



TECHNICAL MEMORANDUM

DATE June 1, 2026

Reference No. CA0029692.2934-TM-06-Rev0

TO Vanessa Heilman, P.Eng.
City of Saskatoon

CC

FROM Blaise Wilson, Hung Vu

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NUTANA SLOPE STABILITY UPDATE – SEPTEMBER 2025

1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by the City of Saskatoon (COS) to complete the monitoring of select geotechnical instrumentation and provide the monitoring data results for the slope failures (referred to as the west slide and east slide) at the Nutana Slope Instability site. Locations of the slope inclinometers and tilt plates are shown in Figure 1.

This memorandum must be read and used in conjunction with the Study Limitations provided in Section 5 that follows the main text and forms an integral part of this document. The reader is specifically directed to this information as it is essential for the proper use and interpretation of this document.

1.1 Background

The west slide occurred in June 2012 and impacted a slope area approximately 70 m (230 ft) long and 40 m (130 ft) wide. It is most pronounced in the back yards of 229, 231, 233/235, and 237/239 11th Street East, through the back alley, and into the back yard of 222 Saskatchewan Crescent East.

The east slide occurred in June 2013 and impacted a slope area of approximately 50 m (165 ft) long and 30 m (100 ft) wide. It is most pronounced in the back yards of 303, 305, 307, and 309 11th Street East, through the back alley, and into the back yard of 306, 310 and 316 Saskatchewan Crescent East.

2 FIELD MONITORING RESULTS

Monitoring data from the slope inclinometers and tilt plates were collected by WSP on May 19, 2026. The monitoring results for this period are summarised below. Photos of the site conditions are attached to this memorandum in Appendix A. The results of the instrumentation monitoring are presented in Appendix B.

2.1 Slope Inclinometer Data

The slope inclinometer plots are shown in Appendix B.

- Inclinometer COS-13-002 plots continue to show a slight drift, with approximately 2.0 mm (0.08 in) of cumulative movement between August 17, 2018, and May 19, 2026, but overall insignificant movement since July 30, 2013.

- Inclinometer COS-13-004 has in recent years indicated drift in both the direction, perpendicular and parallel to the direction of the laneway. The inclinometer plots indicated insignificant movement (less than 2.0 mm or 0.08 in) between September 10, 2025 and May 19, 2026.
- Inclinometer COS-13-005 was destroyed in fall 2025. The landowner for 316 Saskatchewan Crescent completed tree removal and landscaping which resulted in the inclinometer being destroyed. It will no longer be monitored.
- Inclinometer 20-109 indicated approximately 29 mm of cumulative downslope movement between October 28, 2020, and May 19, 2026, with approximately 2.5 mm (0.10 in) of movement between September 10, 2025 and May 19, 2026. The zone of movement is approximately 2.5 m below the top of casing. The rate of slope movement has varied from:
 - approximately 1.0 mm/yr between October 28, 2020 and May 5, 2022;
 - to approximately 5.3 mm/yr between May 5, 2022 and August 12, 2024; and
 - approximately 2.3 mm/yr between August 12, 2024 and May 19, 2026.
- Inclinometer 20-111 plots have historically shown minor drift in the upslope direction (with some downslope drift observed in September 2025), with approximately 6.0 mm (0.24 in) of cumulative movement observed between October 28, 2020, and May 19, 2026. Approximately 2.0 mm (0.08 in) of movement observed between September 10, 2025, and May 19, 2026 in the upslope direction.

2.2 Tilt Plate Data

Tilt plate monitoring results are presented in Figure B1 for the City of Saskatoon tilt plates and Figure B2 for the tilt plates installed on Saskatoon Light and Power poles:

- Tilt plates TP4, TP5, TP6 indicated insignificant changes in angle of tilt (less than 0.05 degrees) between June 5, 2013, and May 19, 2026. Tilt plate TP7 indicates a change in angle of tilt of approximately 0.06 degrees between September 10, 2025 and May 19, 2026.
- Tilt plate SLP3 indicates a change in angle of tilt of approximately 0.10 degrees, towards the north, between September 10, 2025 and May 19, 2026. However, past readings for SLP3 have been erratic and appear to be affected by seasonal variations.
- Tilt plates SLP4 and SLP5 both indicated an insignificant change in angle of tilt (less than 0.05 degrees) between September 10, 2025 and May 19, 2026.
- Tilt plate SLP6 indicated a change in angle of tilt of approximately 0.42 degrees, toward the south, between September 10, 2025 and May 19, 2026. The results of this tilt plate are greater in magnitude than any historical results and were towards the south in direction, which is opposite of the historical direction of tilt. This reading from this tilt plate from this monitoring event is questionable, may be erroneous, and should be evaluated further compared to the results from the next monitoring update.

3 RECOMMENDATIONS

Slope inclinometer 20-109 indicated a zone of movement at a depth of approximately 2.5 m below the top of casing. The rate of movement has varied from approximately 1 mm/yr between October 28, 2020, and May 5, 2022; then increased to approximately 5.3 mm/yr between May 5, 2022 and August 12, 2024; but in more recent years has decreased to approximately 2.3 mm/yr between August 12, 2024 and May 19, 2026.

Tilt plate SLP6 indicated a greater magnitude of change in angle of tilt than has been observed in past events, which was also observed in the opposite direction of historical movement. The results for SLP6 are questionable, may be erroneous, and should be evaluated further following the next monitoring trip.

WSP recommends completing the remaining planning monitoring trips for summer and fall 2026.

4 CLOSURE

This memorandum provides a factual summary of the May 2026 instrumentation monitoring results. WSP is providing this information for the specific use of the City of Saskatoon. No other party may rely on the information provided herein, or any portion thereof. This memorandum is not intended to serve as a geotechnical assessment and therefore should not be used as the geotechnical basis for any future developments.

We trust that this memorandum provides you with the information you require at this time.

WSP Canada Inc.

Darnavid Puentes
Geotechnical Consultant

Blaise Wilson, P.Eng.
Lead Geotechnical Engineer

Hung Vu, P.Eng., Ph.D.
Senior Principal Geotechnical Engineer

DP/BW/HV/cf

Attachments: Figure 1: Instrumentation Plan
Appendix A: Site Photographs
Appendix B: Instrumentation Monitoring Results

[https://wsponlinecan.sharepoint.com/sites/ca-ca00296929234/shared documents/06. deliverables/06 may 2026/ca0029692.9234-tm-06-rev0 - cos nutana monitoring update_may2026.docx](https://wsponlinecan.sharepoint.com/sites/ca-ca00296929234/shared%20documents/06.%20deliverables/06%20may%202026/ca0029692.9234-tm-06-rev0-cos%20nutana%20monitoring%20update_may2026.docx)

5 STUDY LIMITATIONS

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Figures

Path: \\corpshaw.net\CA\CA\CA\K300\GIS\ Client\CityOfSaskatoon\Saskatoon\09_PROJECTS\CA0029692.9234\1000\02_PRODUCTION\DWG\ | File Name: CA0029692.9234-FIG001.dwg | Last Edited By: gdl_sabedoff Date: 2024-09-18 Time: 12:56:27 PM | Printed By: gdl_sabedoff Date: 2024-09-18 Time: 12:56:05 PM



South Saskatchewan River →

D1-008 ▲

CP-1 CP-4 CP-2 CP-3

Saskatchewan Crescent

200 Area of Interest 300

200 300

TP-7 TP-5 TP-4

Melrose Avenue Victoria Avenue

11th Street

10th Street

Eastlake Avenue

LEGEND

⊕ TILT PLATE LOCATION

▲ SLOPE INCLINOMETER

● POWER POLES

303 LOT NUMBER

REFERENCE(S)

LOT LOCATIONS PROVIDED BY CITY OF SASKATOON

CITY OF SASKATOON DATUM

IMAGE OBTAINED FROM GOOGLE EARTH © 2024 GOOGLE INC. USED WITH PERMISSION. GOOGLE AND GOOGLE LOGO ARE REGISTERED TRADEMARKS OF GOOGLE INC. IMAGERY DATE: OCTOBER 14, 2023. GOOGLE EARTH IMAGE IS NOT TO SCALE.

0 10 20

1:600 METRES

CLIENT



PROJECT

NUTANA SLOPE INSTABILITY

TITLE

INSTRUMENTATION LOCATION PLAN

CONSULTANT	YYYY-MM-DD	2024-09-18
	DESIGNED	BW
	PREPARED	SL
	REVIEWED	BW
	APPROVED	HV

PROJECT NO.	CONTROL	REV.	FIGURE
CA0029692.9234	1000	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

APPENDIX A

Site Photographs



Photograph 1: Looking west down the back alley at the East Failure (May 19, 2026)



Photograph 2: Looking east down the back alley at the West Failure (May 19, 2026)

