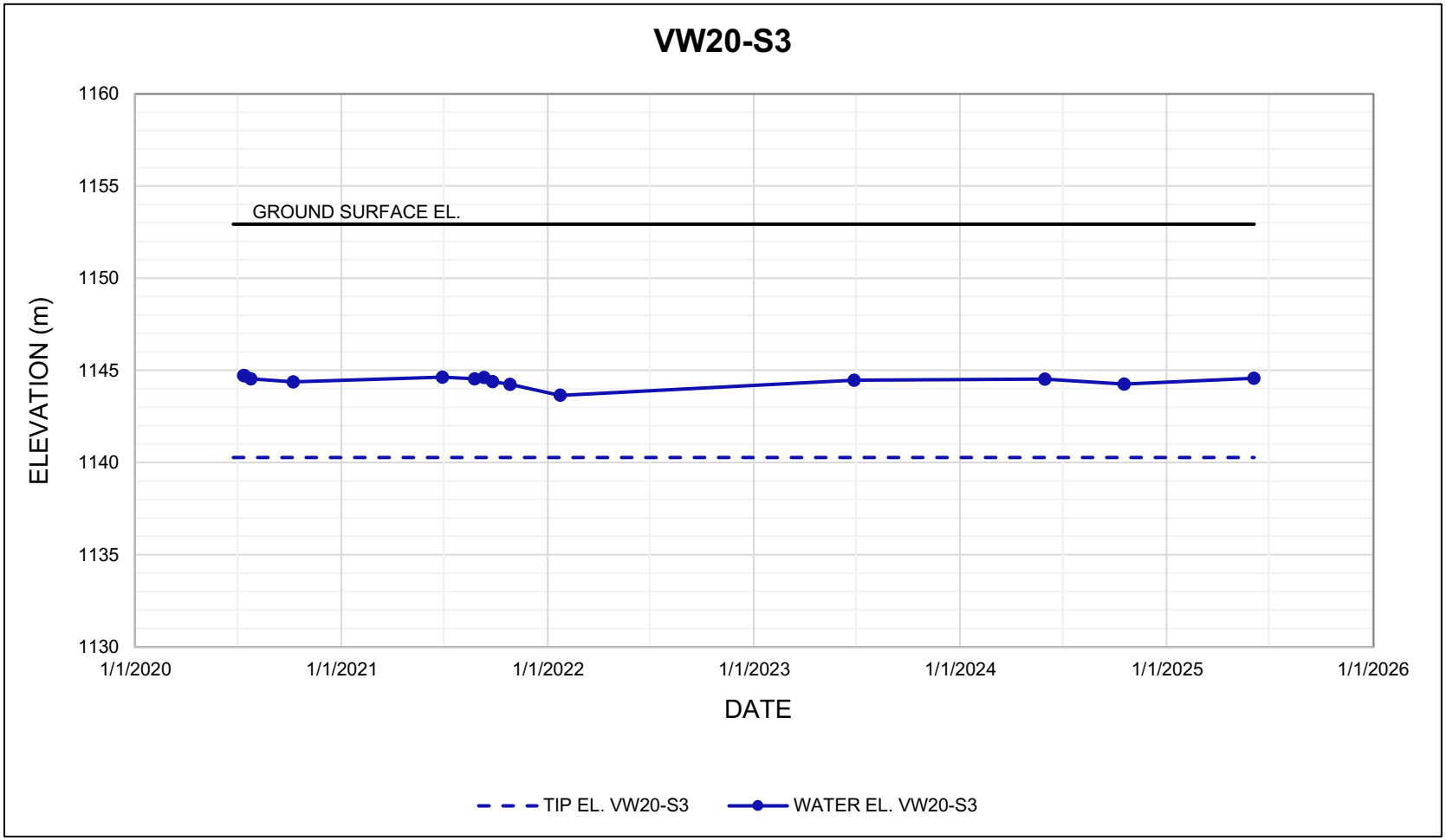
Alberta Transportation



NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021 PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
2. GROUND SURFACE ELEVATION MEASURED PRIOR TO CONSTRUCTION AND MAY NEED TO BE UPDATED.

