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 GP028; H43:12, km 34.473 Two Creeks
Section C – 2025 Spring Readings

1 GENERAL

One slope inclinometer (SI) (SI02-02), six vibrating wire piezometers (VWPs) (VWP15-13U/L, MW14-6, MW15-12, PW14-2, and PW15-3), seven standpipe piezometers (SPs) (SP02-05, SP02-07, SP14-2, MW14-3, MW14-8, MW14-10, and MW14-11), two monitoring wells (MW14-7 and MW14-9), one pumping well (PW14-1) were read at the GP028 site in the Peace Region (Grande Prairie District – South) (GP South Region) on June 2, 2025 by Evan Hergott, E.I.T. and Min Hou, E.I.T. of KCB. These instruments were read as part of the GP South Region Geohazard Risk Management Program (GRMP). The site is located on Hwy 43:12, km 34.473. The approximate site coordinates are 6017213 N, 544193 E (UTM Zone 11, NAD 83). A site plan is presented on Figure 1.

The geohazard at the GP028 site consists of a landslide with a backscarp that extends through the south (eastbound) lanes of Hwy 43:12 and toes out in Two Creeks. High groundwater levels are also impacting the pavement subgrade/surface. The site is located north (upslope) of Two Creeks.

Previous remedial actions completed at the GP028 site include the installation of 1-m-deep pavement drains below the eastbound lane and a 315-m-long subdrain in the median in 2003. The subdrain is approximately 2.5 m deep, 400 mm in diameter, and outlets via a culvert beneath the south (eastbound) lane that eventually drains into Two Creeks. In 2015, two pumps were installed in pumping wells that discharge water into the same subdrain outlet, a remote monitoring station was installed, and Class 2 riprap was keyed-in along a 100 m length of the creekbank to protect it from erosion.

Between 2002 and 2015, several geotechnical site investigations, which included installing instruments, were conducted at the site by the previous consultants. The encountered stratigraphy has not been provided to KCB.

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1.1 Instrumentation

KCB has been reading the instruments at this site since the spring of 2021. 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.

Between 2002 and 2015, several SIs, piezometers, and wells were installed at the site by the previous consultants to monitor movement and groundwater conditions, respectively. A barologger was also installed in 2014. Some of these instruments are now inoperable (e.g., sheared or damaged), as detailed in Table 1.1 (see table notes). Recommendations for maintenance or replacement are made in Section 3.

During the fall 2024 readings, SP-08 was blocked at an approximate depth of 2 m below ground surface. KCB inspected SP-08 during the spring 2025 readings with a downhole camera and observed the casing to be pinched at an approximate depth of 2 m. A replacement instrument is not recommended at this time since similar data is provided by nearby SI02-07. The operable instruments are protected by above-ground casing protectors.

SI02-02 was read using the same metric RST Digital MEMS Inclinometer System that has been used to read the SI since KCB took over the readings in June 2021. The operable VWPs were read using RST Instruments DT Logger Host software and Campbell Scientific Device Configuration software. It is noted that the remotely-monitored VWPs cannot be accessed remotely right now, likely due to a change in service provider. Until this issue is resolved, KCB will continue to manually download the data from these instruments. The operable SPs with Solinst Leveloggers installed in them were read using a Solinst PC Interface Cable and Solinst Levelogger software. The remaining operable SPs were read using a Heron Water Level Meter.

Table 1.1 Instrumentation Installation Details[1]

Instrument Type	Instrument ID	Date Installed	UTM Coordinates (m)		Ground Surface Elevation (m)	Stick Up (m)	Depth (mbgs[2])	Condition
			Northing	Easting				
SI	~~SI02-01~~	~~Sep. 11, 2002~~	~~Unknown~~					~~Inoperable[6]~~
	SI02-02	Sep. 12, 2002	6017223	544356	851.9	0.7	14.6[6]	Operable[7]
	~~SI02-03~~	~~Sep. 12, 2002~~	~~Unknown~~					~~Inoperable[6]~~
	~~SI15-13~~	Oct. 15, 2015	6017220	544327	850.2	~~Unknown~~		~~Inoperable[6]~~
VWP[3]	VW15-13U	Oct. 15, 2015	6017220	544327	850.2	N/A	13.7	Operable
	VW15-13L					N/A	18.3	Operable
VWP[4]	MW14-6	2014	6017259[4]	544435[4]	856.0	N/A	15.3	Operable
	MW15-12	2014			858.2	N/A	27.1	Operable
	PW14-2	2014			856.3	N/A	18.0	Operable
	PW15-3	2014			857.0	N/A	26.9	Operable
SP	~~SP02-01~~	~~Sep. 13, 2002~~	~~Unknown~~					~~Inoperable[8]~~
	~~SP02-02~~	~~Sep. 11, 2002~~	~~Unknown~~					~~Inoperable[8]~~
	~~SP02-03~~	~~Sep. 11, 2002~~	~~Unknown~~					~~Inoperable[8]~~
	~~SP02-04~~	~~Sep. 12, 2002~~	~~Unknown~~					~~Inoperable[8]~~
	SP02-05	Sep. 11, 2002	6017232	544367	854.0	0.8	12.4	Operable
	~~SP02-06~~	~~Sep. 11, 2002~~	~~Unknown~~					~~Inoperable[8]~~
	SP02-07	Sep. 12, 2002	6017214	544358	851.2	0.7	6.6	Operable
	~~SP02-08~~	~~Sep. 12, 2002~~	~~6017195~~	~~544351~~	~~849.8~~	~~0.8~~	~~6.9~~	~~Inperable[11]~~
	SP14-2	2014	6017298	544055	839.3	1.0	8.8	Operable
SP[5]	MW14-3	2014	6017279	544221	845.0	-	7.0	Operable
	~~MW14-4~~	~~2014~~	~~6017264~~	~~544350~~	~~851.7~~	-	~~10.1~~	~~Inoperable[9]~~
	~~MW14-5~~	~~2014~~	~~6017264~~	~~544354~~	~~851.7~~	-	~~6.9~~	~~Inoperable[9]~~
	MW14-8	2014	6017247	544513	861.2	-	12.1	Operable
	MW14-10	2014	6017231	544671	870.7	-	12.8	Operable
	MW14-11	2014	6017232	544668	870.7	-	27.1	Operable
~~Barologger[9]~~	~~BW14-10~~	~~2014~~	~~6017231~~	~~544671~~	~~870.7~~	~~N/A~~	~~N/A~~	~~Inoperable[10]~~
Pumping Well	PW14-1	2014	6017250	544423	855.5	0.6	17.5	Operable
Monitoring Well	MW14-7	2014	6017258	544431	856.0	1.1	11.9	Operable
	MW14-9	2014	6017247	544521	861.2	1.0	6.1	Operable

Notes:

[1] Instrument installation details were taken from reports and data files prepared or provided by the previous consultant(s) or TEC. Instrument coordinates and stick ups (where applicable) were confirmed by KCB using a handheld GPS (accuracy of ± 5 m) and tape measure, respectively.

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

[3] VW15-13U/L are connected to single-channel data loggers (Model No. DT2011B from RST Instruments Ltd.), which are programmed to record a reading of the instruments every two hours.[4] MW14-6, PW14-2, PW15-3, MW15-12 are connected to a multi-channel data logger (Model CR6 from Campbell Scientific), which is programmed to record a reading of the instruments every two hours. The data logger is installed at the central monitoring station located in the highway median. The coordinates given for the instruments are for the location of the central monitoring station.

[5] Solinst Leveloggers are installed in MW14-3/4/5/8/10/11. The loggers are programmed to record a reading of the instruments every two hours.

[6] SI02-1, SI02-3, and SI15-13 have sheared at an approximate depth of 13.0 m, 14.0 m, and 14.6 m below ground surface, respectively.

[7] SI02-2 sheared at an approximate depth of 15.7 m below ground surface in 2005 and has since been read above this depth.

[8] SP-01 through SP-04, and SP-06 were reported as inoperable by a previous consultant.

[9] On March 24, 2021, the protective head boxes for MW14-4 and MW14-5 were struck by a vehicle, leaving MW14-4 inoperable. MW14-5 was inoperable during the spring 2024 readings.

[10] BW14-10 could not be read in 2022 or 2023 and was removed from site. Previously, BW14-10 was in the head box for MW14-10. The instrument is being temporarily stored at the KCB Edmonton Office.

[11] SP02-08 is pinched at an approximate depth of 2.0 m below ground surface. Camera inspection completed during the spring 2025 readings. Instrument last read in May 2024.

2 INTERPRETATION

2.1 General

For SI02-2, the cumulative displacement, incremental displacement, and displacement-time data was plotted in the A-direction (i.e., the direction of the A0-grooves) and the X-direction (i.e., the direction of maximum movement obtained at a skew angle from the A0-grooves). SI02-02 has a skew angle of 165°, measured clockwise from the direction of the A0-grooves.

For the operable PNs and 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 SPs and monitoring/pumping wells, the water level data was plotted relative to ground surface elevation and the screen elevation for each instrument.

The SI and piezometer data plots are included in Appendix I, and a summary of the SI and piezometer data is provided in Table 2.1 through Table 2.4.

In 2021, KCB reviewed the instrumentation data provided by the previous consultant and removed corrections applied to the historical SI data based on our experience. The instrumentation data obtained by KCB is consistent with the data obtained by the previous consultant. No re-initialization of the SI is recommended. The SI data plots presented herein include data for readings taken with both the previous consultants' and KCB's SI reading equipment.

2.2 Zones of Movement

Discrete movement (i.e., movement occurring on a defined failure plane) is being recorded in SI02-2 between an approximate depth of 13.1 m and 14.6 m below ground surface (approximately elevation 838.9 m to 837.3 m). This instrument previously sheared at an approximate depth of 15.7 m below ground surface (approximately elevation 836.2 m) in 2005 and has been read above this depth since. The movements recorded in SI02-02 likely do not reflect all the subsurface movements occurring at this site since movements could be occurring below a depth of 15.7 m below ground surface. This instrument should no longer be read and replacement should be considered to capture deeper movements that could be occurring at the site.

SI02-1 and SI02-3 (both inoperable) were previously reported as sheared at an approximate depth of 13.0 m and 14.0 m below ground surface, respectively.

Table 2.1 Slope Inclinometer Reading Summary

Instrument ID	Date				Ground Surface Elevation (m)	Depth of Movement (mbgs[1])	Direction of Movement, Skew Angle[2]	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	Most Recent Reading	Change from Previous Reading
SI02-02[3]	Sep. 13, 2002	Oct. 18, 2024	Oct. 18, 2024	Jun. 02, 2025	851.9	13.1 – 14.6 [3]	X-direction, 165°	23.3	-0.1	8.0	-0.2	-0.6

Notes:
[1] Meters below ground surface (mbgs).
[2] Skew angle of the X-direction measured clockwise from the A-direction. The azimuth of the A0-groove in the SI was measured by KCB with a magnetic compass in spring 2022.
[3] SI02-2 has sheared at an approximate depth of 15.7 m below ground surface and is currently being read above this depth.