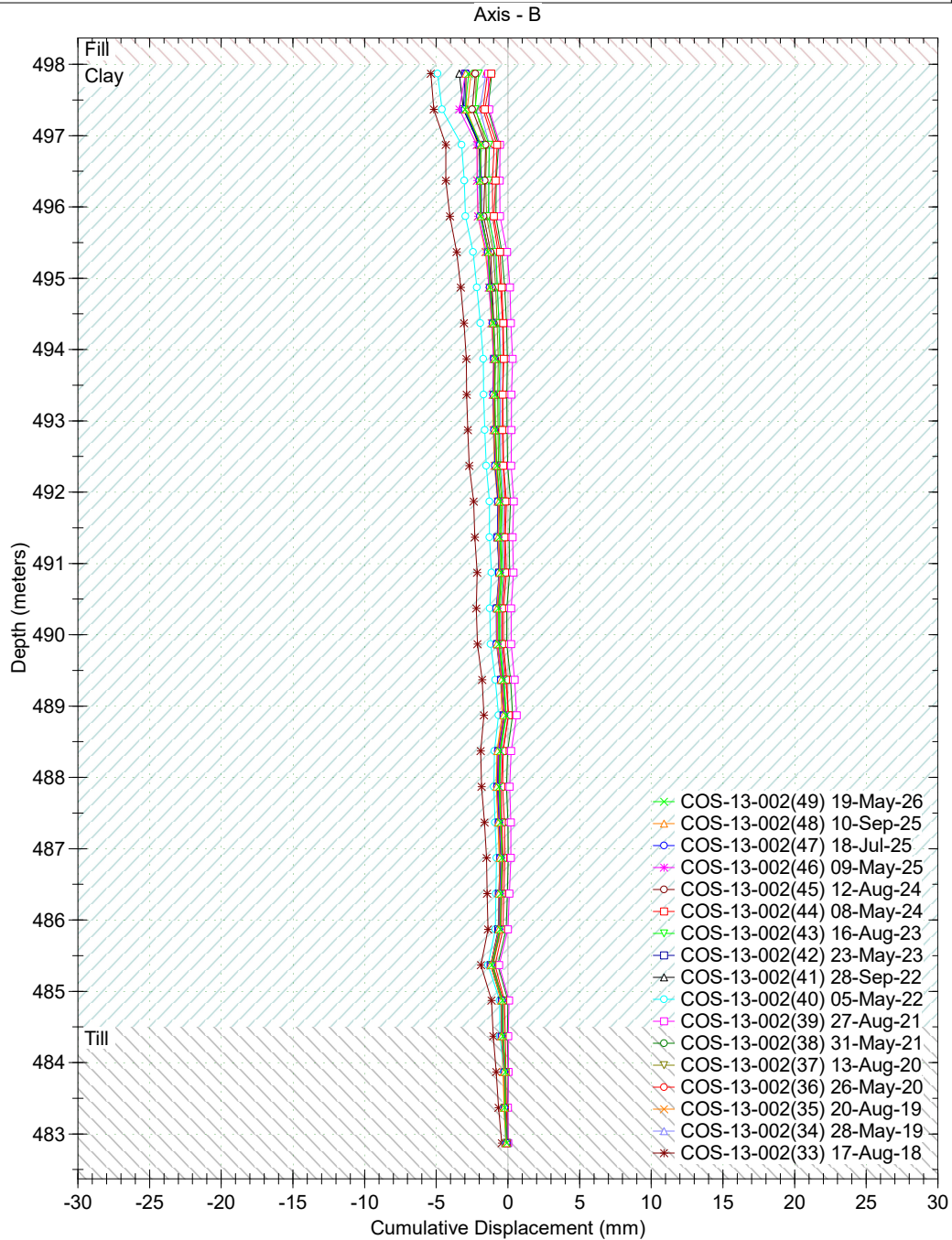
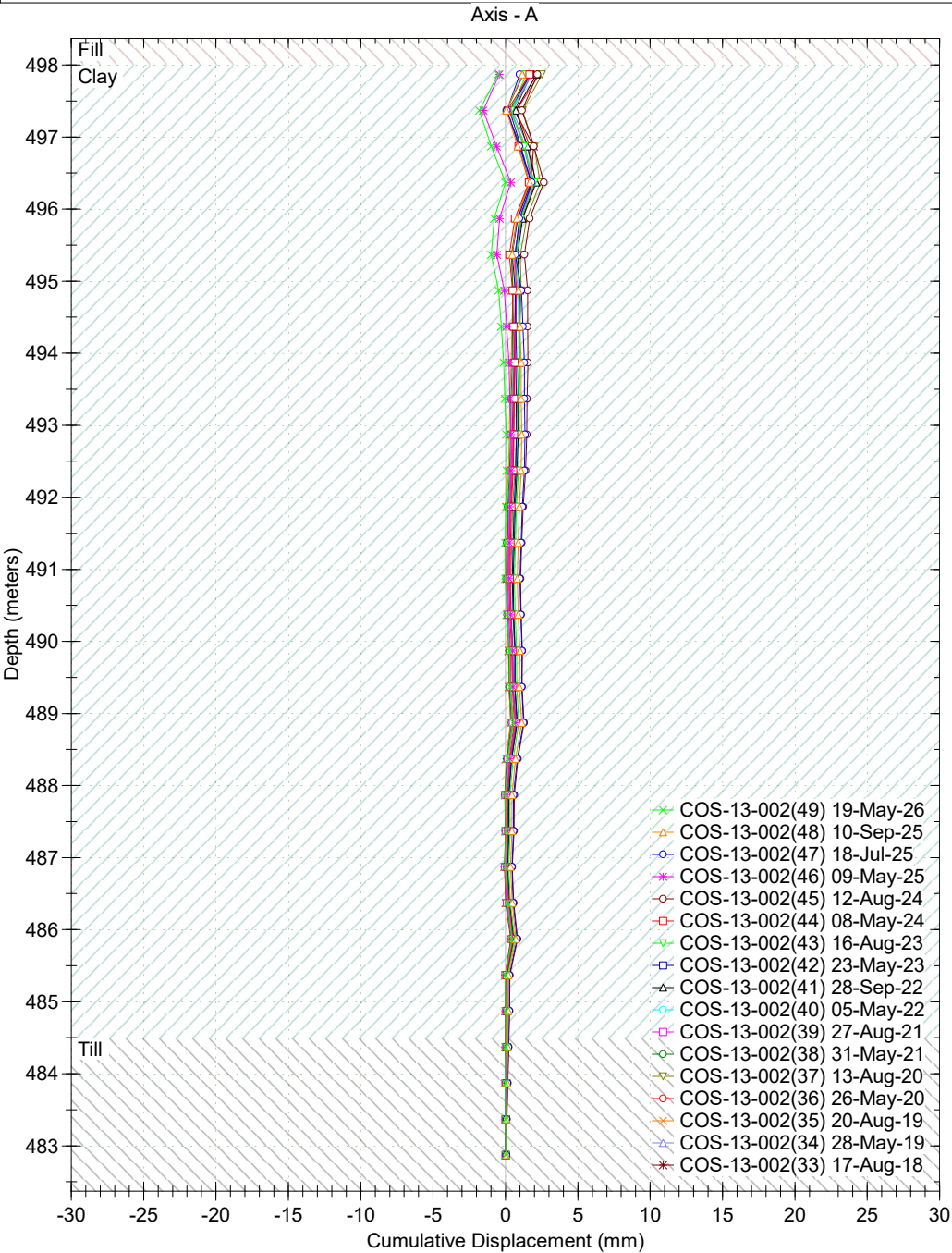
APPENDIX B