CLIENT

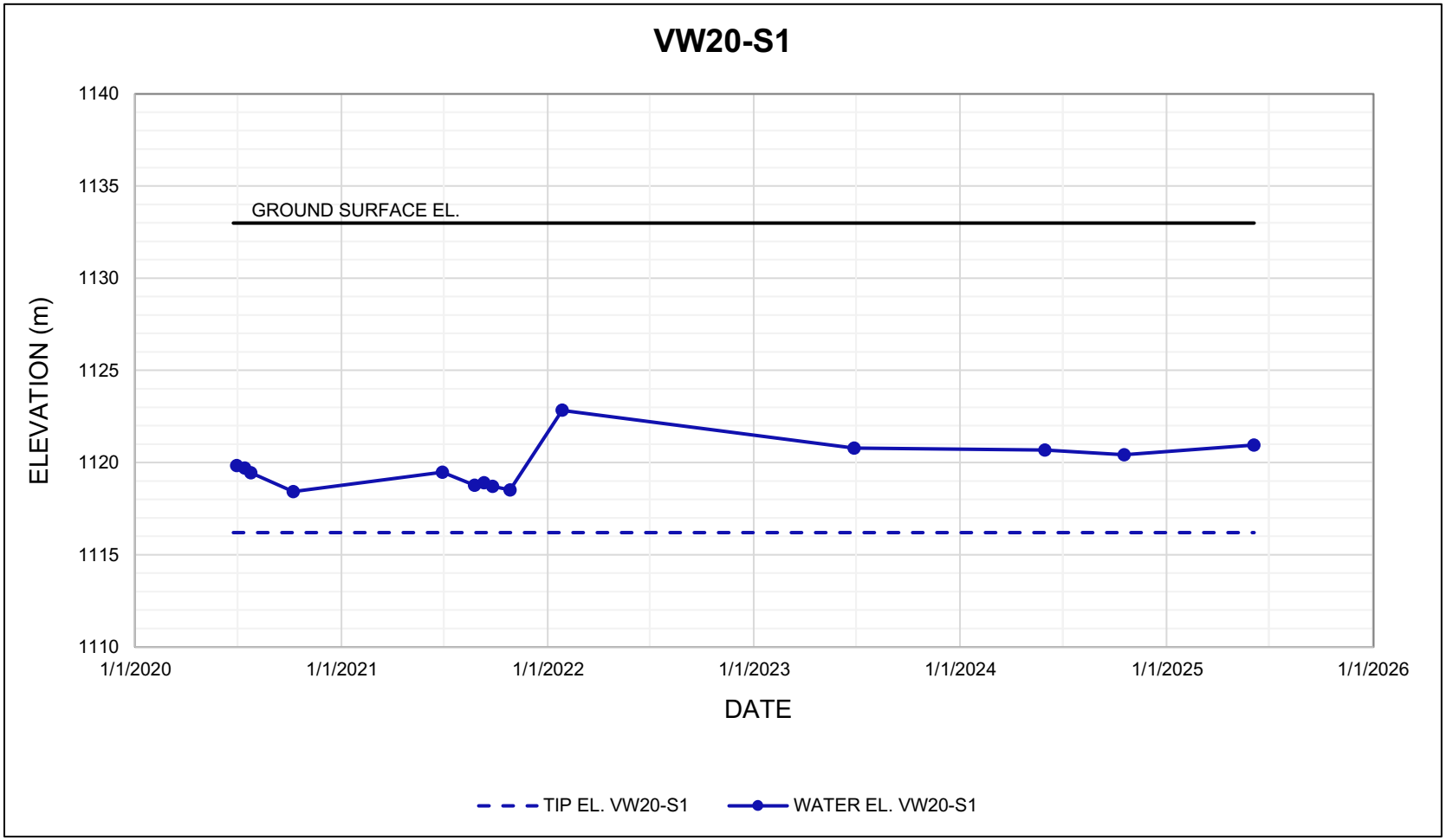
Alberta

Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
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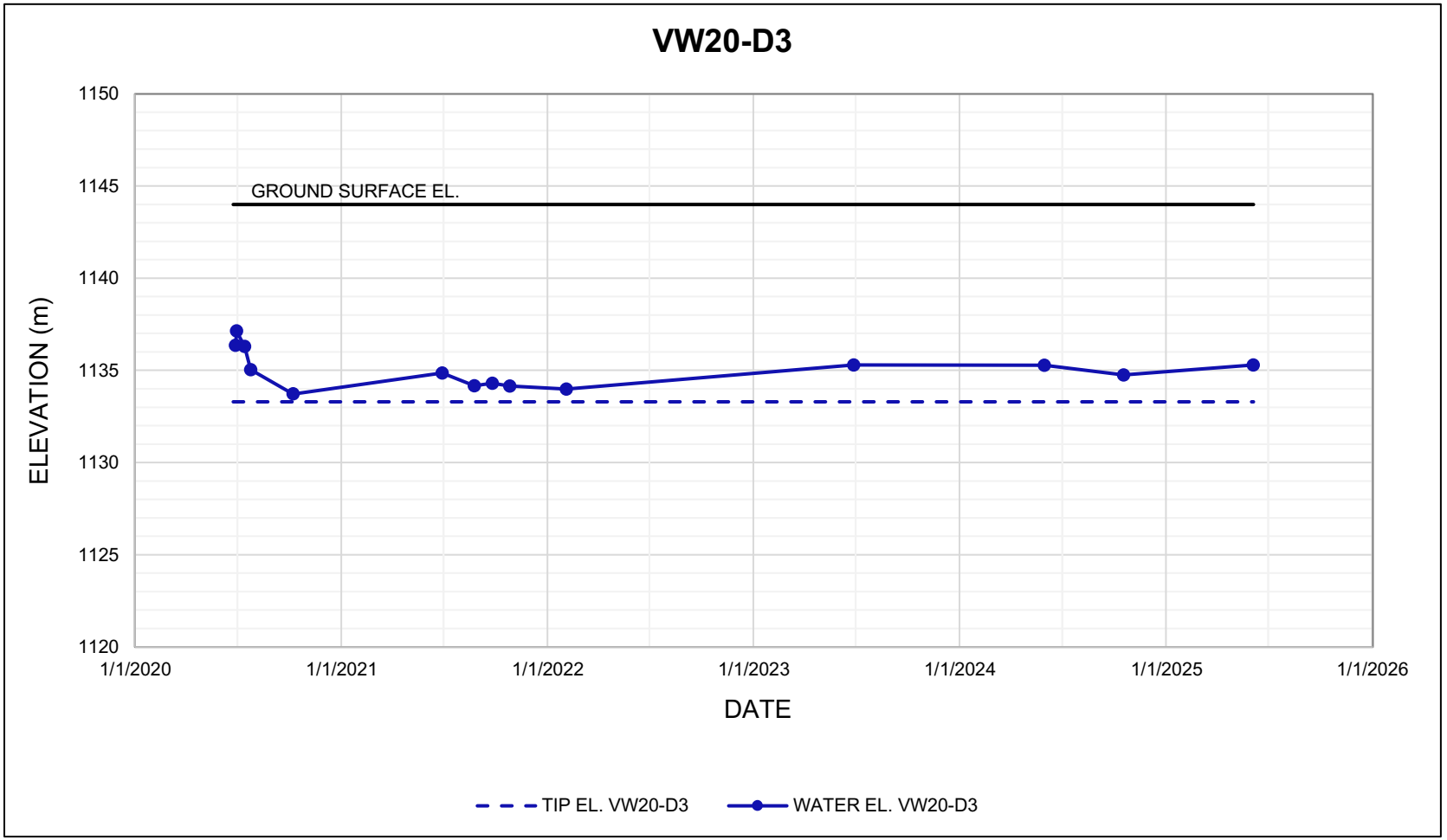
Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