Table 2.2 Vibrating Wire Piezometer Summary

Instrument ID	Serial No.	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)
VW15-13U[2]	34611	2015	Oct. 18, 2024	Jun. 02, 2025	850.2	13.7	5.9	5.8	0.1
VW15-13L[2]	34612		Oct. 18, 2024	Jun. 02, 2025		18.3	N/A – instrument is dry		
MW14-6[3]	34613	2014	Oct. 18, 2024	Jun. 02, 2025	856.0	15.3	8.2	7.5	0.7
MW15-12[3]	34616	2015	Oct. 18, 2024	Jun. 02, 2025	858.2	27.1	20.1	19.9	0.2
PW14-2[3,]	34615	2014	Oct. 18, 2024	Jun. 02, 2025	856.3	18.0	8.2	7.8	0.4
PW15-3[3]	34614	2015	Oct. 18, 2024	Jun. 02, 2025	857.0	26.9	18.8	18.7	0.1

Notes:
[1] Meters below ground surface (mbgs).
[2] VW15-13U and -13L are connected to single-channel data loggers, which are programmed to record a reading of the instruments every two hours.
[3] MW14-6, PW14-2, PW15-3, MW15-12 are connected to a multiple-channel data logger, which is programmed to record a reading of the instruments every two hours.

Table 2.3 Standpipe Piezometer, Monitoring Well, and Pumping Well Reading Summary

Instrument ID	Instrument Type	Date			Ground Surface Elevation (m)	Screen 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)
SP02-05	SP	2002	Oct. 18, 2024	Jun. 02, 2025	854.0	12.4	5.8	5.6	0.2
SP02-07	SP	2002	Oct. 18, 2024	Jun. 02, 2025	851.2	6.6	3.5	3.3	0.2
SP14-2	SP	2014	Oct. 18, 2024	Jun. 02, 2025	839.3	8.8	1.1	1.4	-0.3
MW14-7	Monitoring Well	2014	Oct. 18, 2024	Jun. 02, 2025	856.0	11.9	7.9	7.5	0.4
MW14-9	Monitoring Well	2014	Oct. 18, 2024	Jun. 02, 2025	861.2	6.1	1.8	1.7	0.1
PW14-1	Pumping well	2014	Oct. 18, 2024	Jun. 02, 2025	855.5	17.5	7.8	7.3	0.5

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

Table 2.4 Levelogger Reading Summary

Instrument ID	Serial No.	Date			Ground Surface Elevation (m)	Screen 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)
MW14-3[2]	62053343	2014	Oct. 18, 2024	Jun. 02, 2025	845.0	7.0	2.0	2.1	-0.1
MW14-8[2]	62053315	2014	Oct. 18, 2024	Jun. 02, 2025	861.2	12.1	2.3	3.3	-1.0
MW14-10[2]	62053298	2014	Oct. 18, 2024	Jun. 02, 2025	870.7	12.8	9.5	9.3	0.2
MW14-11[2]	62053314	2014	Oct. 18, 2024	Jun. 02, 2025	870.7	27.1	19.1	17.4	1.7

Notes:
[1] Meters below ground surface (mbgs).
[2] Solinst Leveloggers are installed in MW14-3/8/10/11. The loggers are programmed to record a reading of the instruments every two hours.

2.3 Interpretation of Monitoring Results

Slope Inclinometer

Since installation in 2002, the rate of movement being recorded in SI02-02, above where it has sheared at an approximate depth of 15.7 m below ground surface, has been relatively steady with an overall rate of approximately 1 mm/year. The current rate of movement recorded in the instrument indicates the rate of movement is slow and within the accuracy of the SI reading equipment/instrument, but it could be higher at deeper depths.

Piezometers

Our comments on the piezometer data are as follows:

- In November 2017, an increase in porewater pressure/water level (up to approximately 15 m) was recorded in the VWPs connected to the central monitoring station (PW14-2, MW14-6, PW15-3, and MW15-12), four SPs (MW14-4/5 ,now both inoperable, and MW14-11), one monitoring well (MW14-7), and one pumping well (PW14-1). The recorded increases were believed to be caused by the pumping wells not being operational. Water levels recorded in these instruments remained elevated until the fall of 2020 when they decreased up to approximately 15 m, in less than a week.
  - Since fall 2020, the water level recorded in PW14-2, MW14-6, PW15-3, and MW15-12, MW14-11 has fluctuated seasonally (with the spring/summer readings typically being higher than the fall/winter readings). Smaller, short-term increases (less than approximately 0.7 m) are also recorded in these instruments likely in response to precipitation and freshet infiltration.
    - Occasionally “spikes” in water level of over 1 m are recorded in PW14-2, MW14-6, PW15-3, and MW15-12 for short periods of time (i.e., less than a day). These spikes have been removed from the data plots because KCB suspects these readings are due to connectivity issues between the data logger and instrument.
- Overall, since fall 2020, the water level recorded in PW14-2, PW15-3, MW14-7, and PW14-1 have been relatively steady (fluctuating up to approximately 1.0 m to 2.0 m reading to reading or seasonally). Whereas the water level recorded in MW14-6 and MW14-11 have increased (between approximately 0.5 m and 2.5 m) and the water level recorded in MW15-12 has decreased (approximately 2.0 m). It is noted that the increase recorded in MW14-11 has not been observed in the adjacent shallower piezometer (MW14-10), which has been fluctuating seasonally.
- Water levels recorded in MW14-8 have historically been relatively steady between approximately 1 m and 2.5 m below ground surface. In late-summer/early-fall 2021 and 2022, short-term water level increases of approximately 4.2 m and 1.7 m were recorded in this instrument, respectively, which were the highest two water levels recorded in this instrument since installation. Since the most recent high-water level recorded in fall 2022, the water level

recorded in this instrument has generally been steady or decreasing, including an approximate 1.5 m decrease since the spring 2024 readings.

- Overall, water levels recorded in the remaining instruments appear to be either relatively steady, fluctuating seasonally (with the spring/summer readings typically higher than the fall/winter readings), or dry (i.e., water level at or below instruments tip elevation).

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.

The site should continue to be inspected by the Maintenance Contract Inspector (MCI) and as part of the GP South Region GRMP Section B inspections.

3.2 Instrument Installs, Repairs, and Maintenance

As discussed in Section 2.2, SI02-2 should no longer be read and a replacement should be considered to capture deeper movements that could be occurring at the site. This instrument previously sheared at an approximate depth of 15.7 m below ground surface in 2005 and has been read above this depth since, so readings recorded in this instrument likely do not reflect all the subsurface movements occurring at the site.

The barologger (BW14-10) could not be read in 2022 or 2023 and was removed from site. The instrument is being temporarily stored at the KCB Edmonton Office. It should be repaired or replaced.

MW14-5, which was previously struck by a vehicle in March 2021, could potentially be repaired by removing the headbox, cutting back the casing, installing a new Solinst Levelogger or removing and repairing the existing Solinst Levellogger, which is currently not working and stuck in the casing below where it is bent.

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.

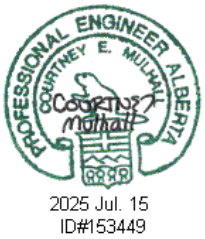
KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.

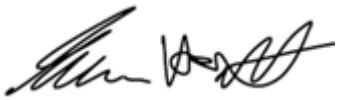
Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

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.



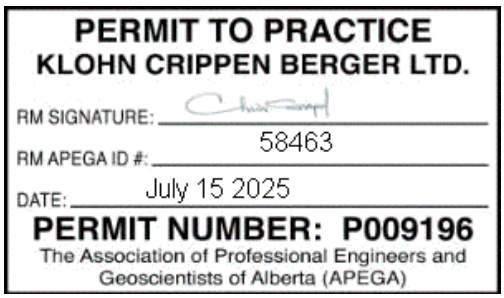


Courtney Mulhall, M.Sc., P.Eng.
Geotechnical Engineer

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

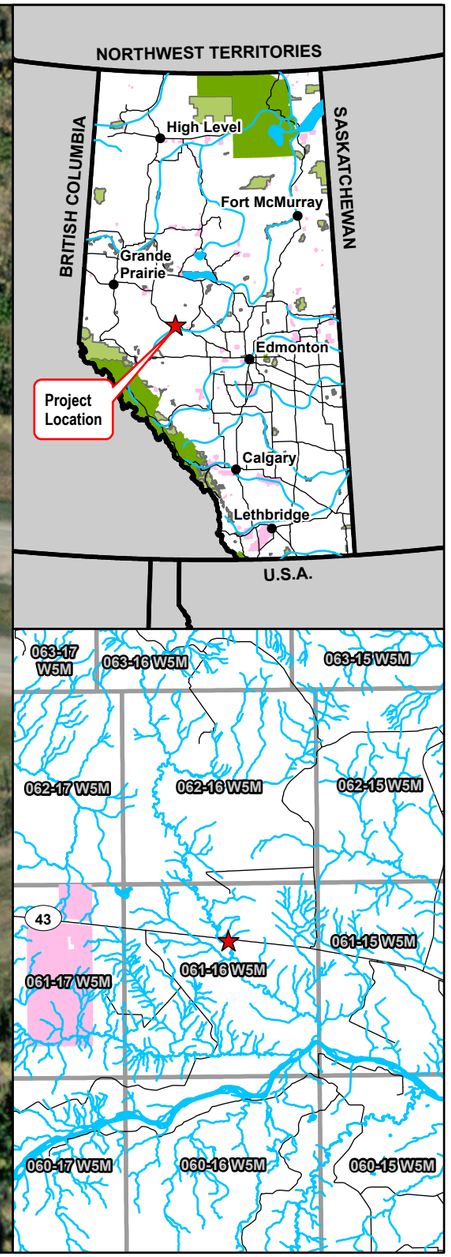
CM/EH:bb

Cc: Chris Gräpel, M.Eng., P.Eng.