Instrumentation Monitoring Results

SLOPE INCLINOMETERS

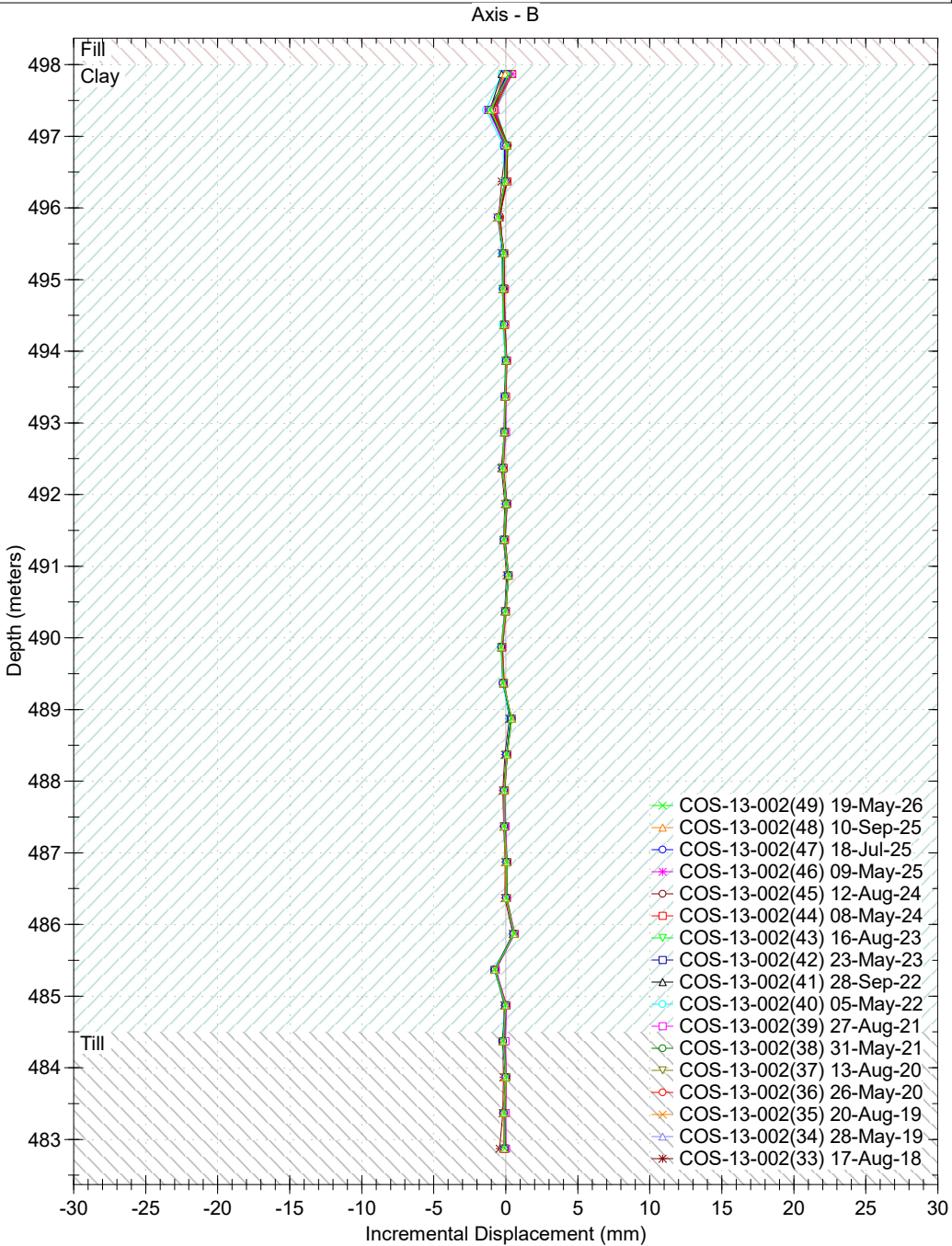
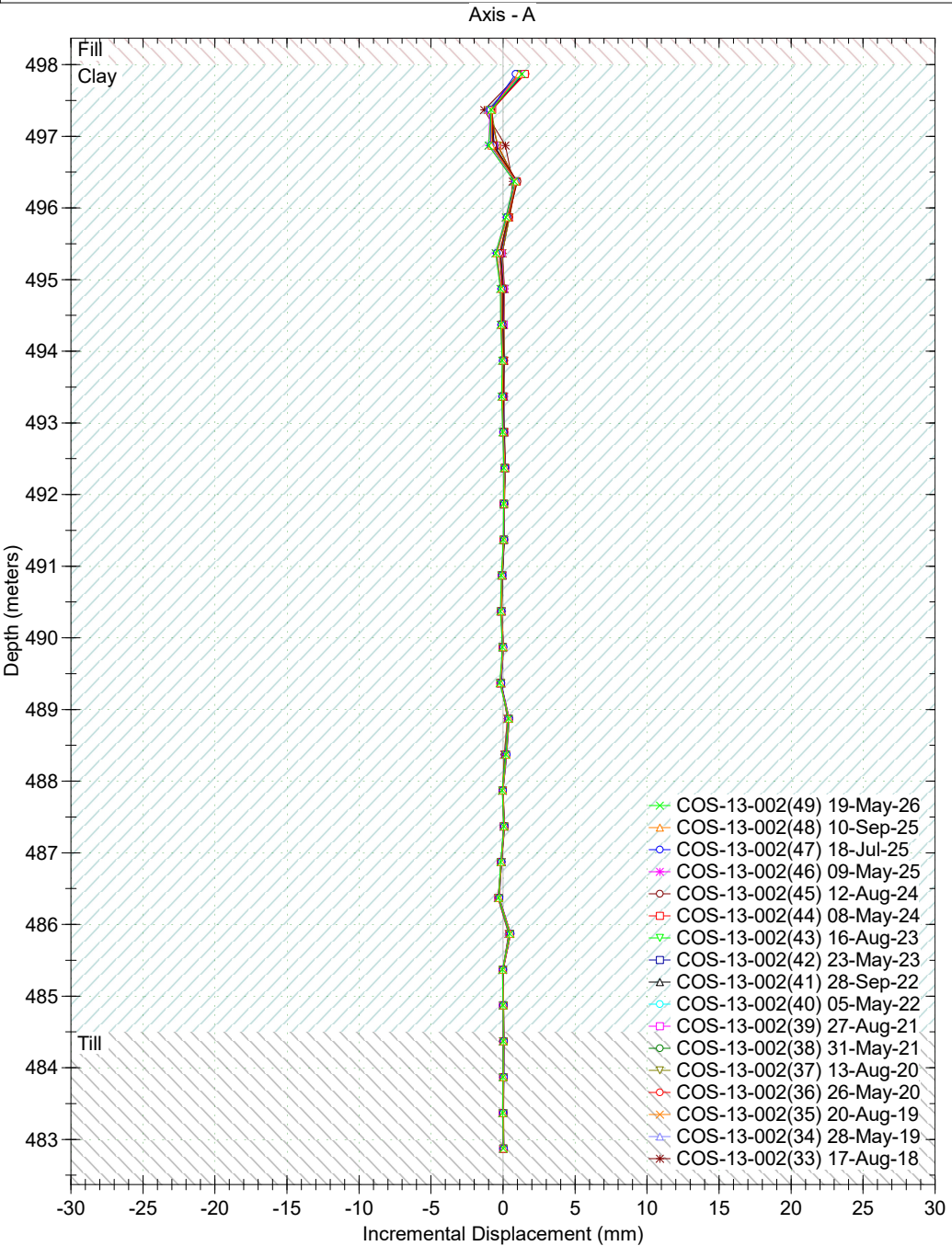
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Project : Nutana Slope
Location : 307 11th St. E. (Front)
Northing : 5775567.41
Easting : 386043.54
Collar : -0.113

Spiral Correction : N/A
Collar Elevation : :498.37 meters
Reading Depth : 15.5 meters
A+ Groove Azimuth :
Base Reading : 2013 Jul 30 16:18
Applied Azimuth : 0.0 degrees