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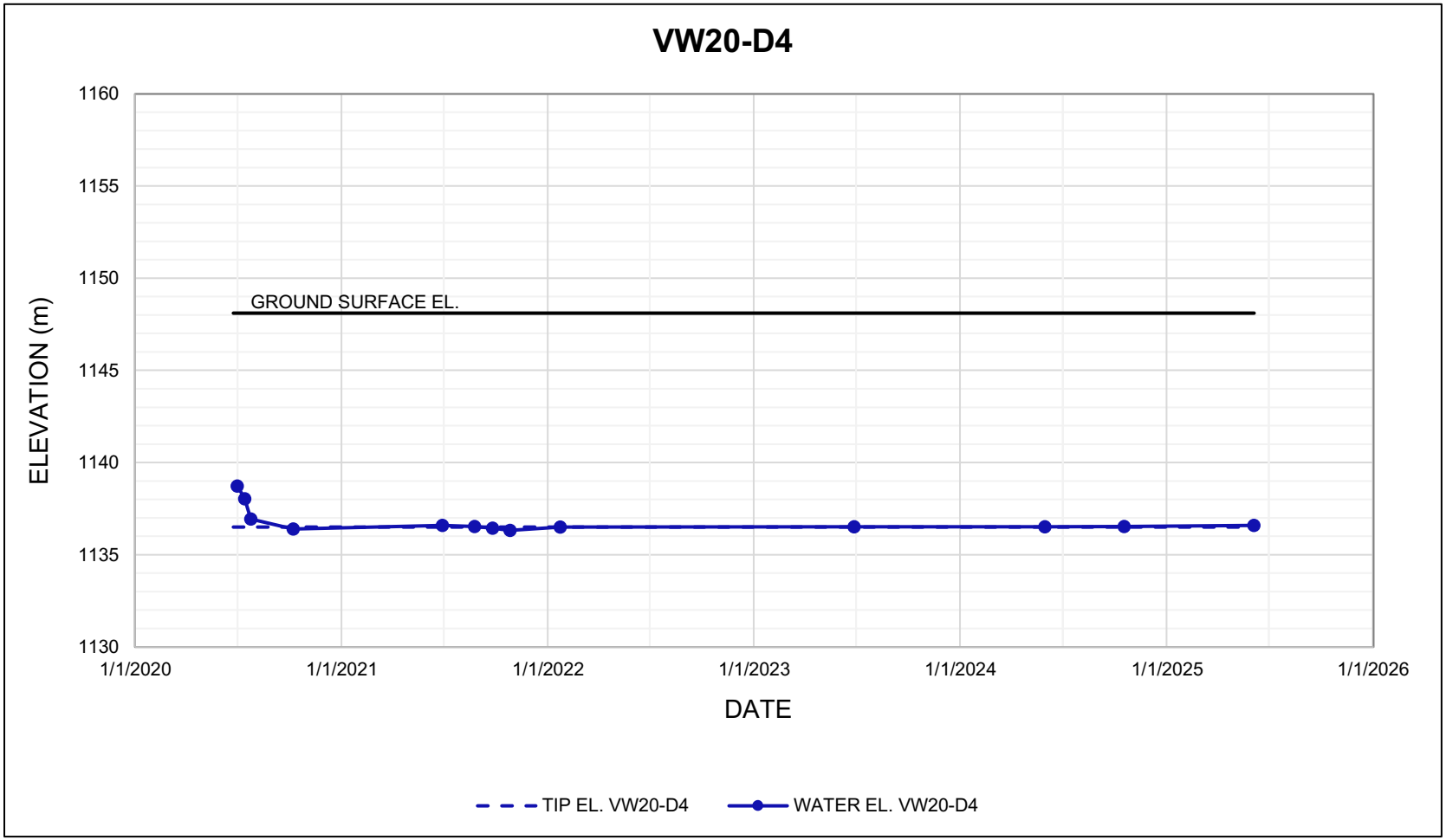
PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021 PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