ATTACHMENTS
Figure
Appendix I Instrumentation Plots

FIGURE



Legend

- Pneumatic Piezometer (PN)
- Slope Inclinometer (SI)
- Standpipe Piezometer (SP)
- Standpipe Piezometer (PW or MW)
- Levelogger (MW)
- Monitoring Well (MW)
- Pumping Well (PW)
- Vibrating Wire Piezometer (VW)
- Vibrating Wire Piezometer (PW or MW)
- Flow Direction
- Watercourse

0 150 Metres

NOTES:
1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM ZONE 11N
3. IMAGE SOURCE: 2025 MICROSOFT CORPORATION, 2025 MAXAR CNES, DISTRIBUTION AIRBUS DS
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
GP028 - Two Creeks
Hwy 43:12, km 34.473

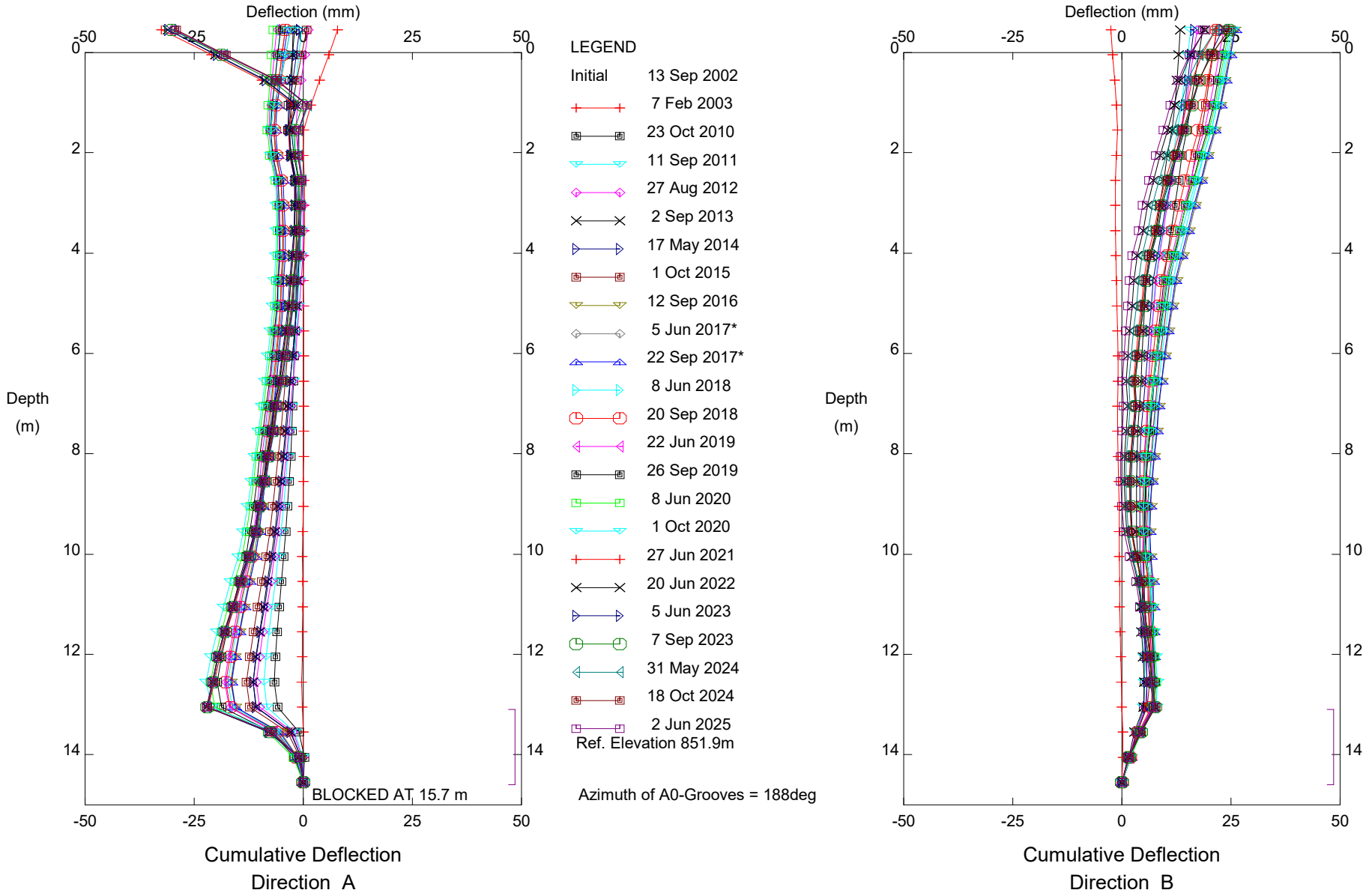
SCALE	PROJECT No.	FIG No.
1:2,500	A05116A01	1

File: Z:\AEDM\A05116A01 ABT Grande Prairie South GRMP\400 Drawings\GIS\MXD\2025\Section C\GIS 2\ABT_GPSouth_SectionC_250707.aprx Date: Time: Creator: : NMirhadi

APPENDIX I

Instrumentation Plots

Klohn Crippen Berger - Edmonton

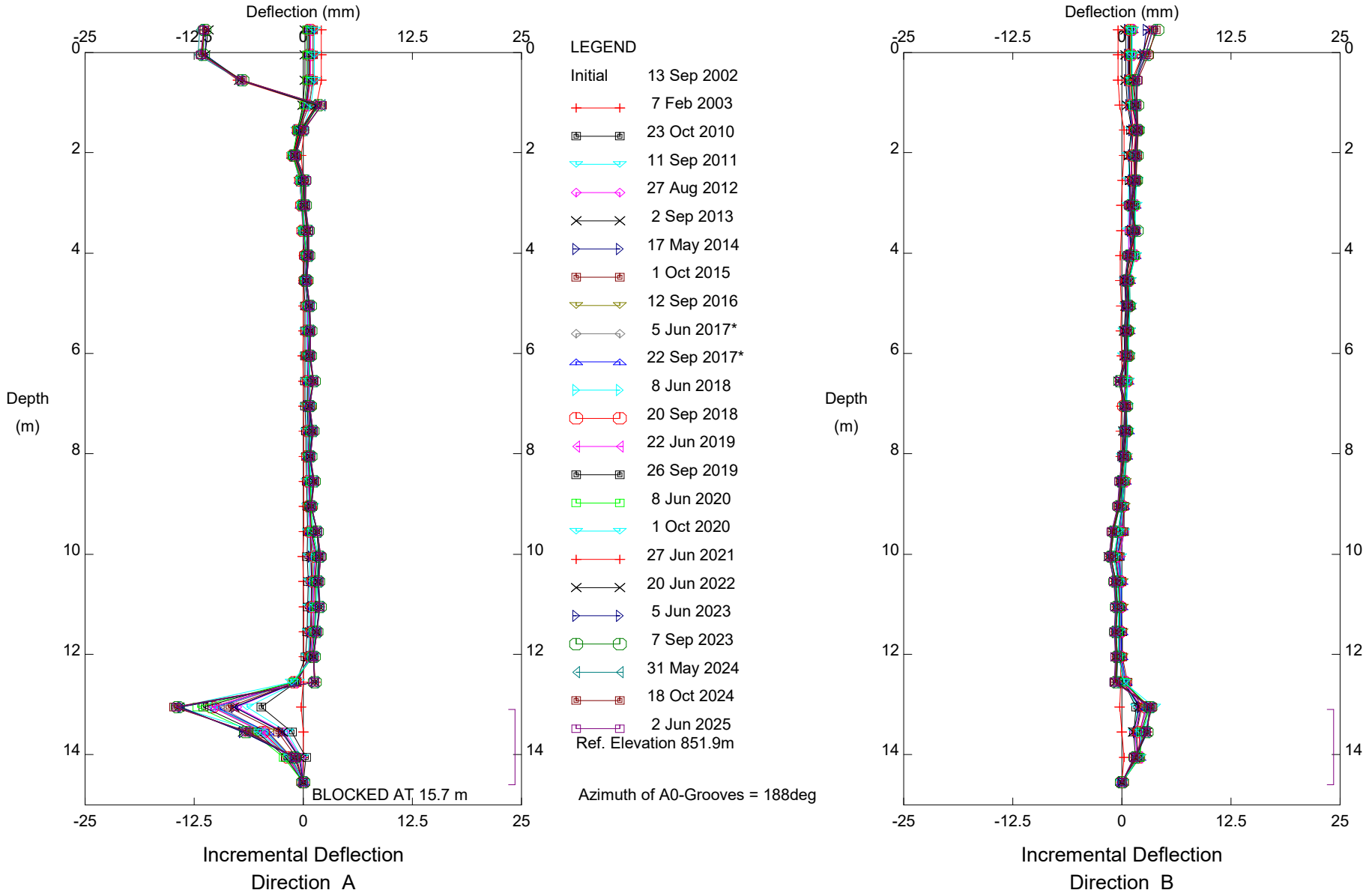


GP028; H43:12, Two Creeks, Inclinometer SI02-02

Alberta Transportation

Sets marked * include zero shift and/or rotation corrections.

Klohn Crippen Berger - Edmonton



GP028; H43:12, Two Creeks, Inclinometer SI02-02

Alberta Transportation

Sets marked * include zero shift and/or rotation corrections.

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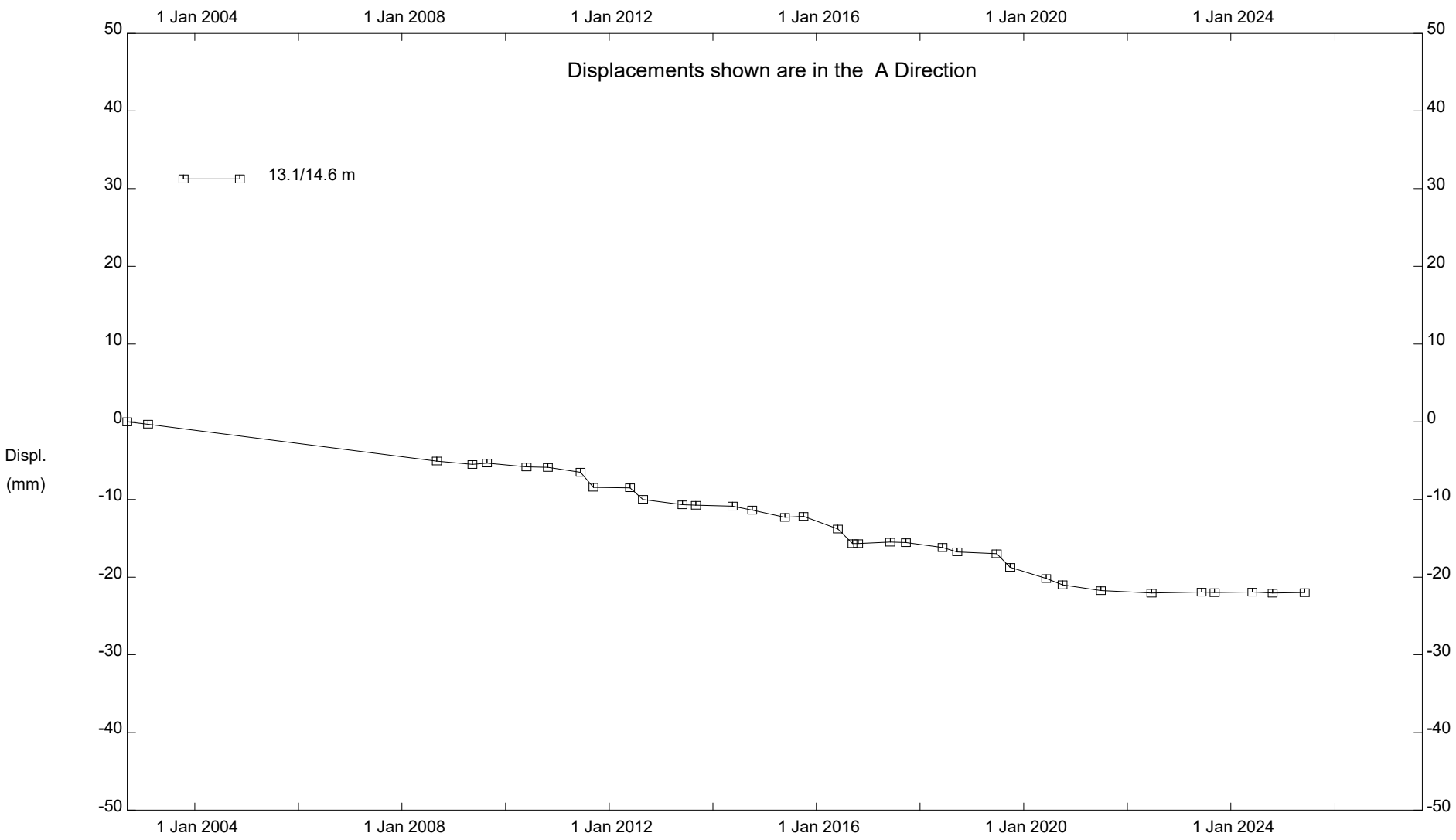