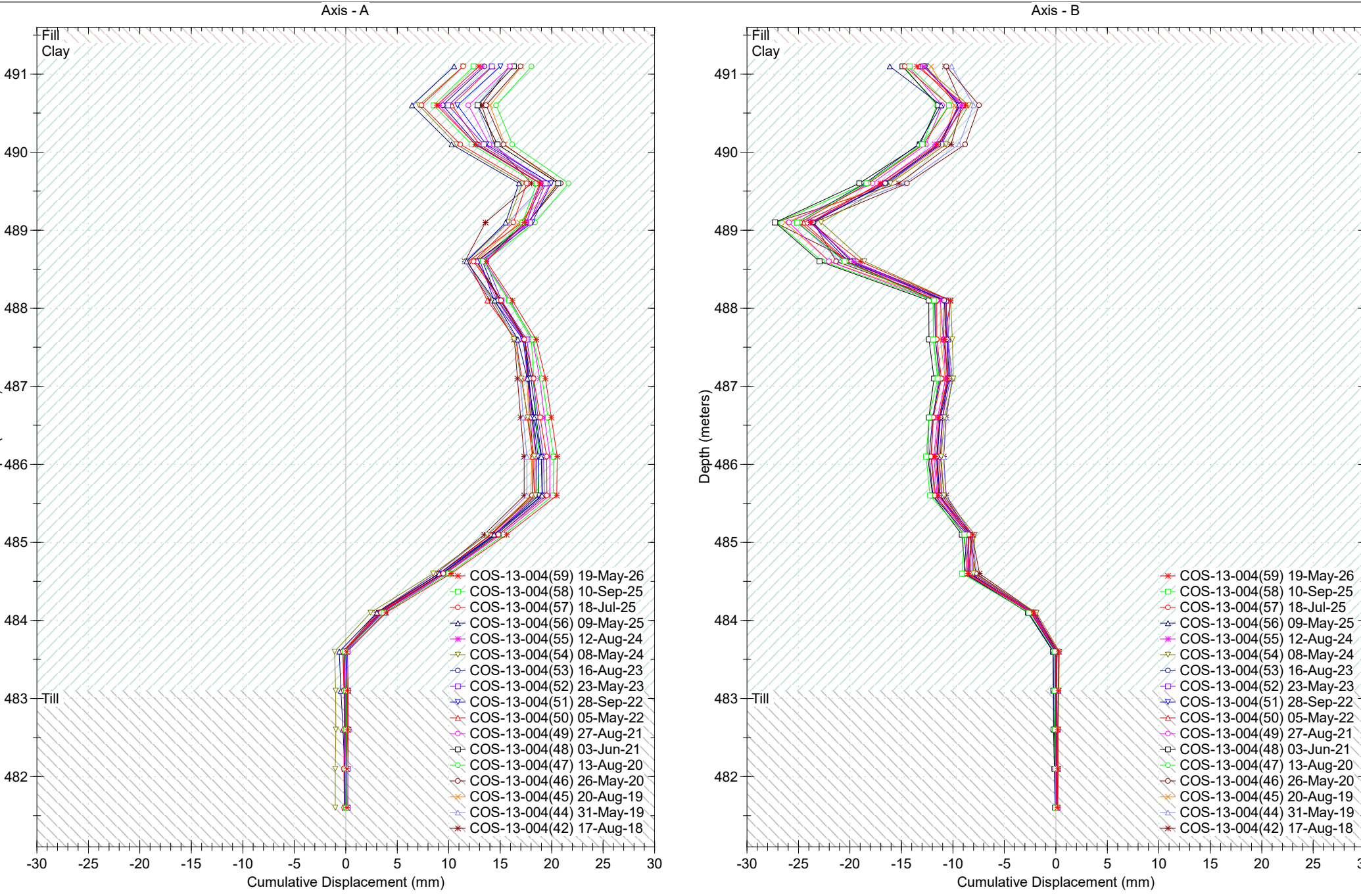
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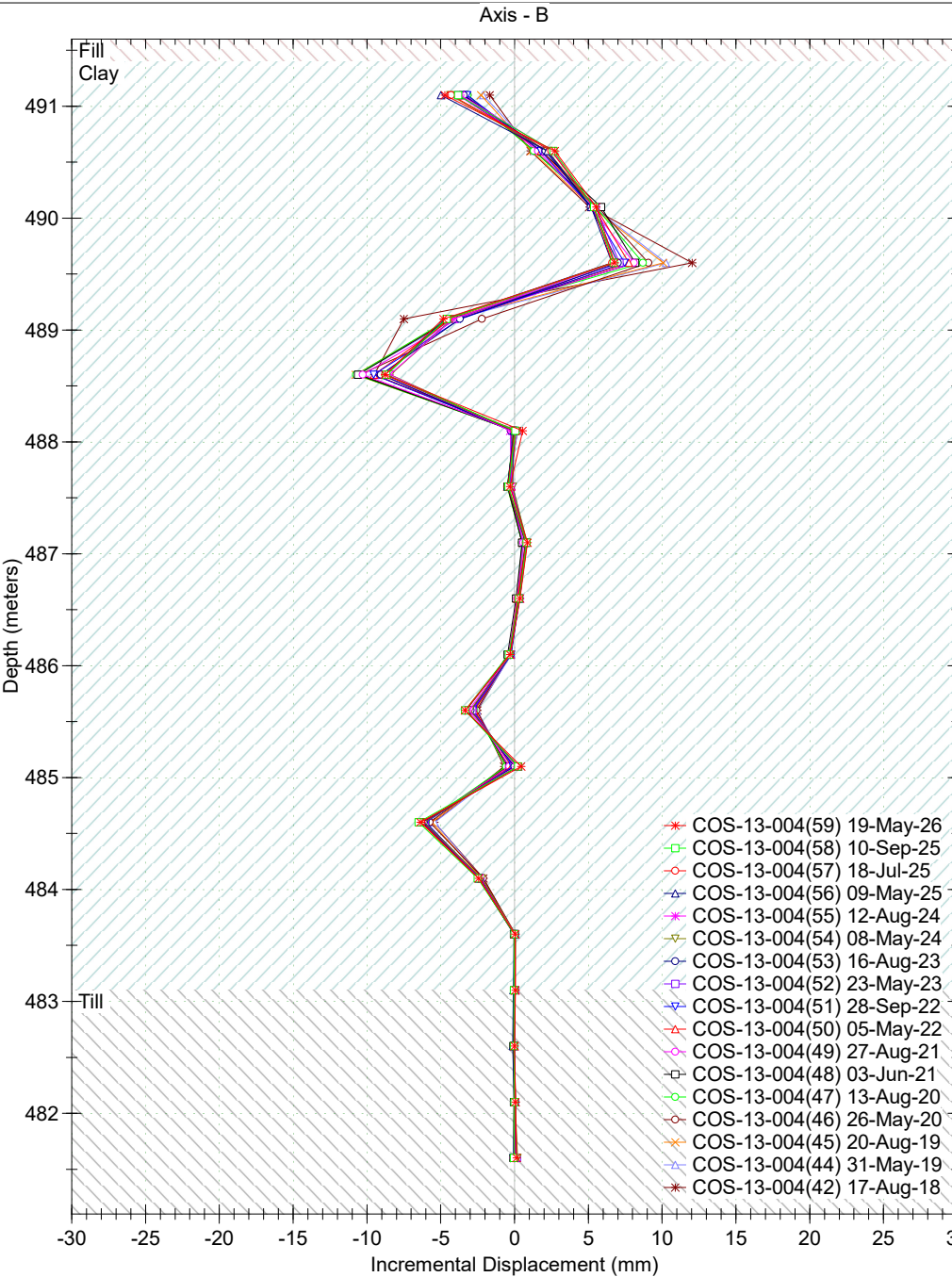
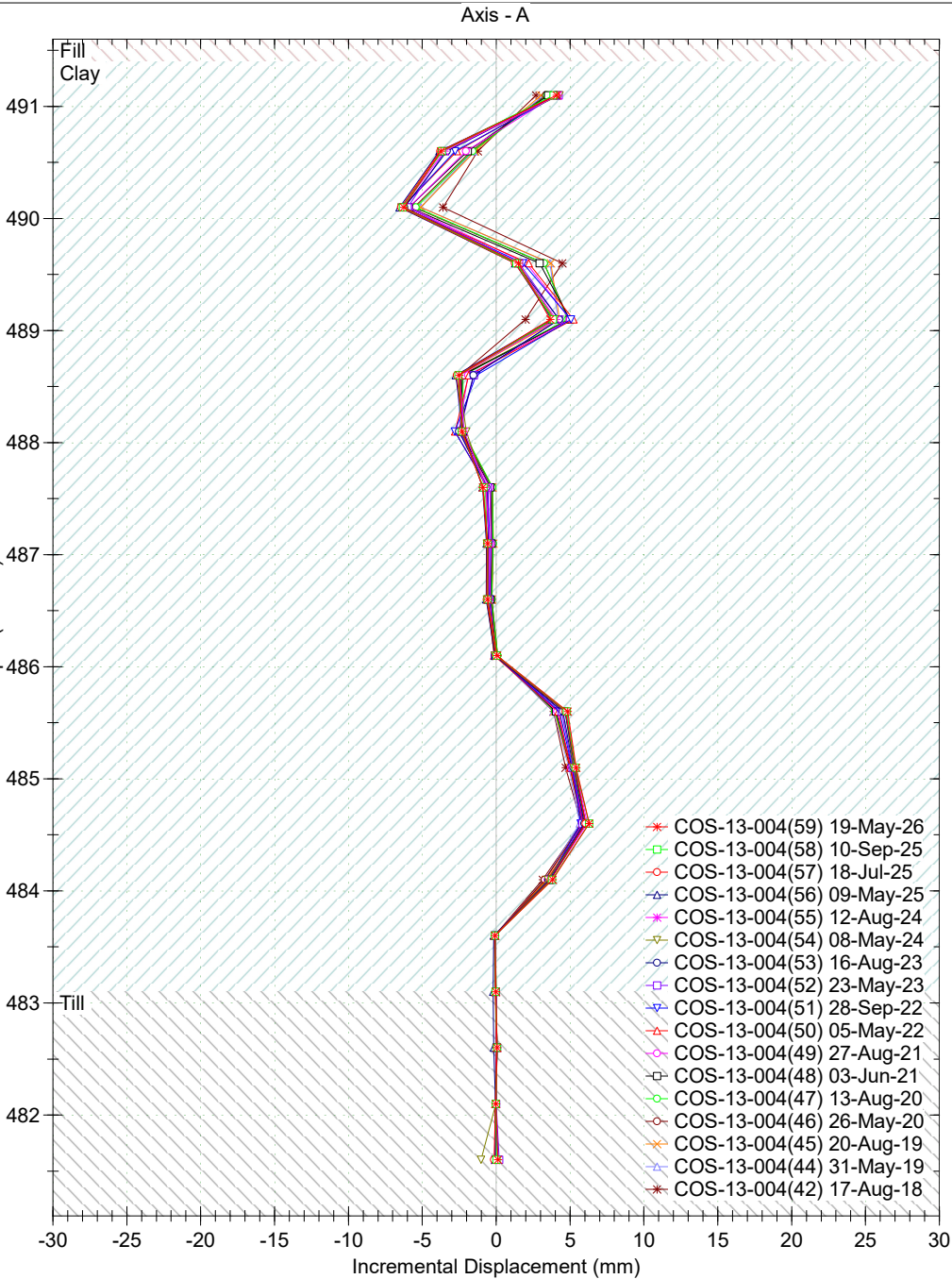
Borehole : COS-13-004
Project : Nutana Slope
Location : 307 11th. St. E. (back)
Northing : 5775604.97
Easting : 386050.63
Collar : -0.677

Spiral Correction : N/A
Collar Elevation : :491.60 meters
Reading Depth : 10.0 meters
A+ Groove Azimuth :
Base Reading : 2013 Aug 28 08:30
Applied Azimuth : 0.0 degrees