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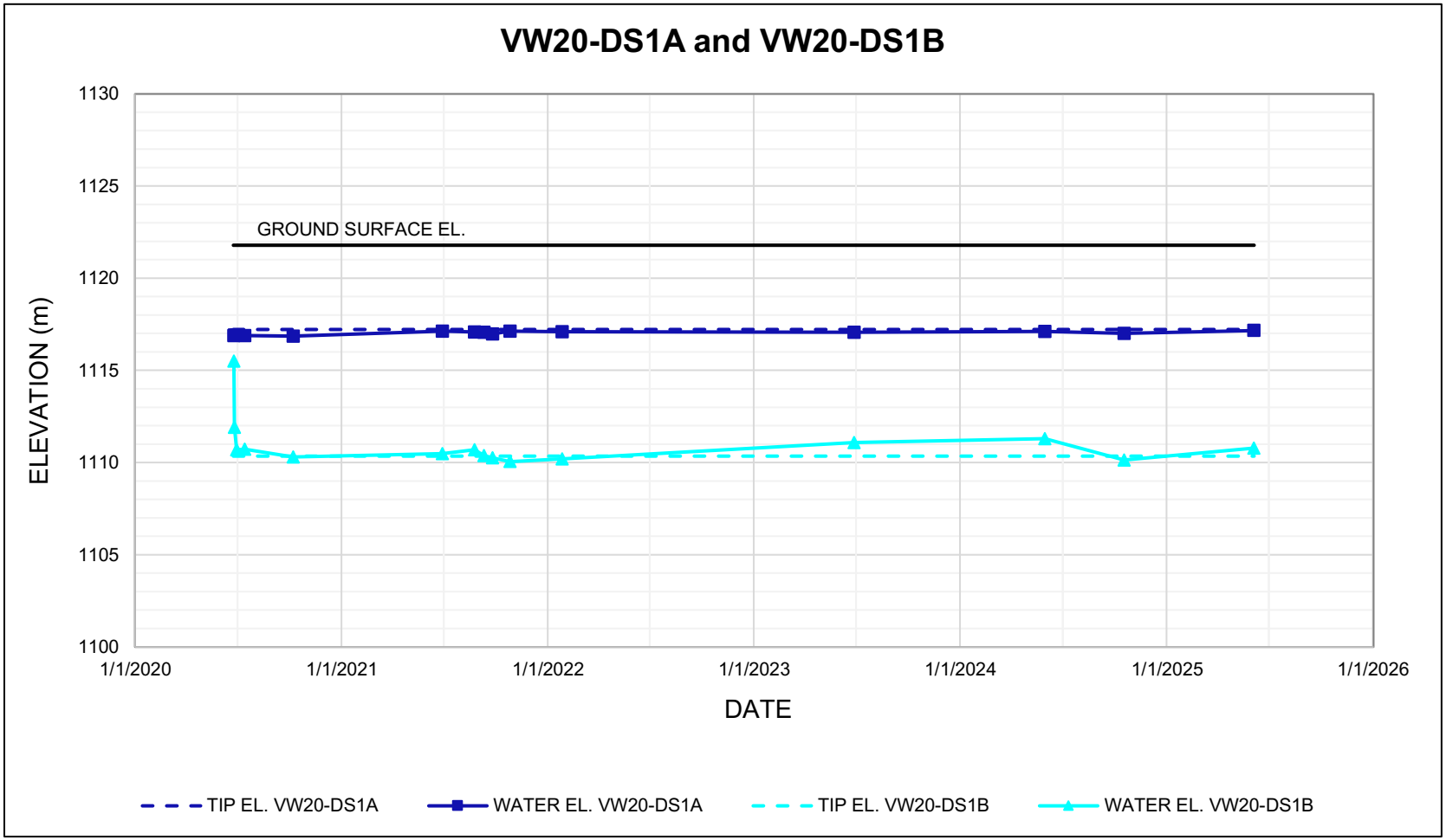
Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021 PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
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CLIENT