GP028; H43:12, Two Creeks, Inclinometer SI02-02

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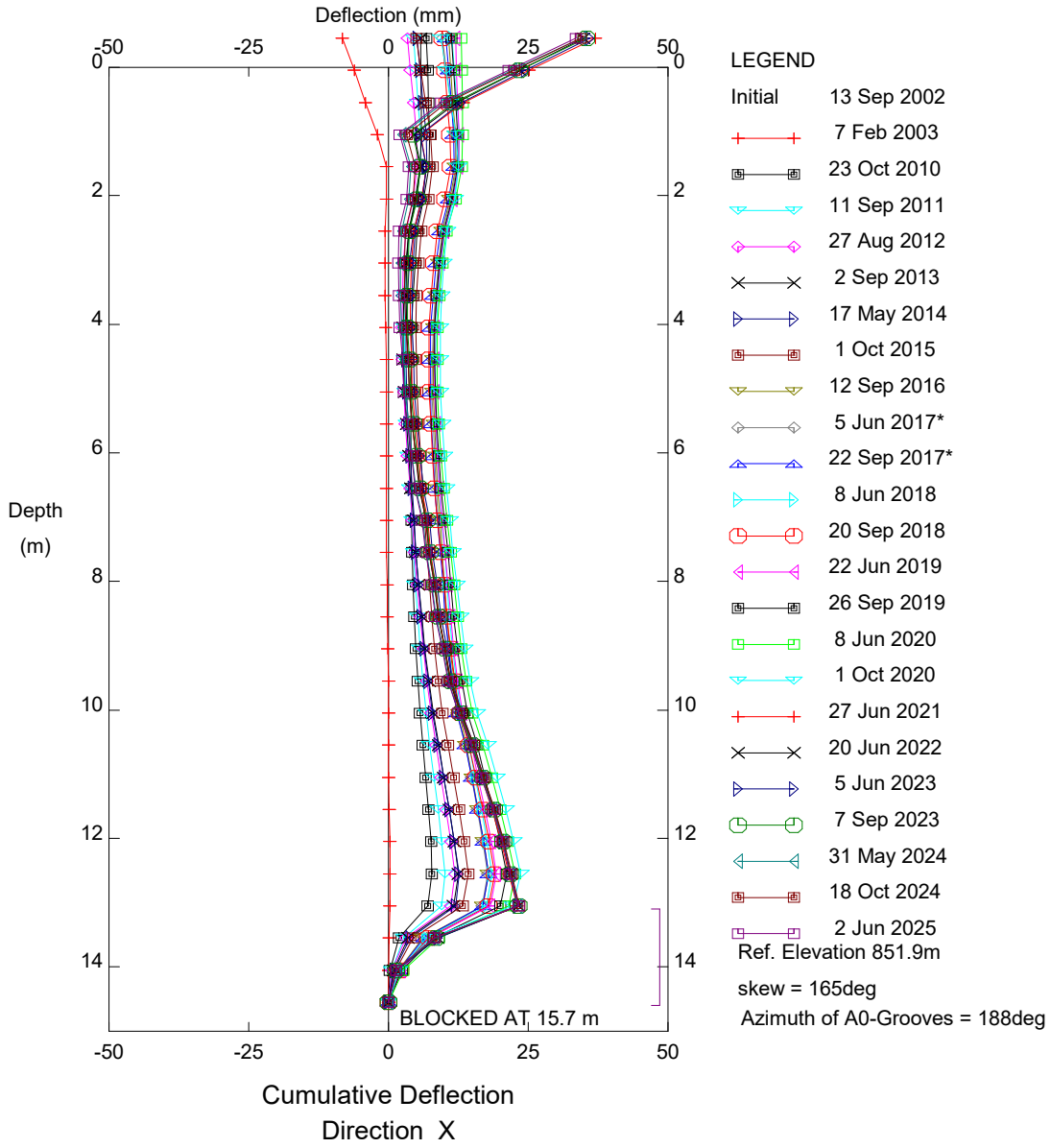


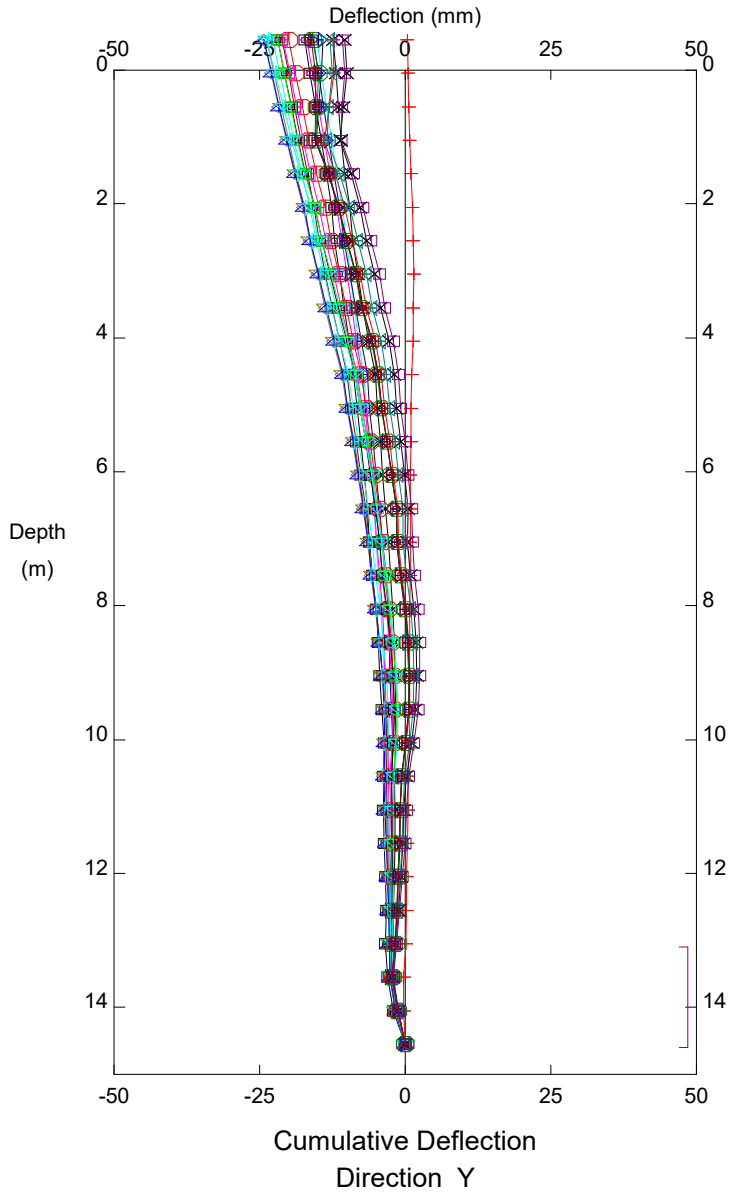
LEGEND

Initial	13 Sep 2002
	7 Feb 2003
	23 Oct 2010
	11 Sep 2011
	27 Aug 2012
	2 Sep 2013
	17 May 2014
	1 Oct 2015
	12 Sep 2016
	5 Jun 2017*
	22 Sep 2017*
	8 Jun 2018
	20 Sep 2018
	22 Jun 2019
	26 Sep 2019
	8 Jun 2020
	1 Oct 2020
	27 Jun 2021
	20 Jun 2022
	5 Jun 2023
	7 Sep 2023
	31 May 2024
	18 Oct 2024
	2 Jun 2025