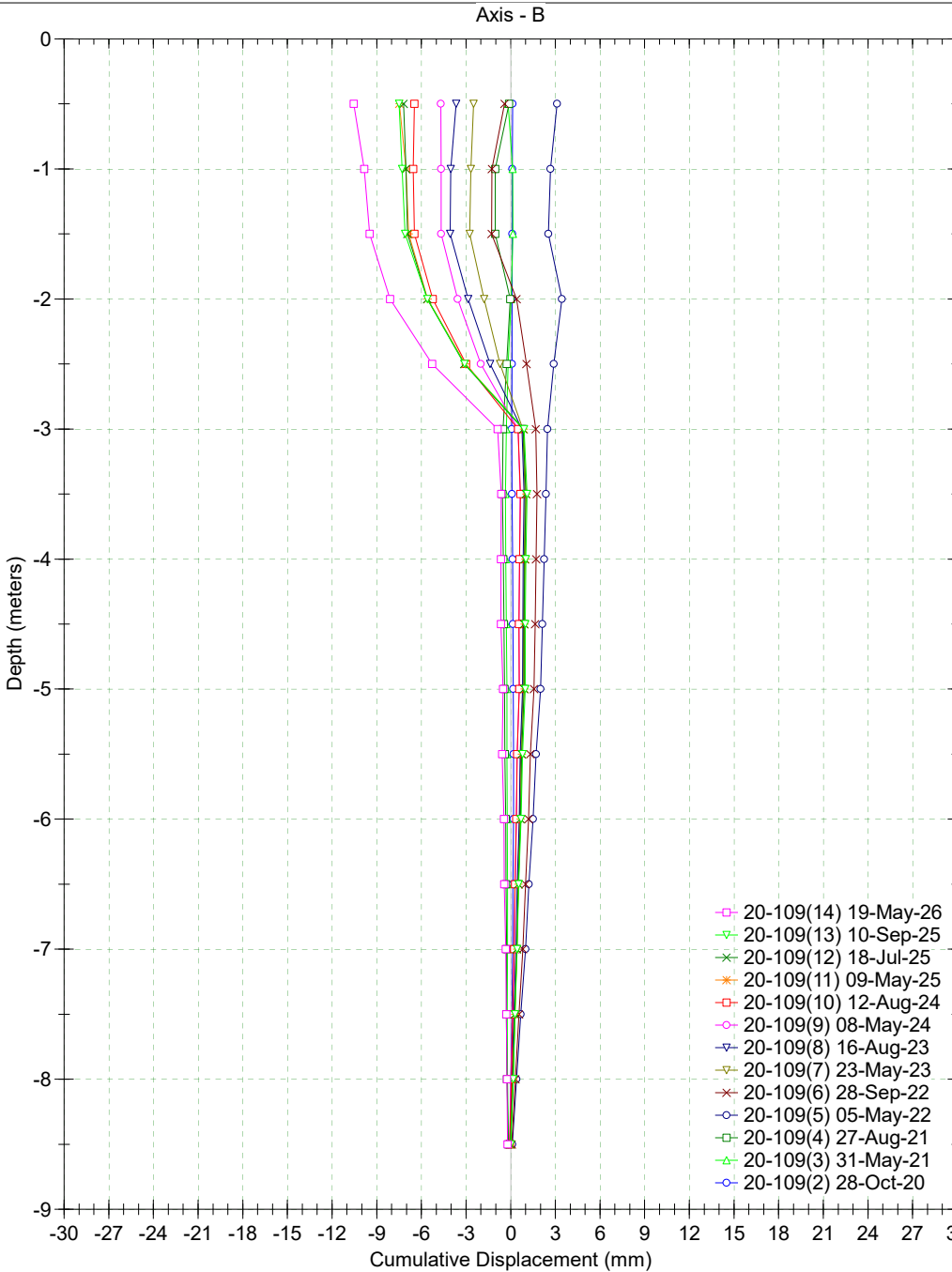
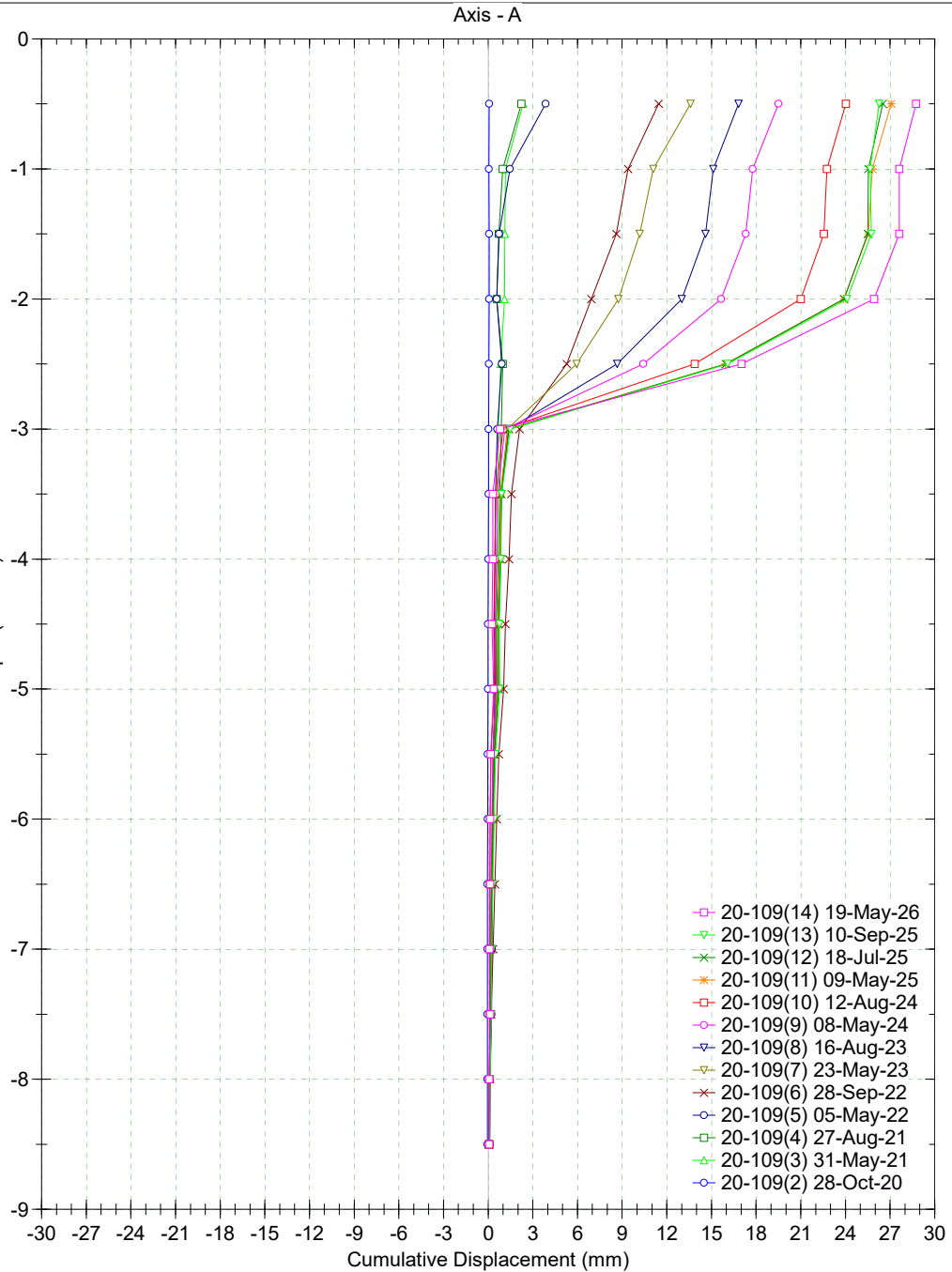
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Project : Nutana Slope
Location : 307 11th. St. E. (back)
Northing : 5775604.97
Easting : 386050.63
Collar : -0.677

Spiral Correction : N/A
Collar Elevation : :491.60 meters
Reading Depth : 10.0 meters
A+ Groove Azimuth :
Base Reading : 2013 Aug 28 08:30
Applied Azimuth : 0.0 degrees