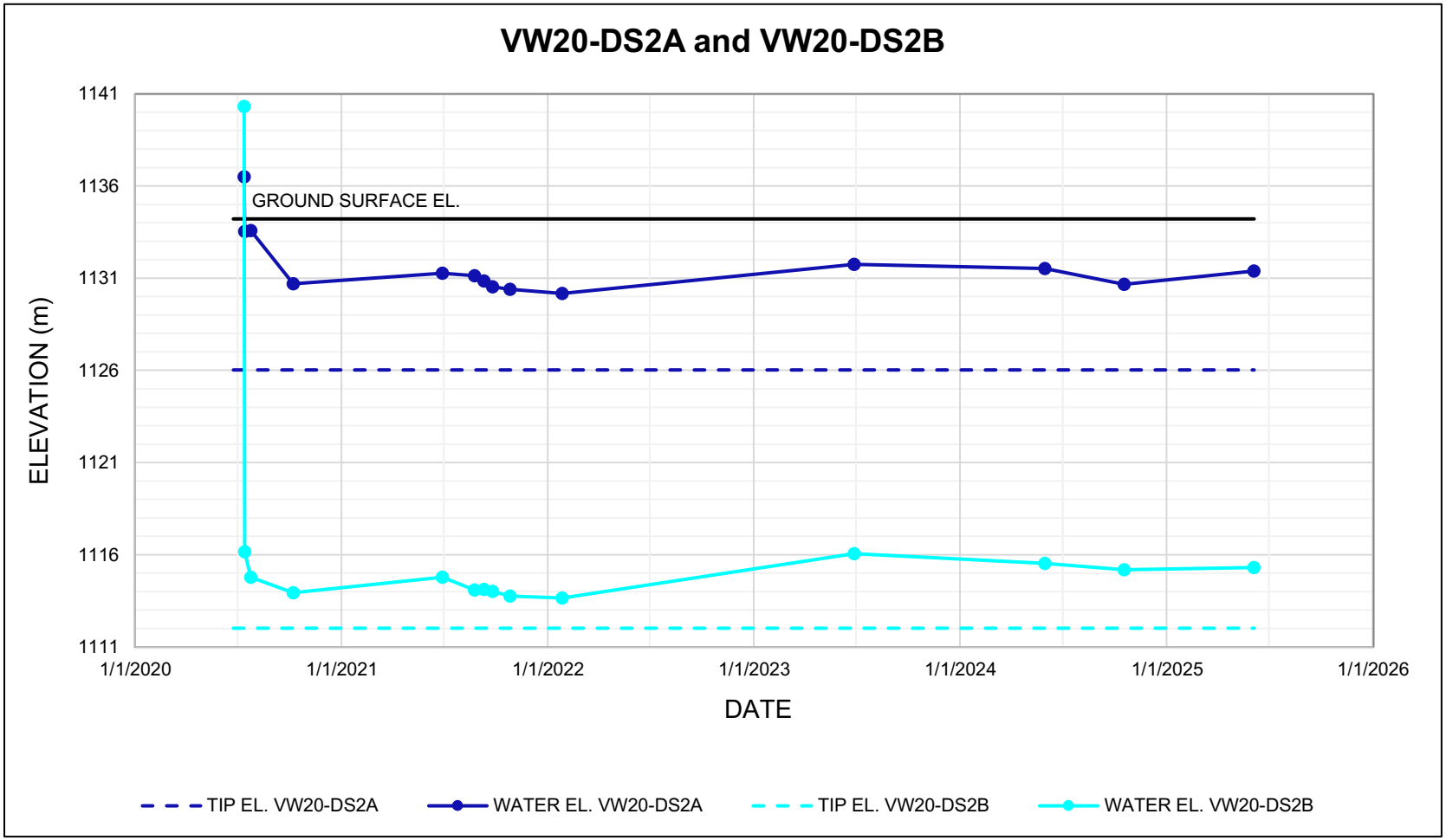
Alberta

Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021 PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
2. GROUND SURFACE ELEVATION MEASURED PRIOR TO CONSTRUCTION AND MAY NEED TO BE UPDATED.