Ref. Elevation 851.9m

skew = 165deg

Azimuth of A0-Grooves = 188deg

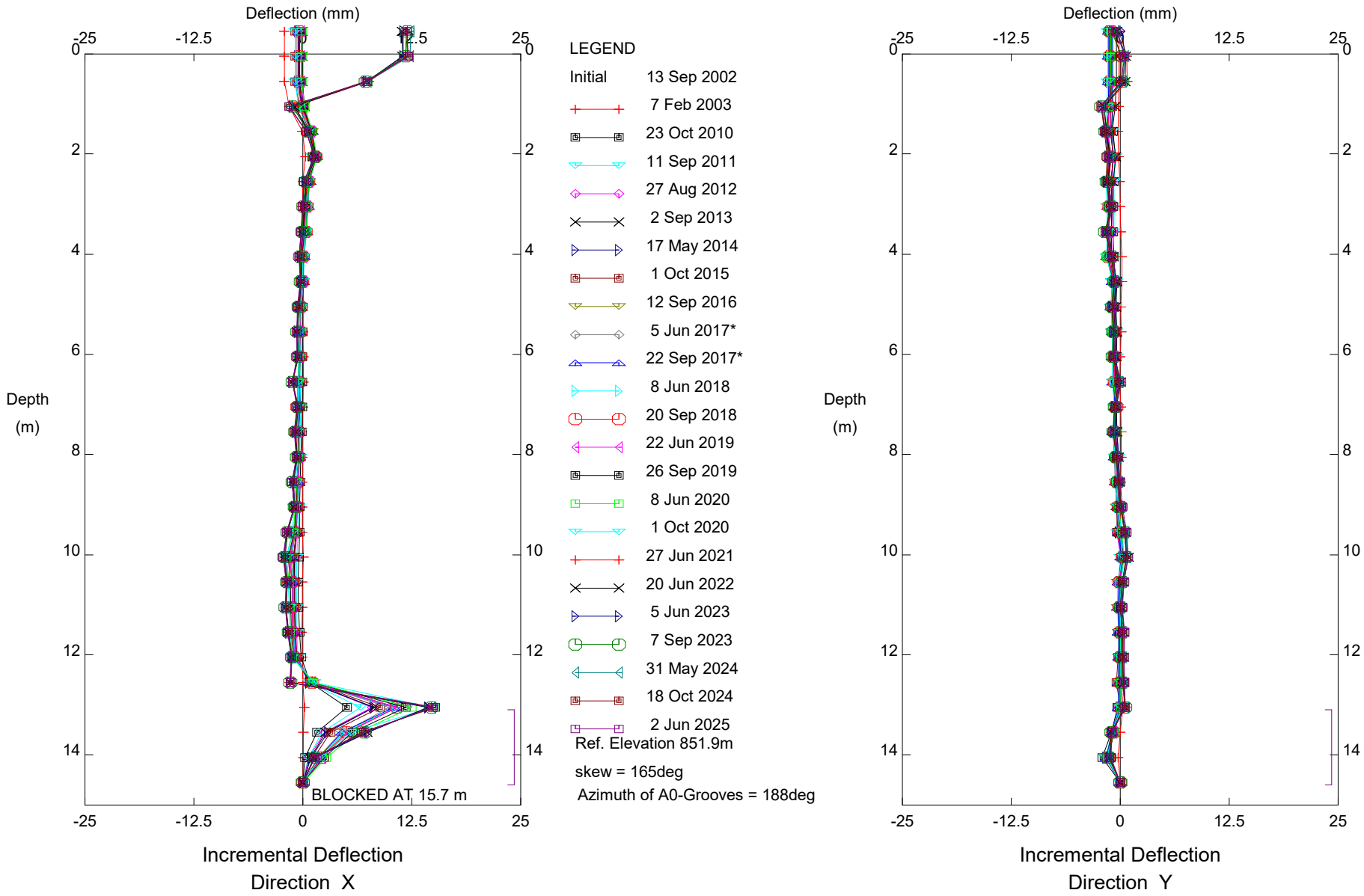


GP028; H43:12, Two Creeks, Inclinometer SI02-02

Alberta Transportation

Sets marked * include zero shift and/or rotation corrections.

Klohn Crippen Berger - Edmonton

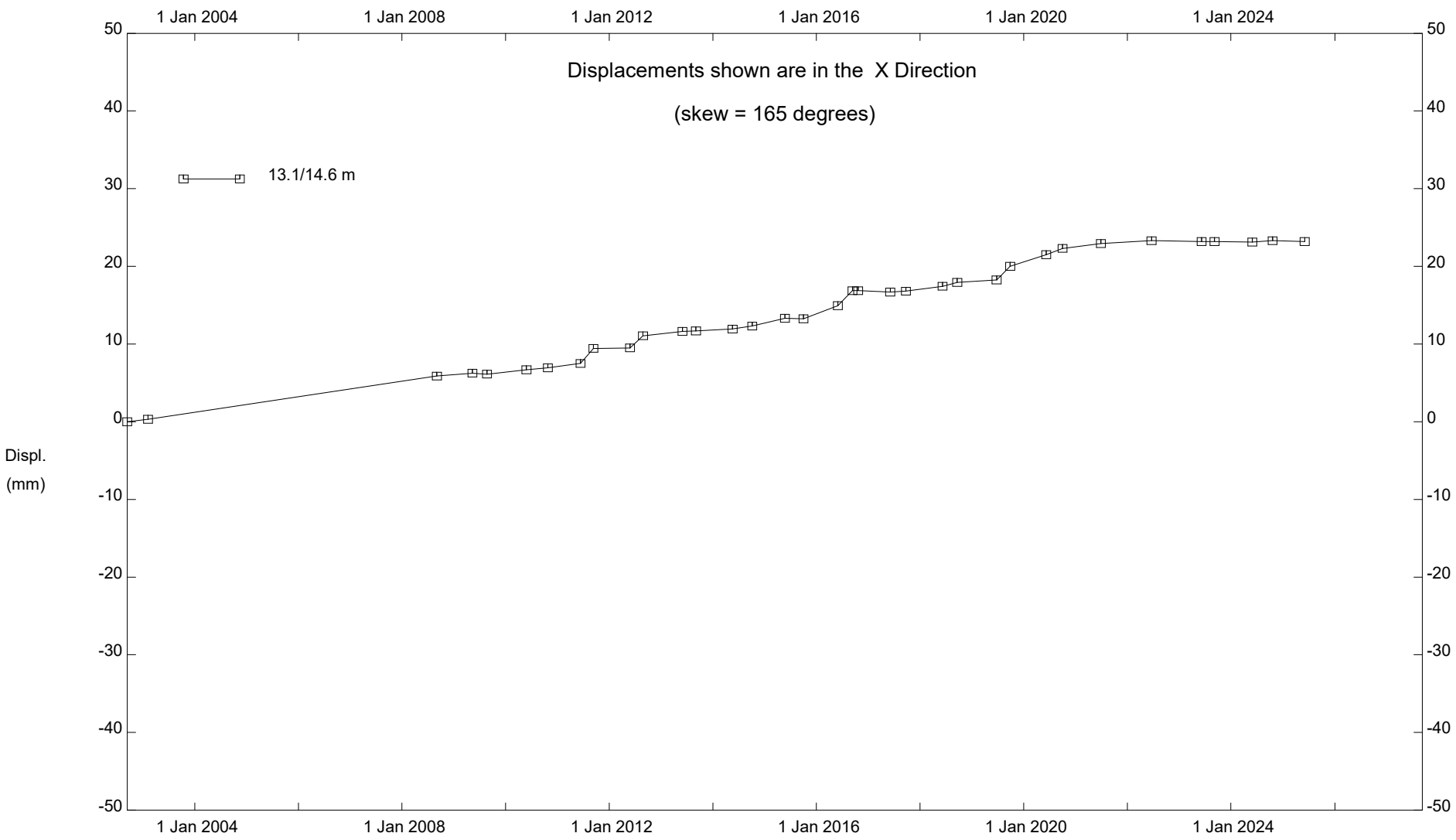


GP028; H43:12, Two Creeks, Inclinometer SI02-02

Alberta Transportation

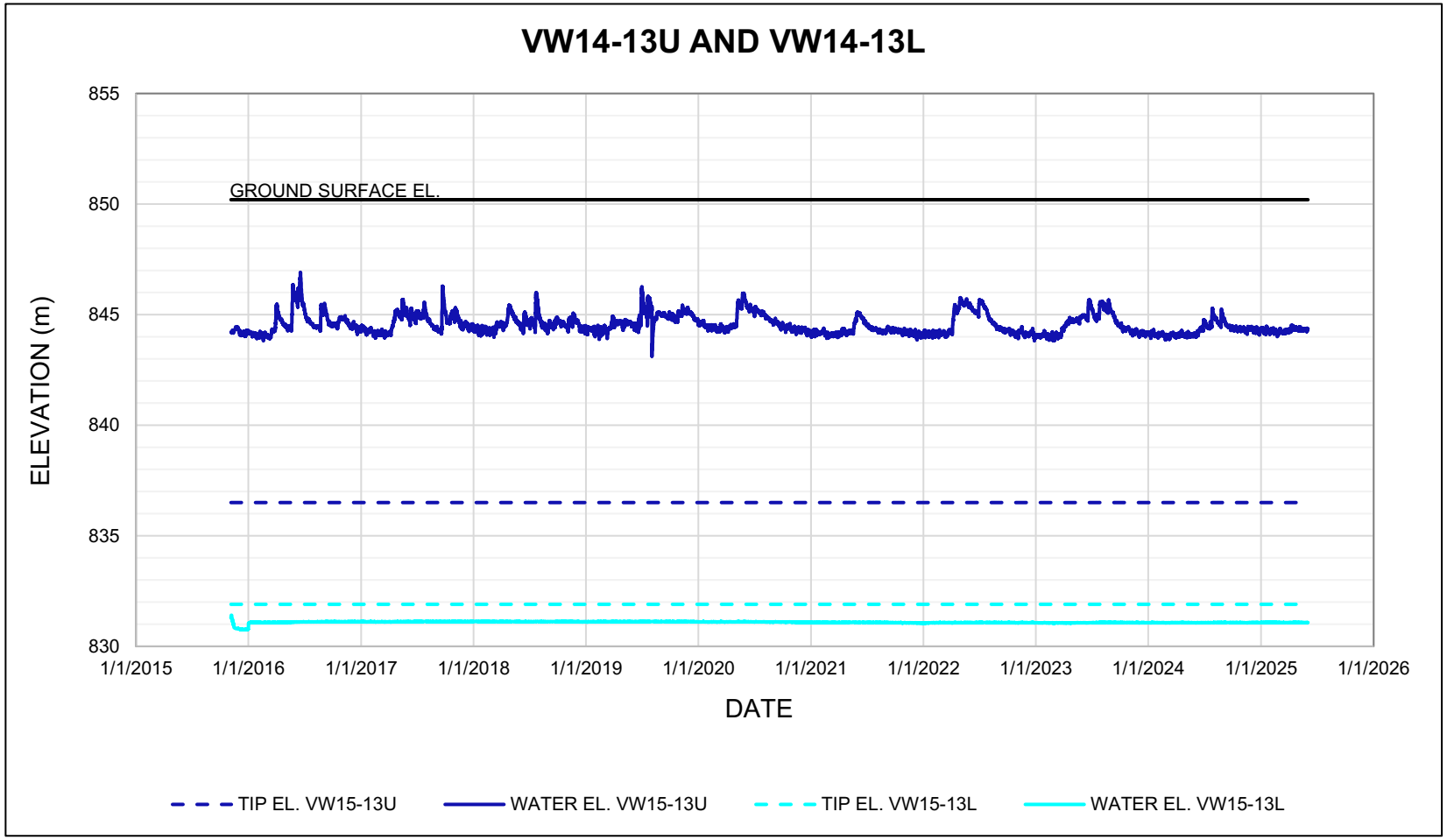
Sets marked * include zero shift and/or rotation corrections.