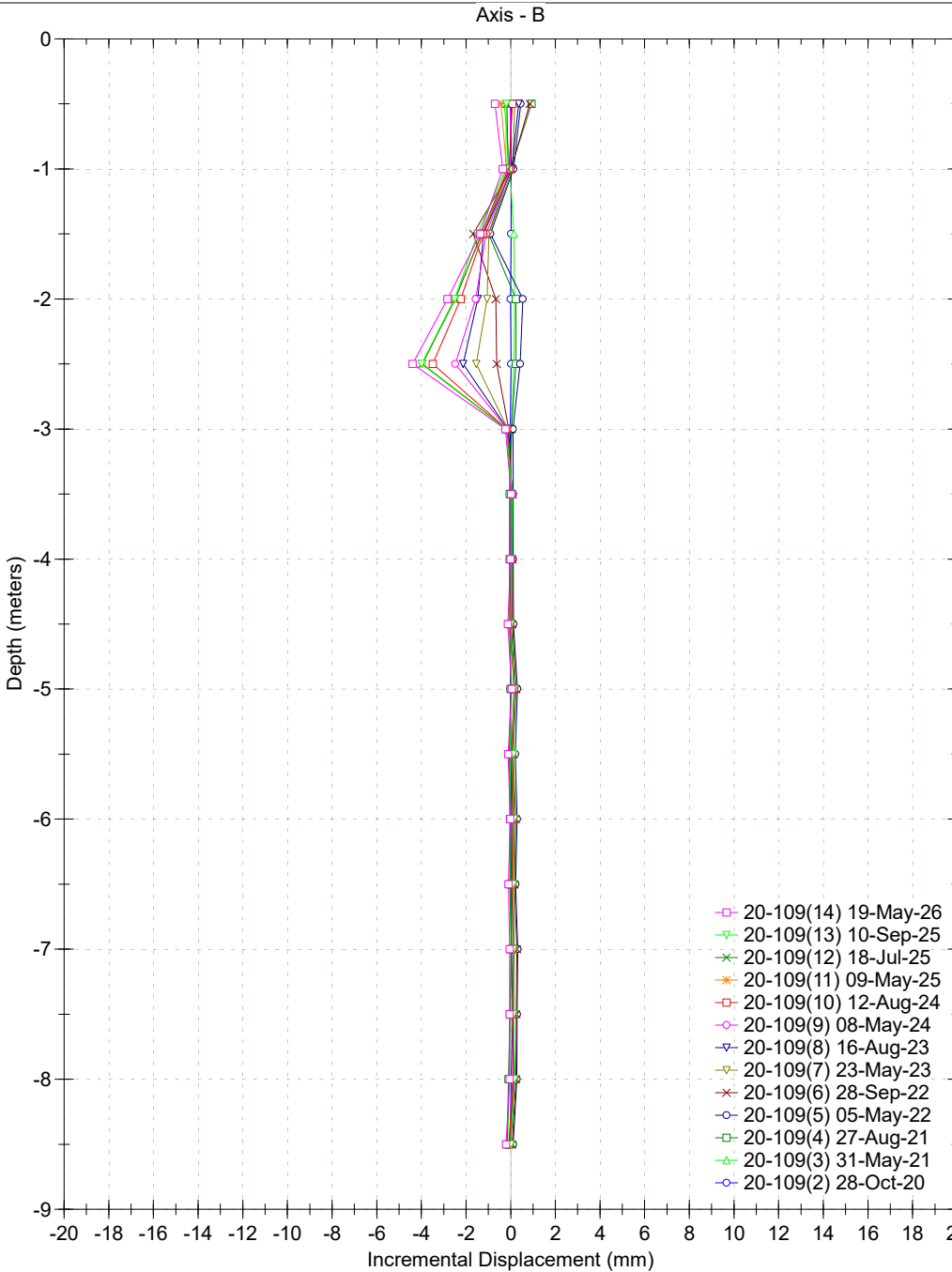
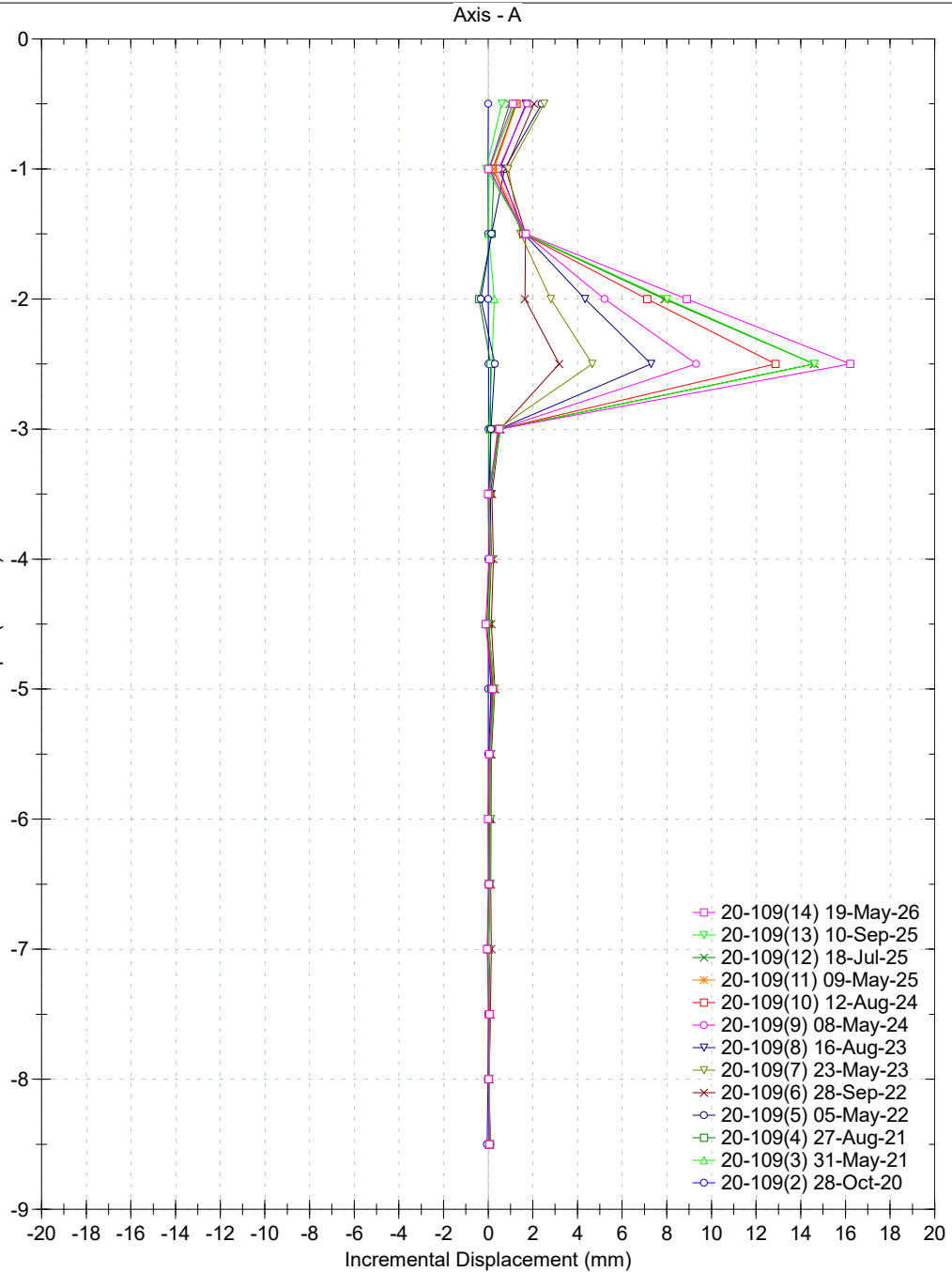
Borehole : 20-109
Project : Nutana Slope
Location :
Northing : 5775622
Easting : 385977
Collar :

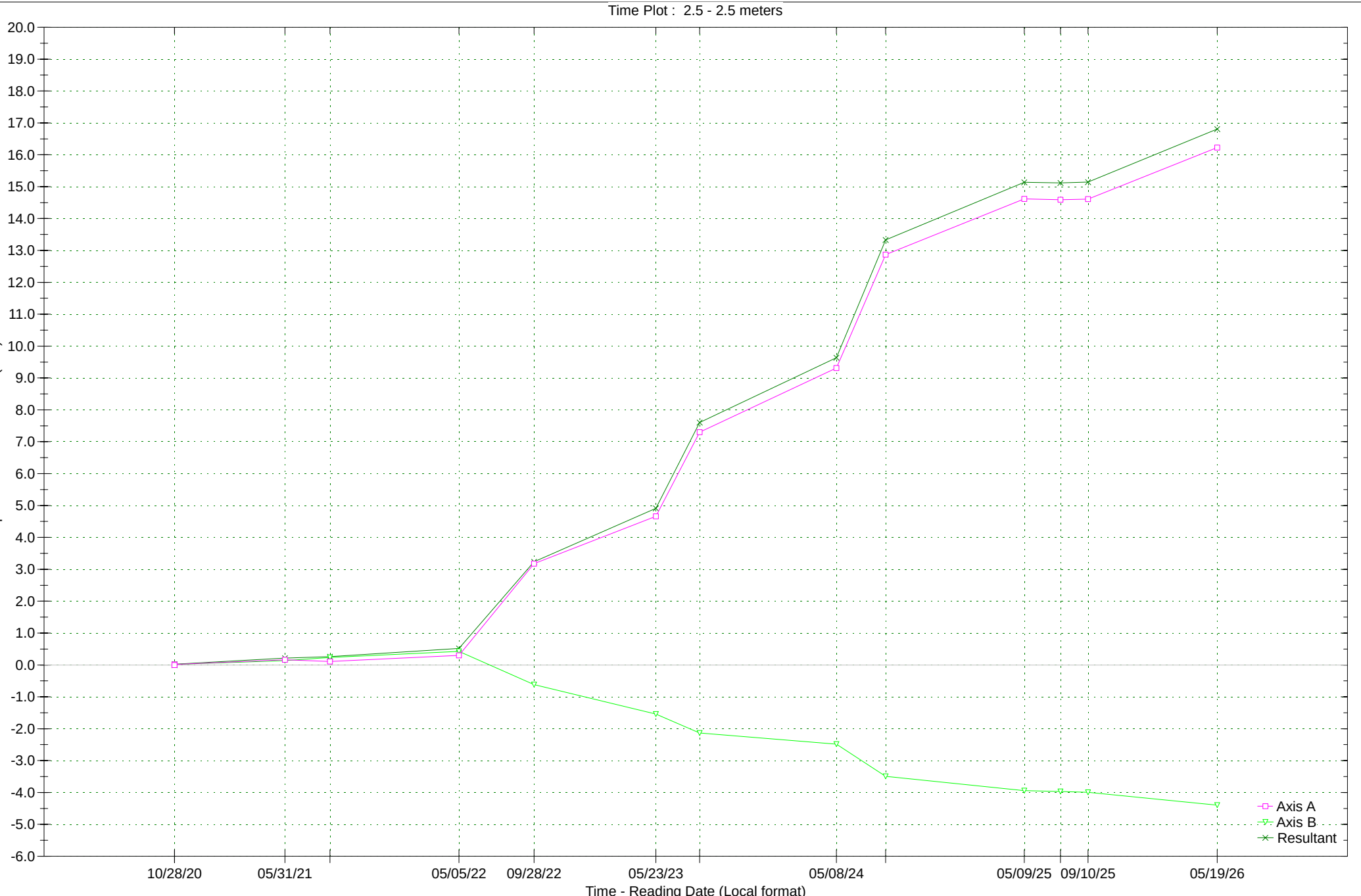
Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 8.5 meters
A+ Groove Azimuth :
Base Reading : 2020 Oct 28 16:29
Applied Azimuth : 0.0 degrees



Borehole : 20-109
Project : Nutana Slope
Location :
Northing : 5775622
Easting : 385977
Collar :