CLIENT

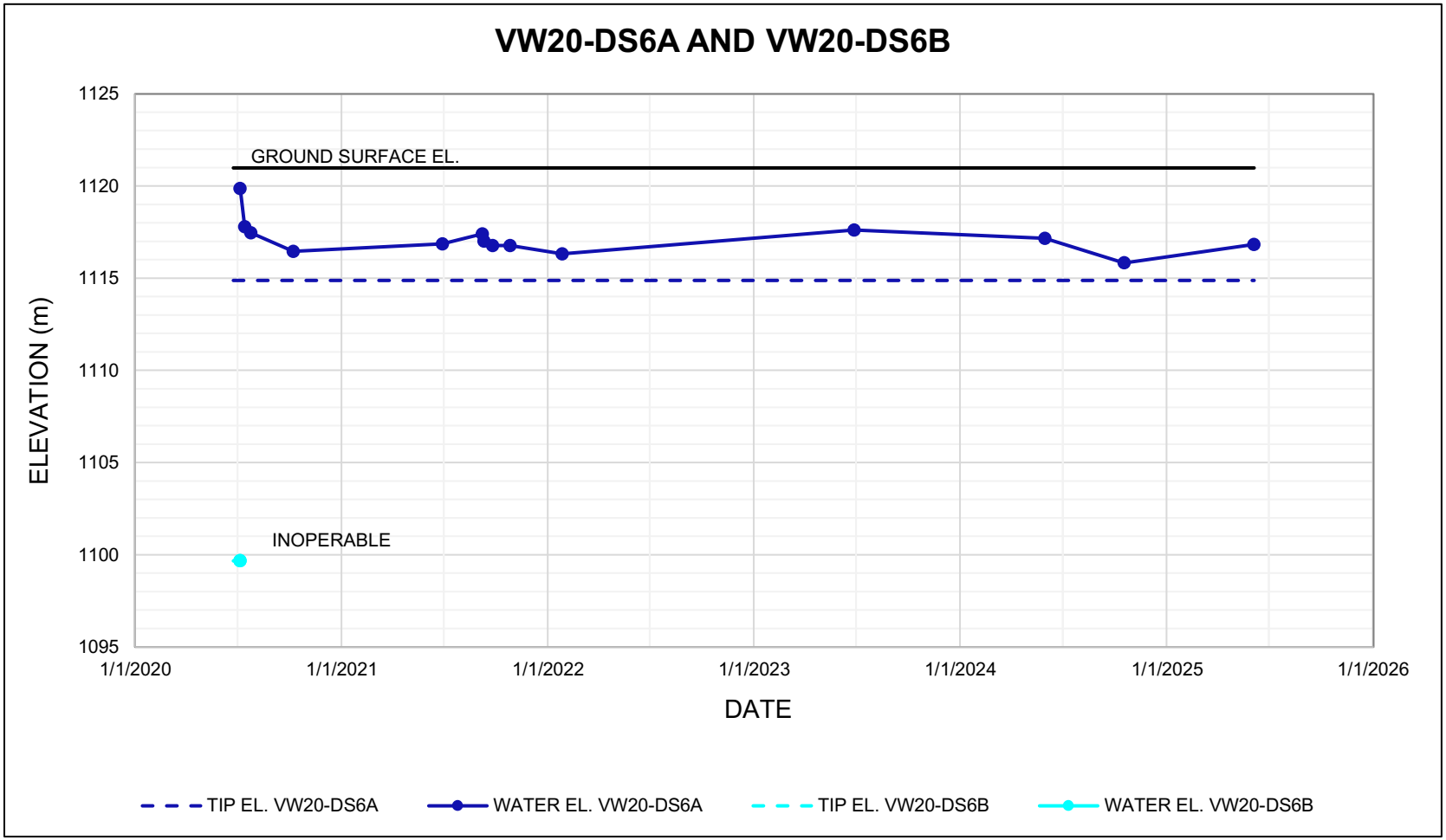
Alberta

Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021 PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
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CLIENT