Klohn Crippen Berger - Edmonton



GP028; H43:12, Two Creeks, Inclinometer SI02-02

Alberta Transportation



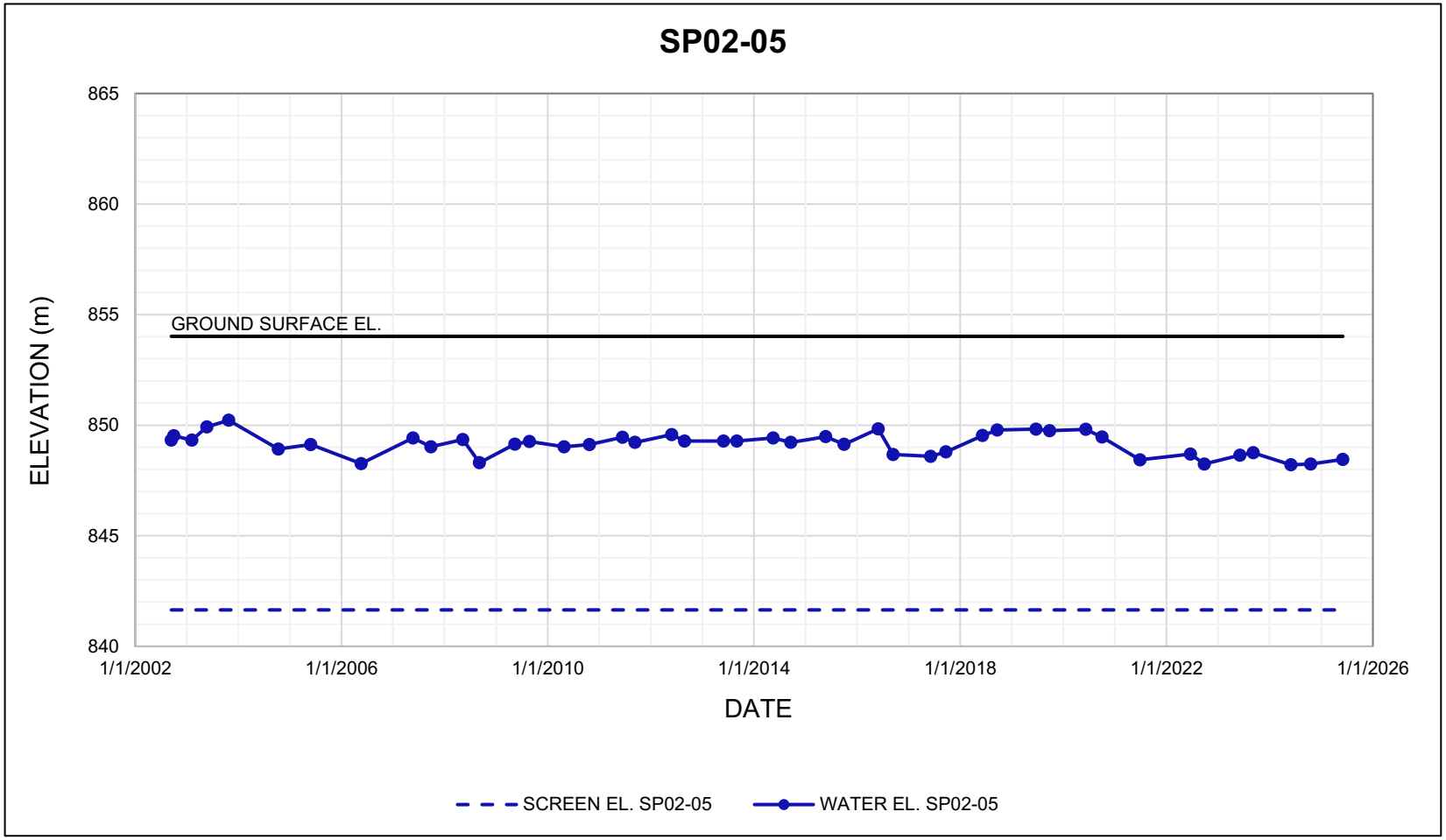
NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021, PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
2. INSTRUMENTS CONNECTED TO SINGLE-CHANNEL DATA LOGGERS.

CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



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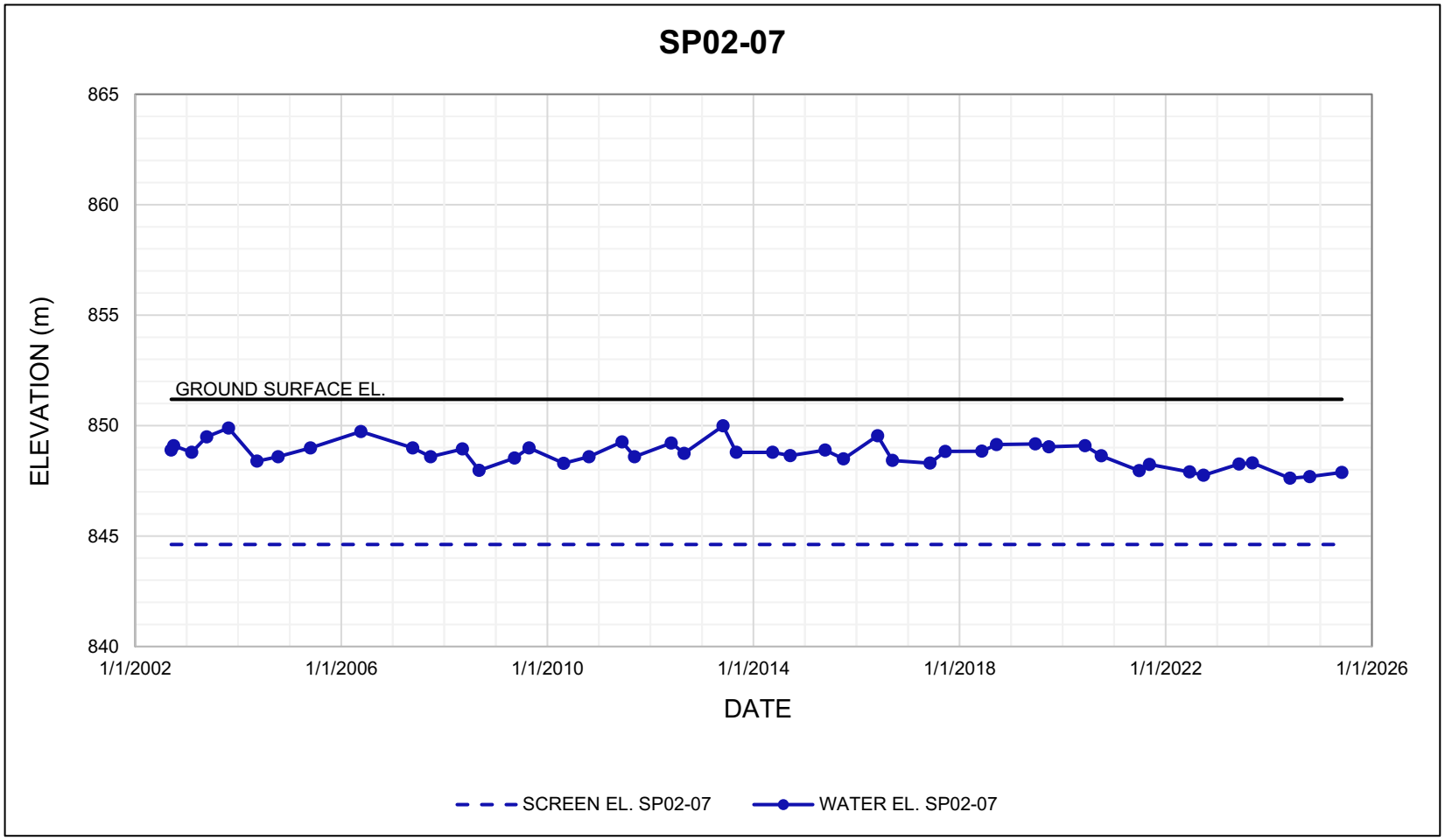
CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



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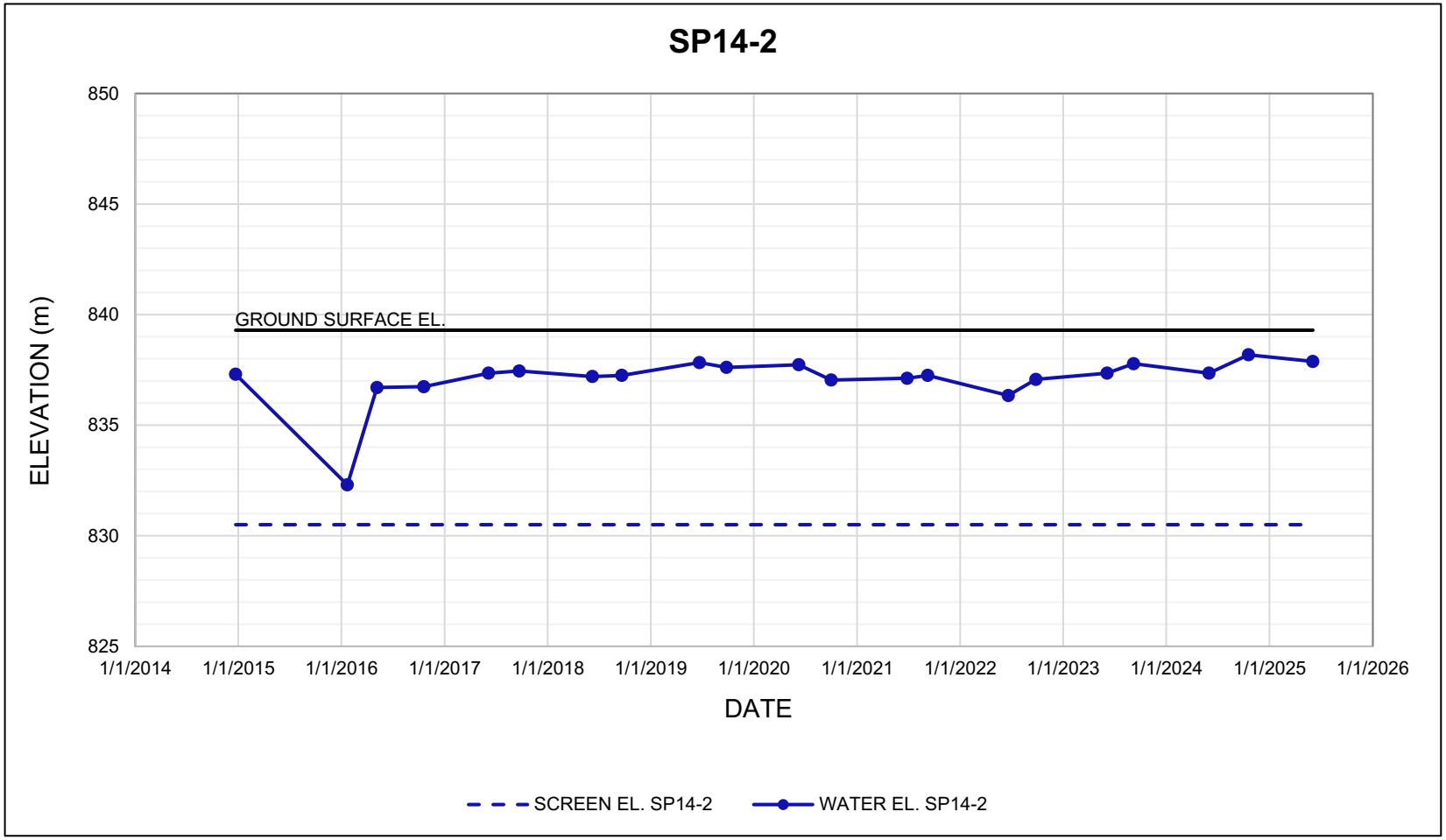
CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