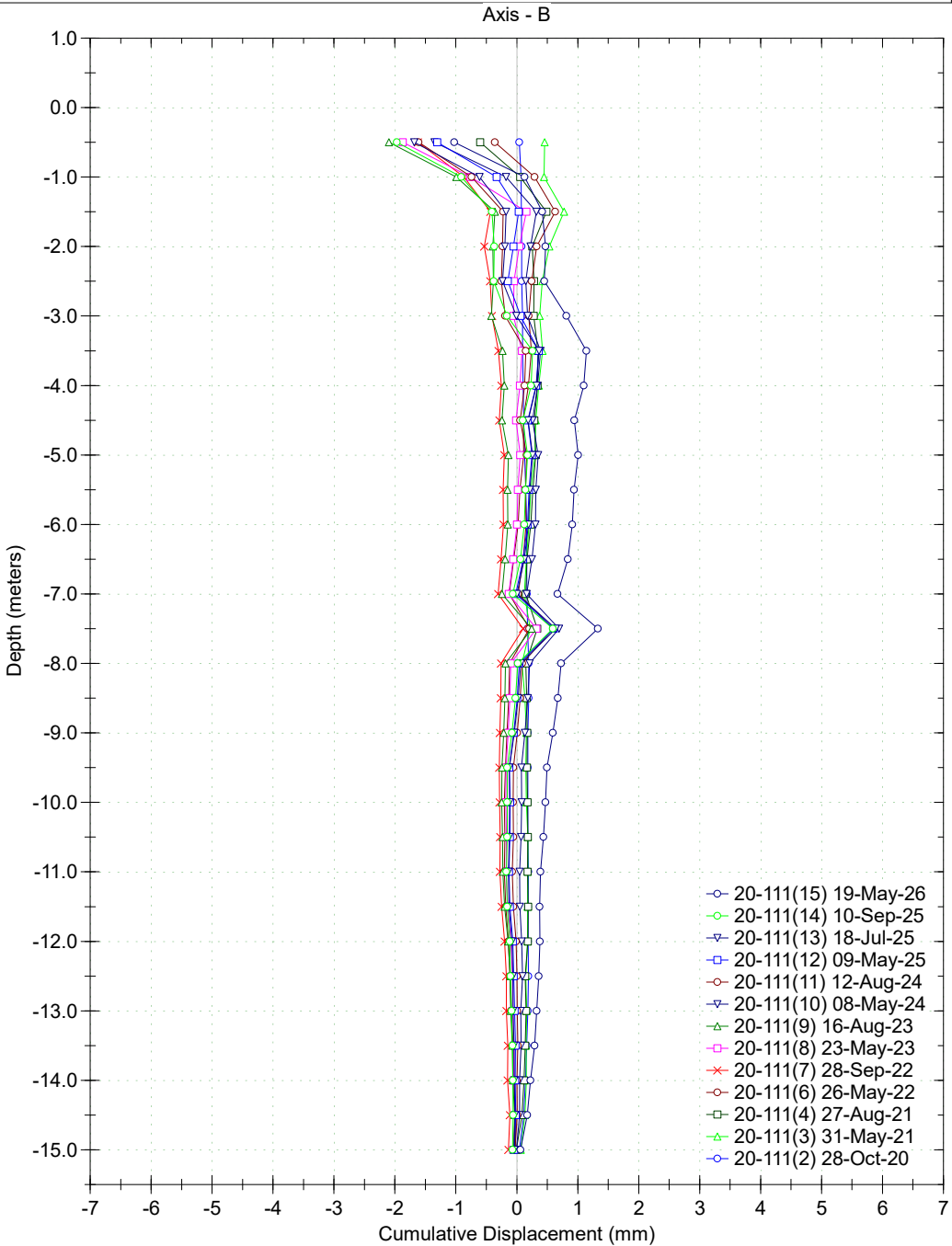
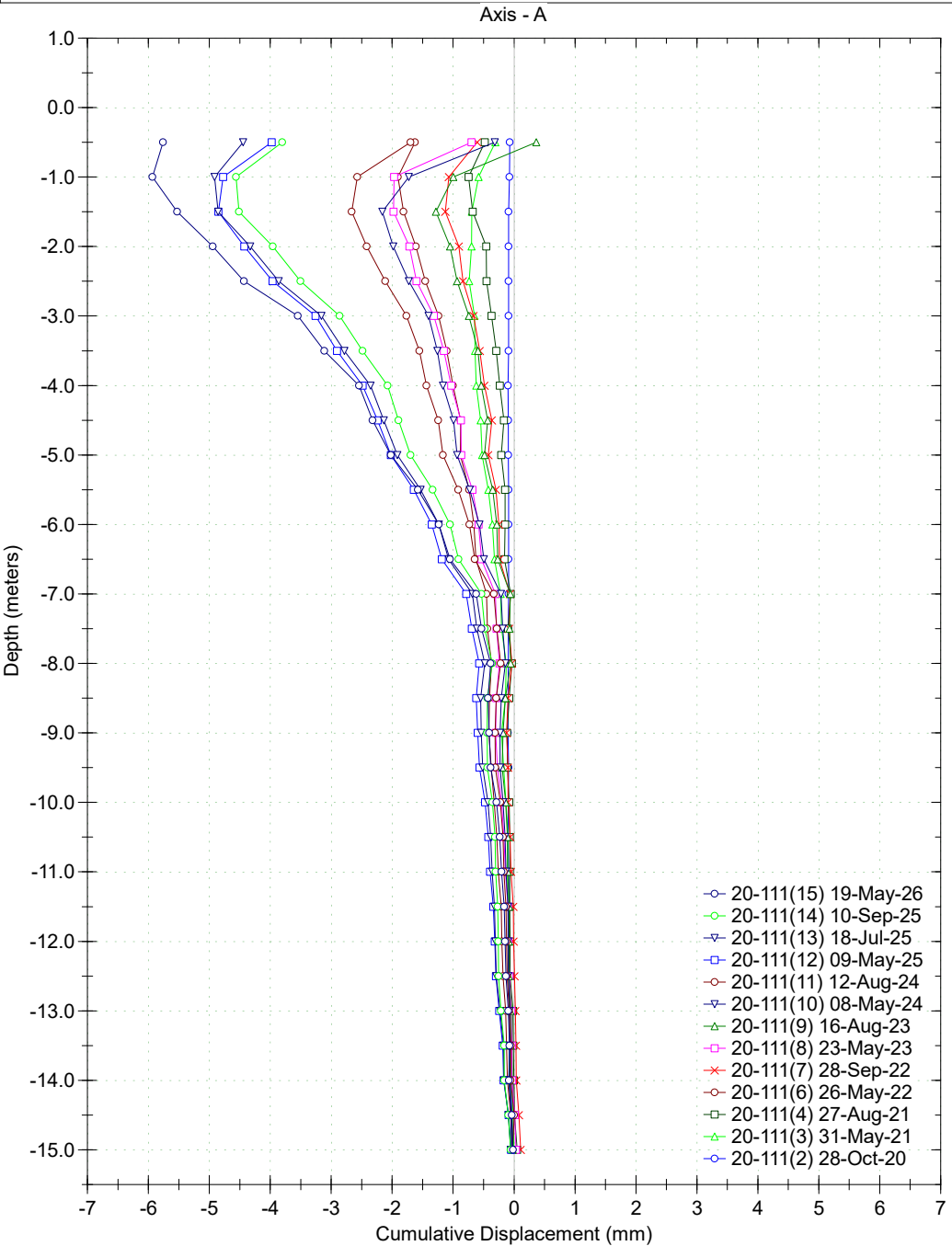
Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 8.5 meters
A+ Groove Azimuth :
Base Reading : 2020 Oct 28 16:29
Applied Azimuth : 0.0 degrees





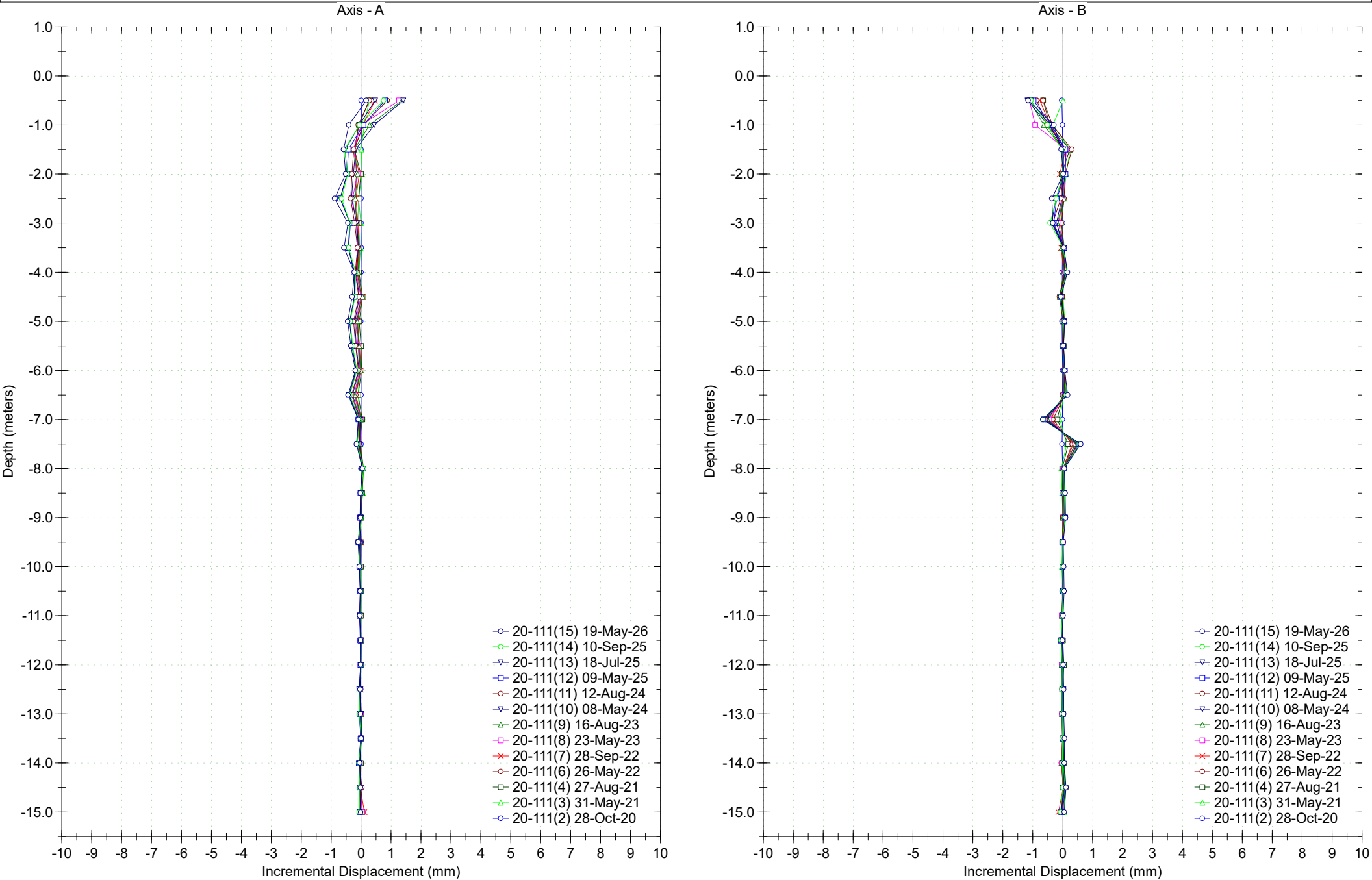
Borehole : 20-111
Project : Nutana Slope
Location :
Northing : 5775568
Easting : 385953
Collar :