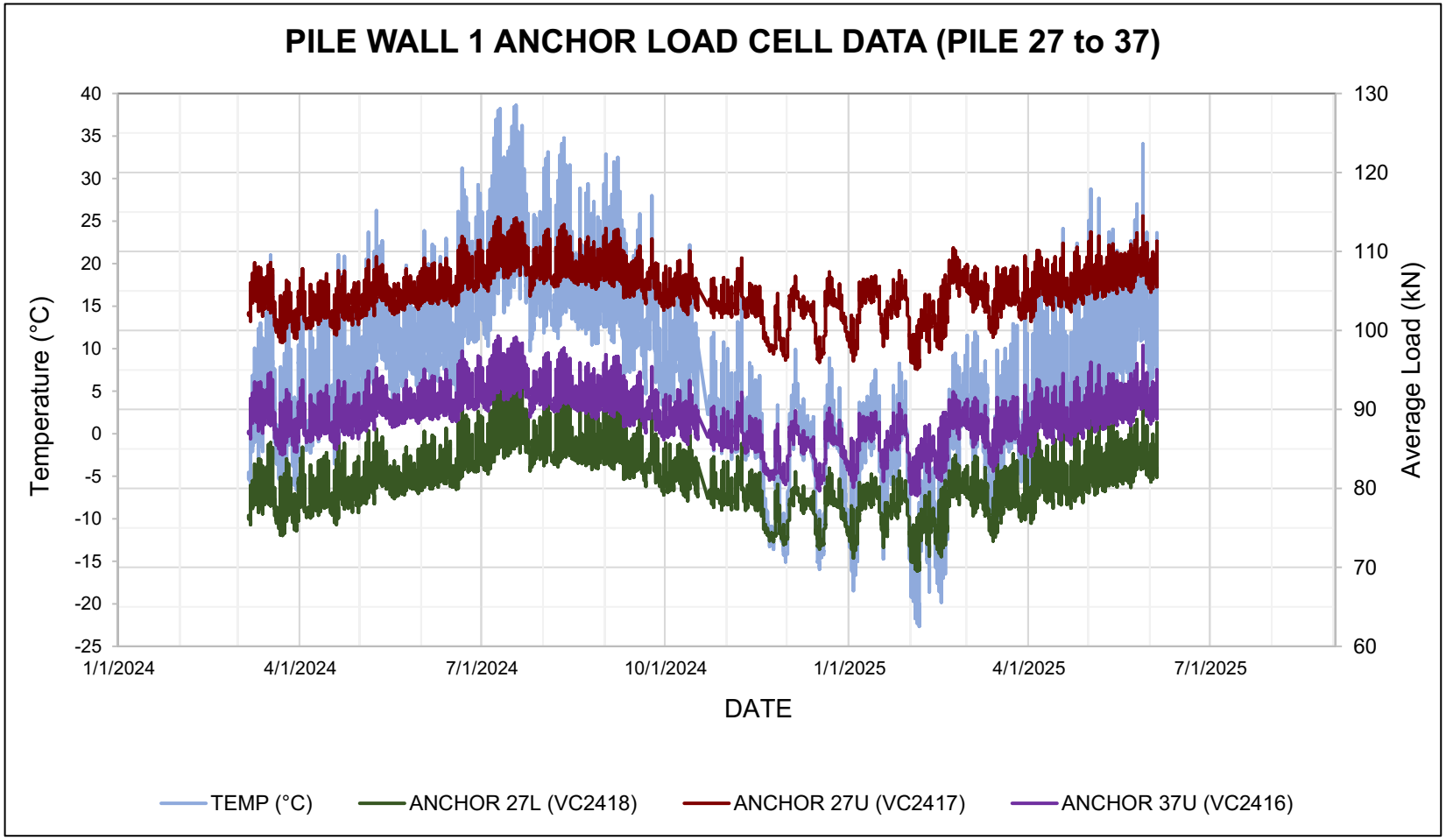
Alberta

Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. INSTRUMENTS CONNECTED TO MULTI-CHANNEL DATA LOGGER.