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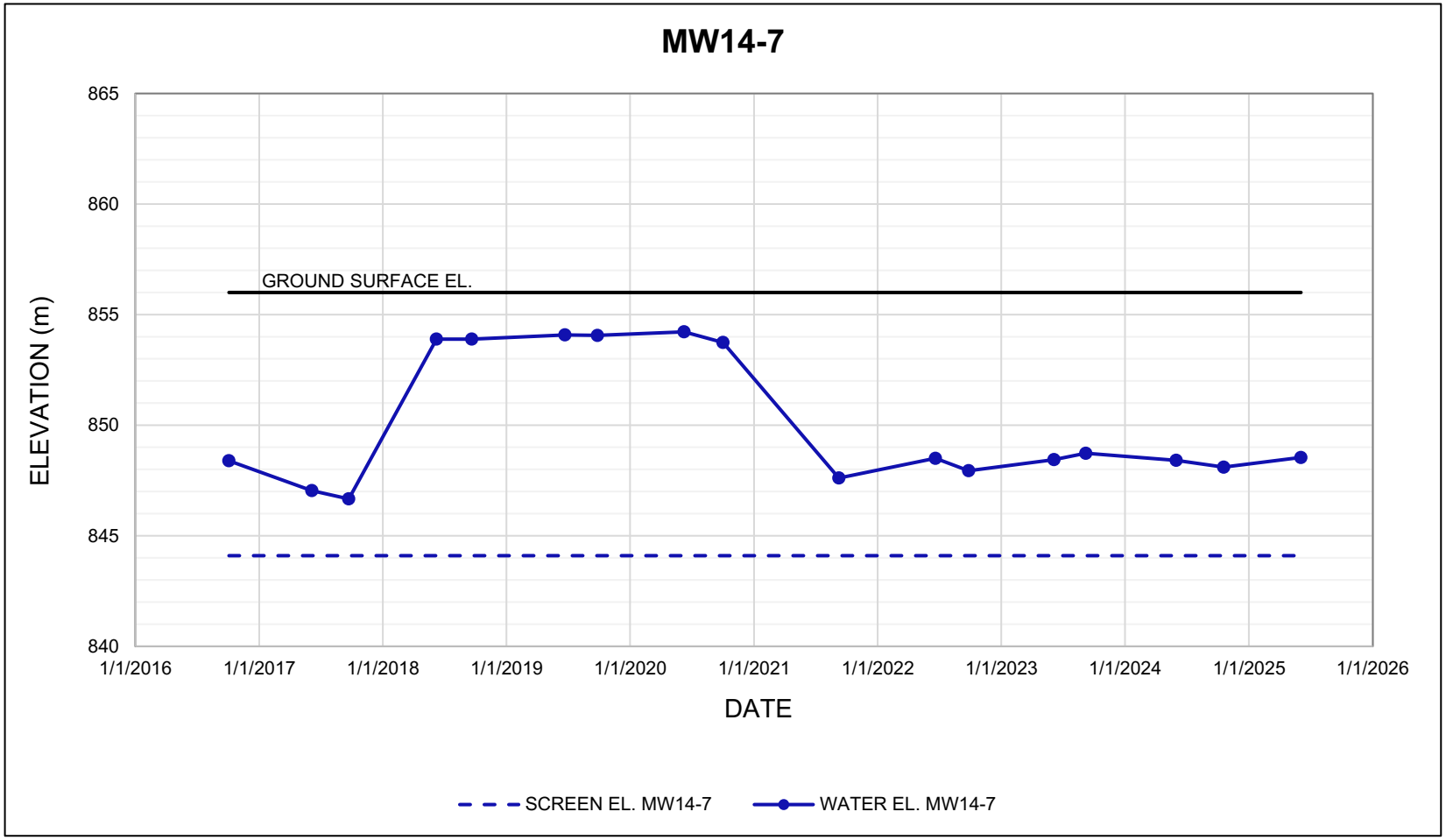
CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



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CLIENT
Alberta
Klohn Crippen Berger

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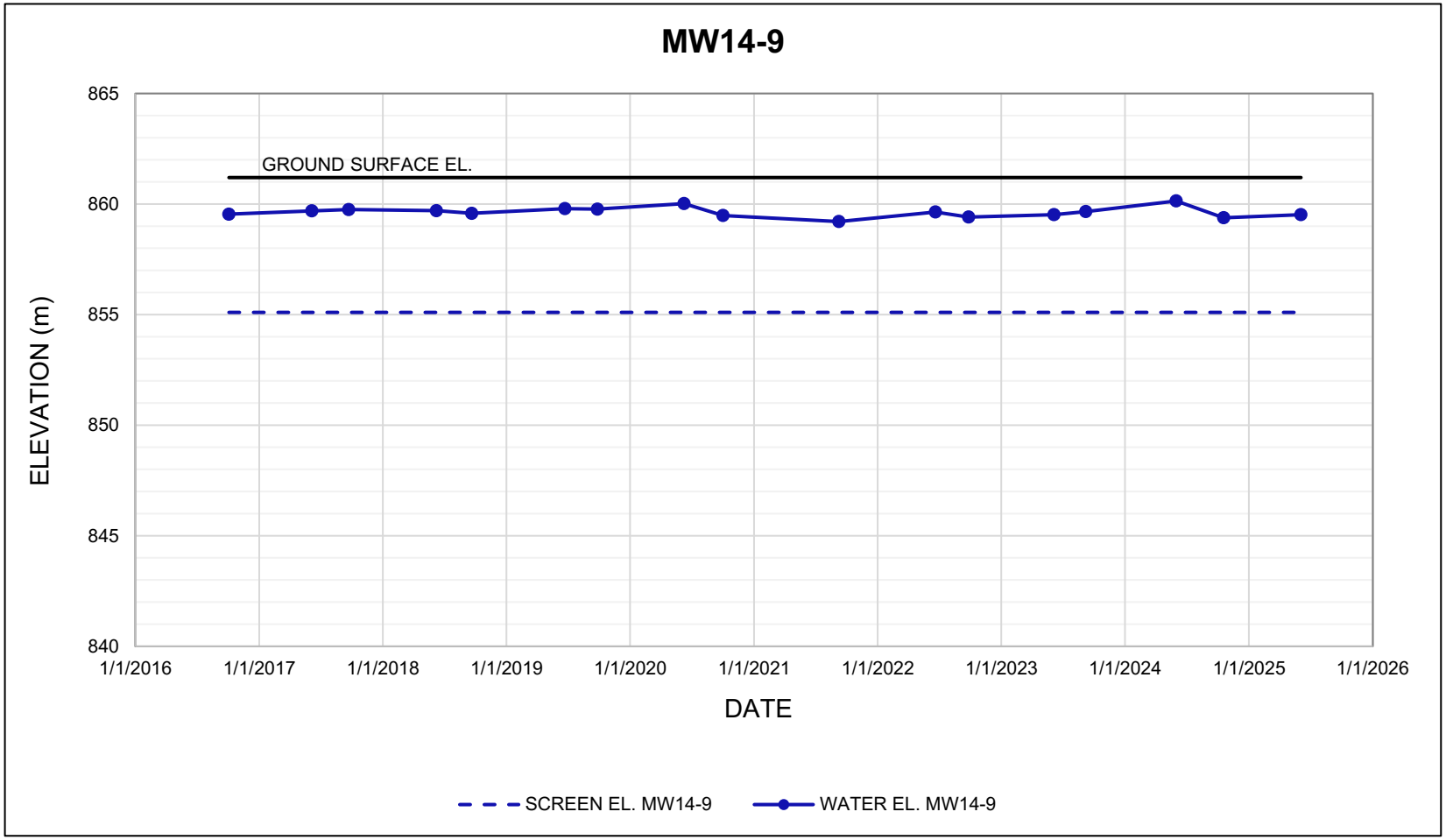
GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



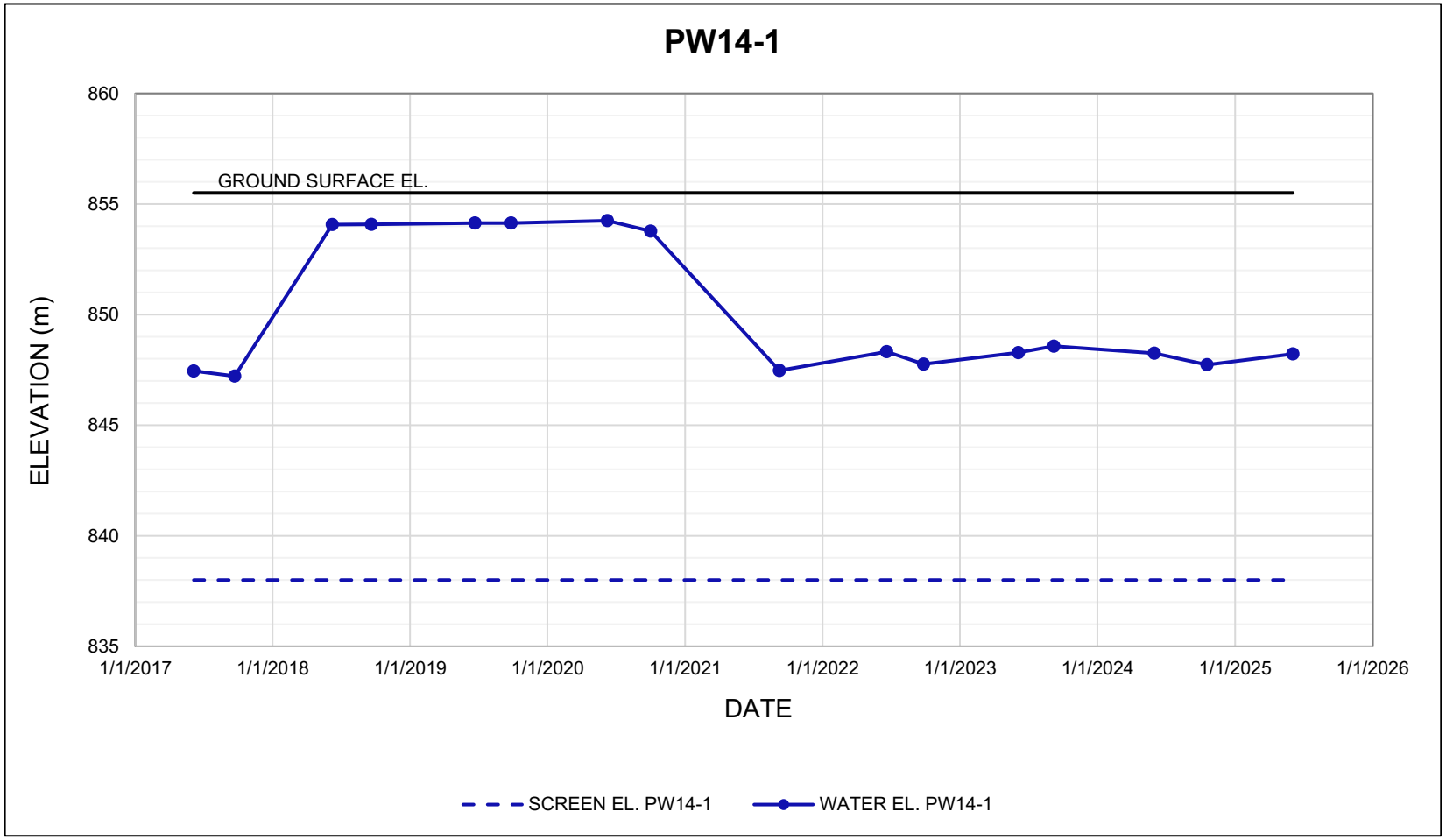
NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021, PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.

CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



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

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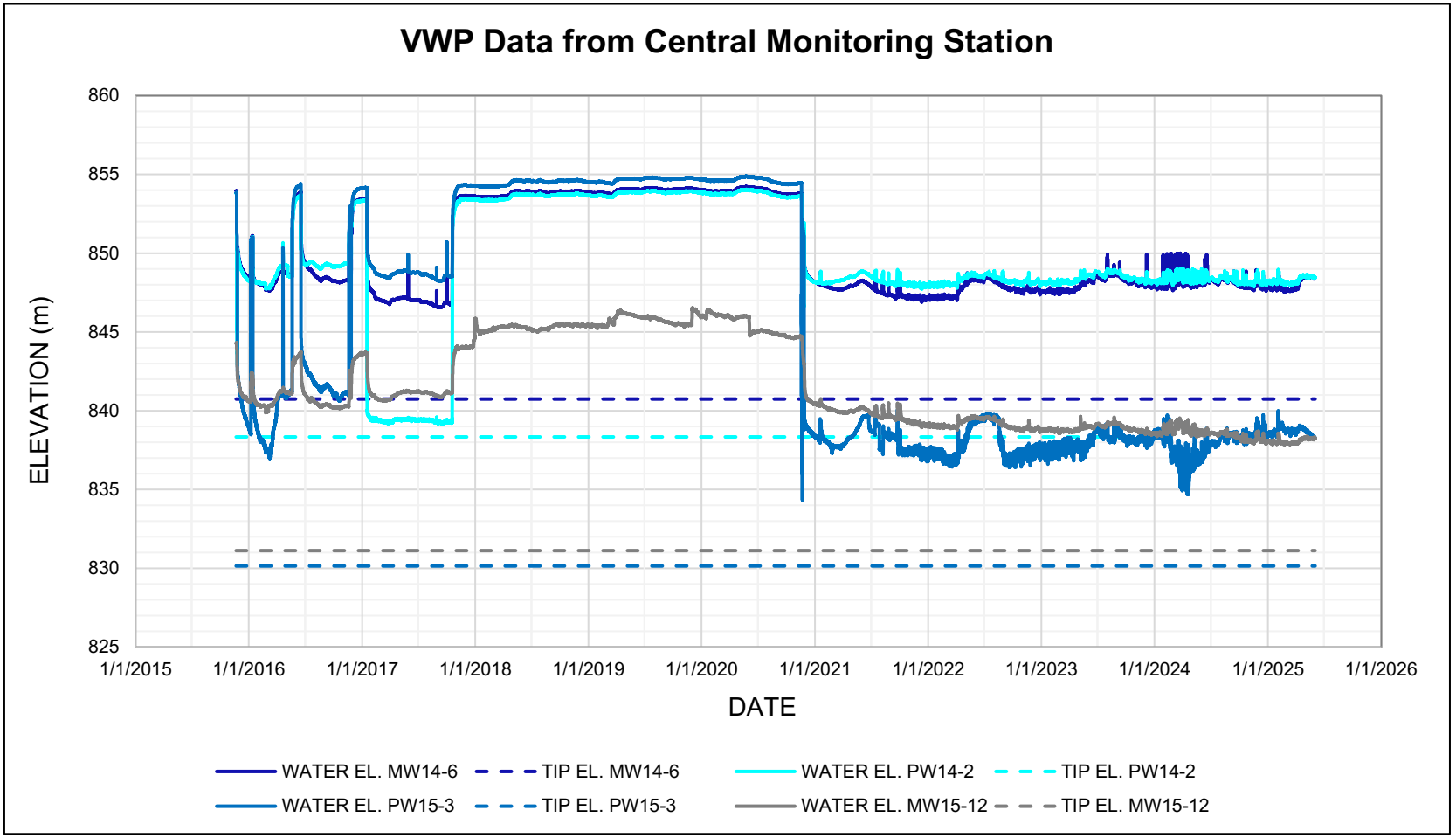
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	



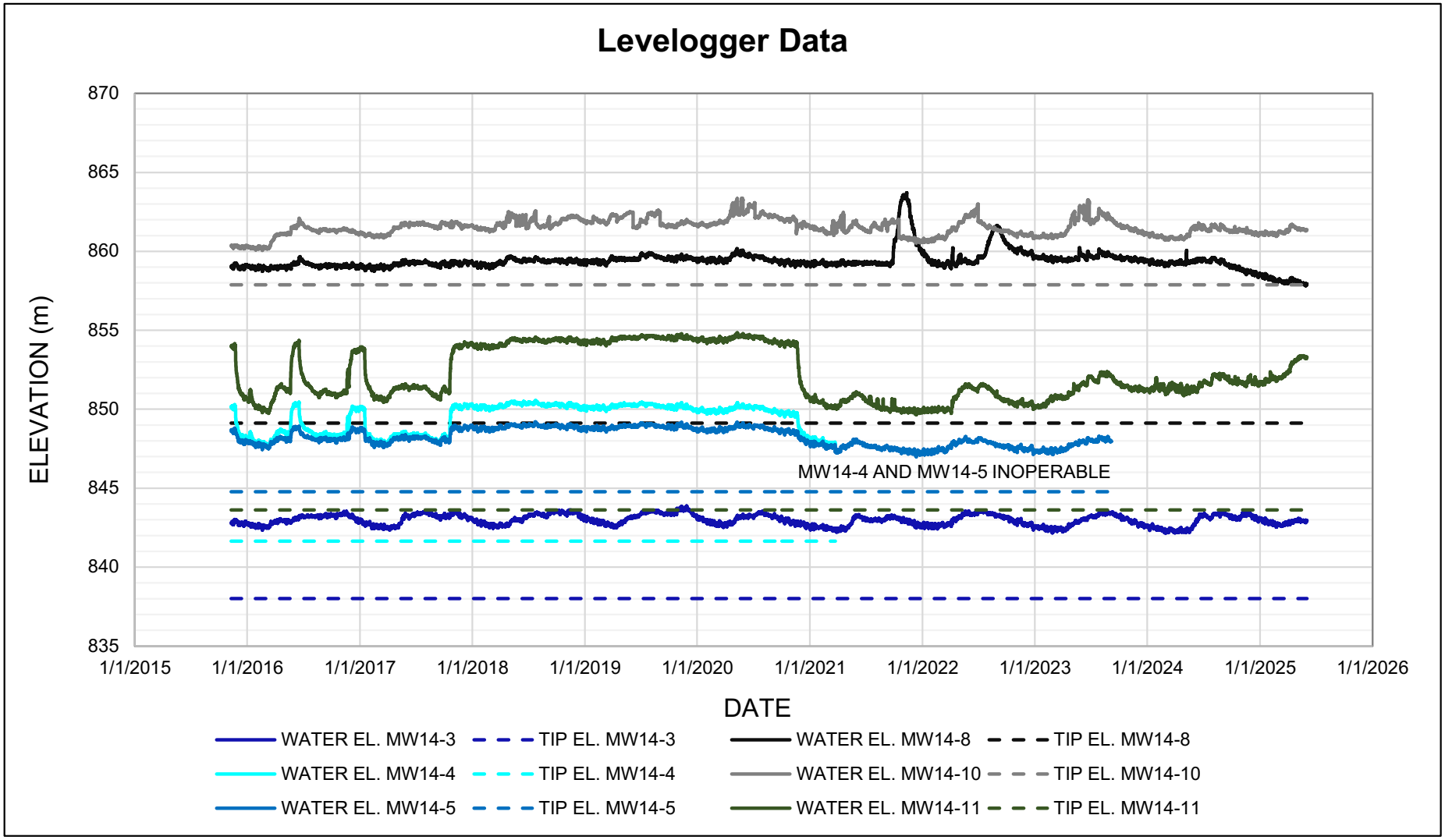
NOTES:
1. PIEZOMETER DATA OBTAINED BEFORE JUNE 28, 2021, PROVIDED TO KLOHN CRIPPEN BERGER LTD. BY ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS ON JUNE 25, 2021.
2. INSTRUMENTS CONNECTED TO MULTIPLE-CHANNEL DATA LOGGER INSTALLED AT CENTRAL MONITORING STATION.

CLIENT
Alberta
Klohn Crippen Berger

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

TITLE
PIEZOMETER DATA
GP028 - TWO CREEKS
HWY 43:12, KM 34.473

SCALE	PROJECT No.	FIG No.
--	A05116A01	


Levelogger Data
ELEVATION (m)
870
865
860
855
850
845
840
835
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024
1/1/2025
1/1/2026
DATE
MW14-4 AND MW14-5 INOPERABLE
WATER EL. MW14-3
TIP EL. MW14-3
WATER EL. MW14-8
TIP EL. MW14-8
WATER EL. MW14-4
TIP EL. MW14-4
WATER EL. MW14-10
TIP EL. MW14-10
WATER EL. MW14-5
TIP EL. MW14-5
WATER EL. MW14-11
TIP EL. MW14-11