CLIENT

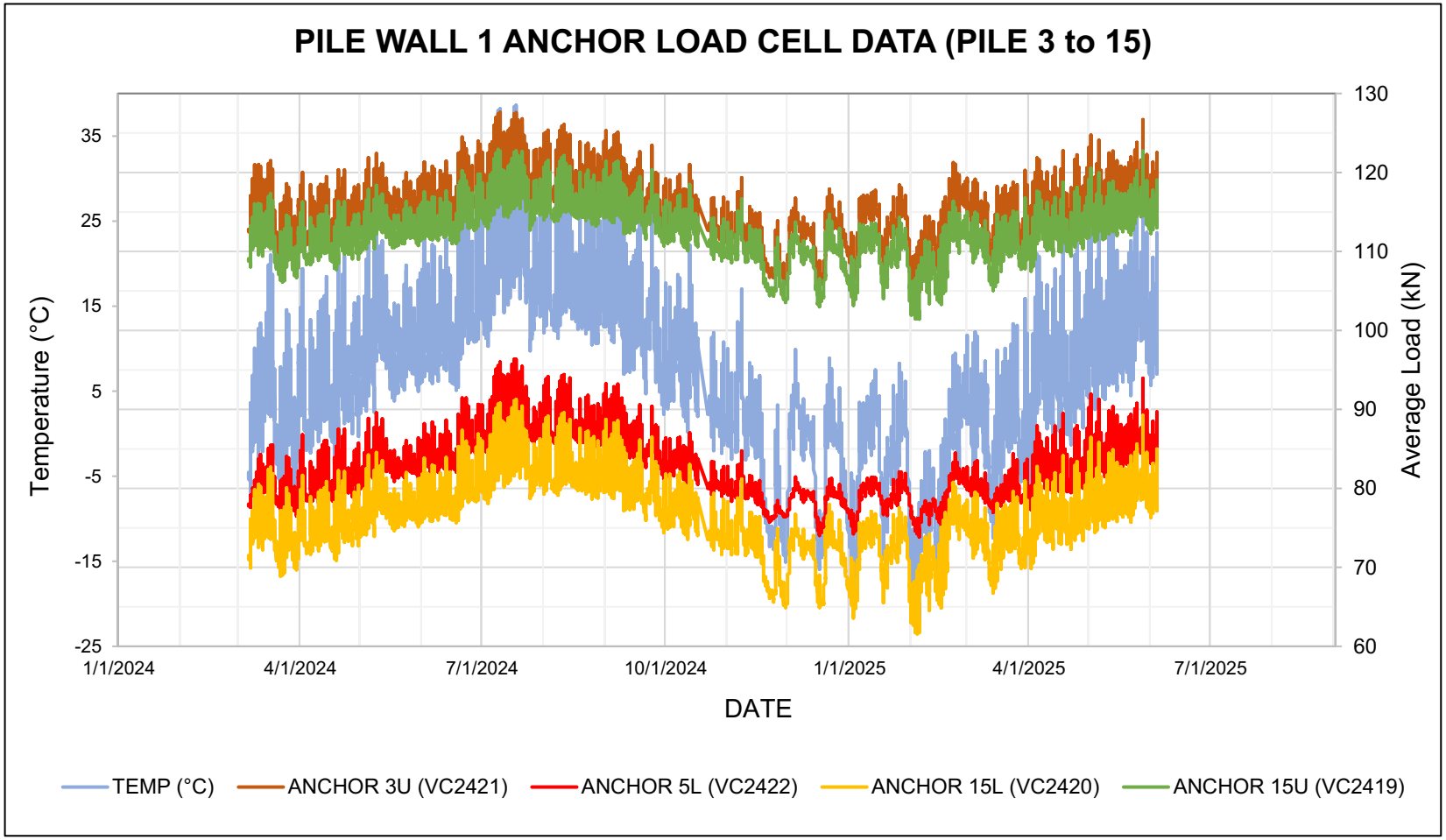
Alberta

Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PILE WALL 1 ANCHORS LOAD CELL DATA
(PILE 27 AND 37)
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	



NOTES:
1. INSTRUMENTS CONNECTED TO MULTI-CHANNEL DATA LOGGER.

CLIENT
Alberta
Klohn Crippen Berger

PROJECT
PEACE REGION (GRANDE PRAIRIE DISTRICT - SOUTH)
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PILE WALL 1 ANCHORS LOAD CELL DATA
(PILE 3, 5, AND 15)
GP042 - WANYANDIE CREEK EMBANKMENT SLIDE
HWY 40:36, KM 37.524

SCALE	PROJECT No.	FIG No.
	A05116A01	