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 15.0 meters
A+ Groove Azimuth :
Base Reading : 2020 Oct 28 15:01
Applied Azimuth : 0.0 degrees

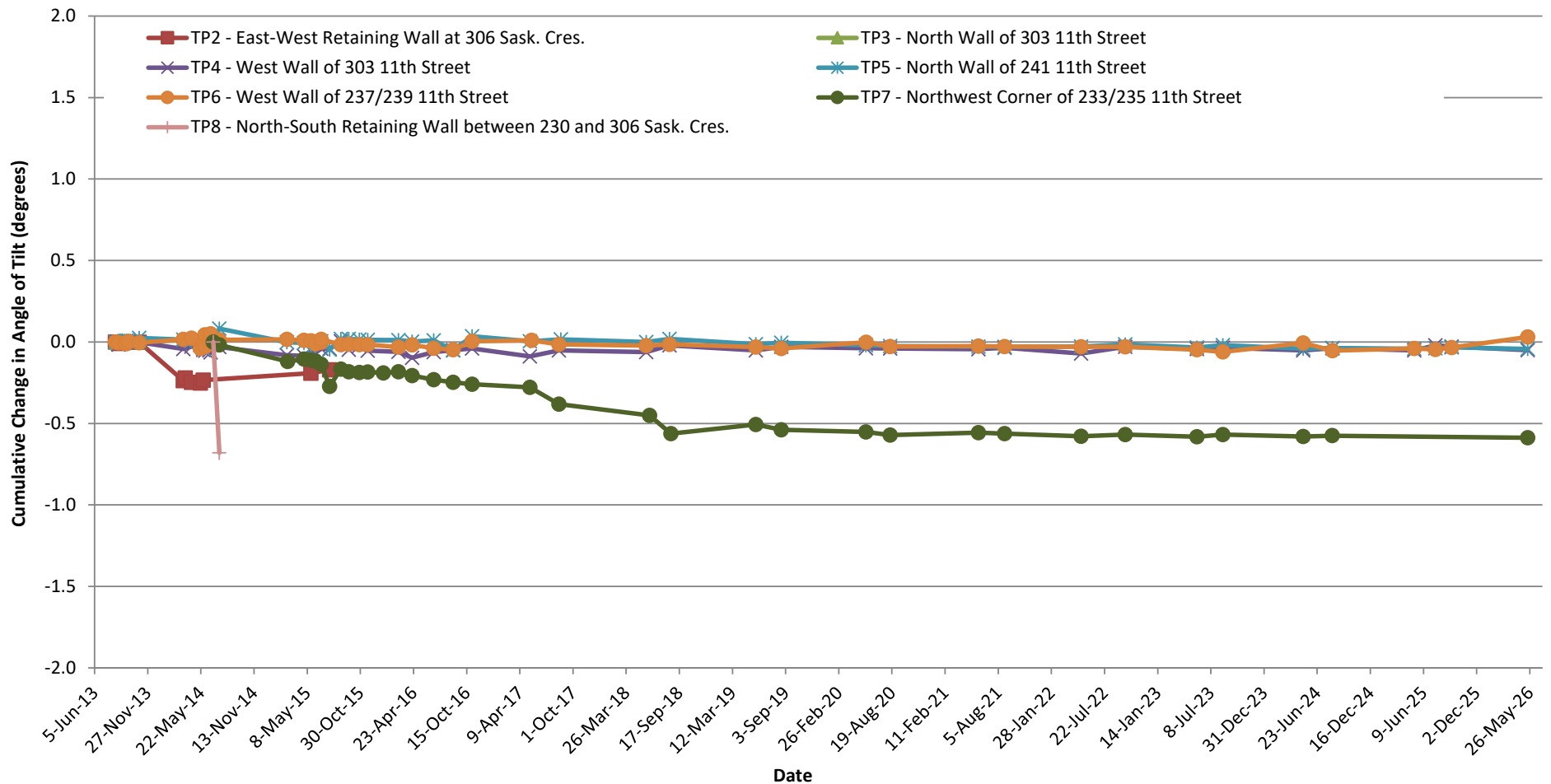


Borehole : 20-111
Project : Nutana Slope
Location :
Northing : 5775568
Easting : 385953
Collar :

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 15.0 meters
A+ Groove Azimuth :
Base Reading : 2020 Oct 28 15:01
Applied Azimuth : 0.0 degrees



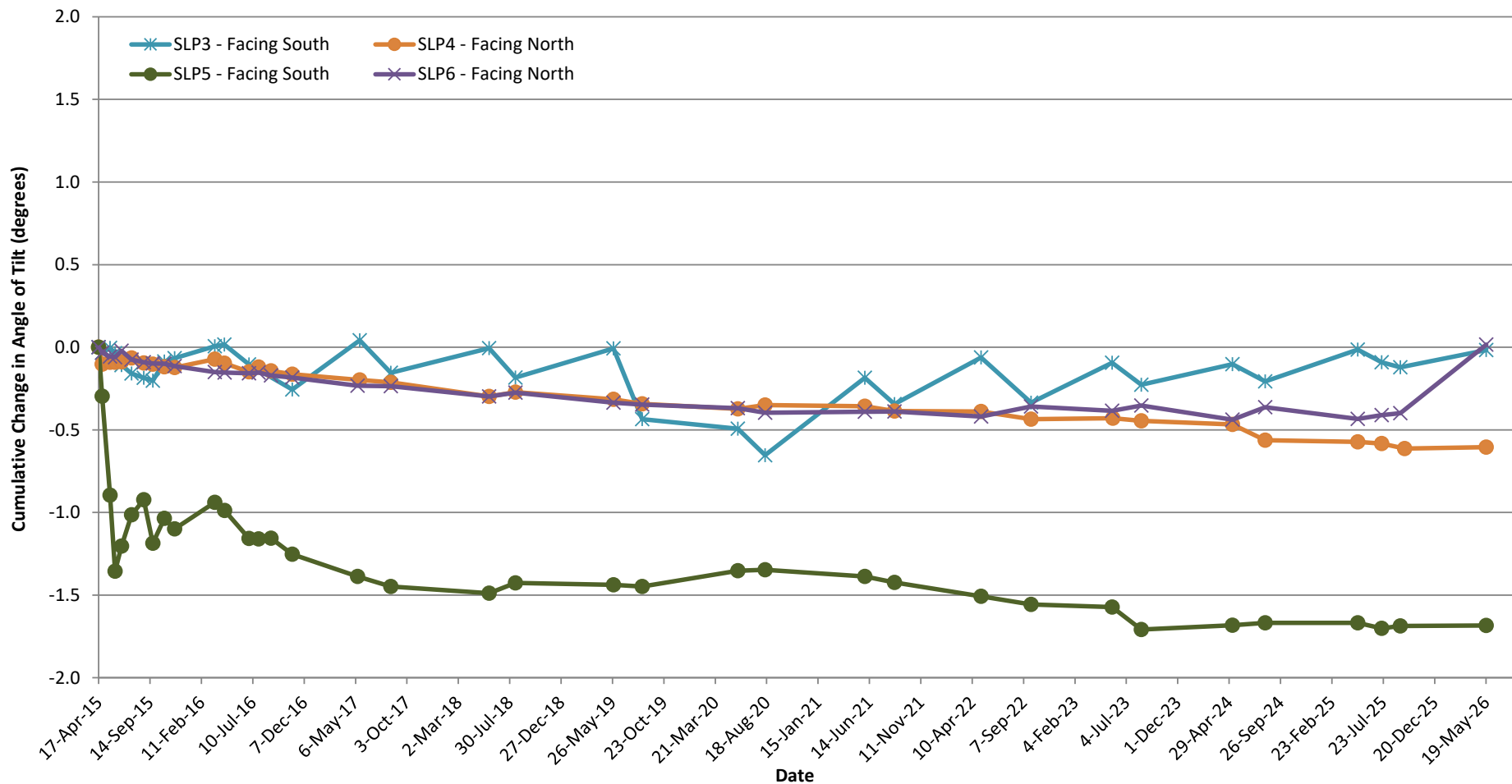
TILT PLATES



Notes:

- 1) Positive changes in tilt indicate tilting toward the monitoring structure.
- 2) TP1, located on the retaining wall between 230 and 306 Sask. Cres., is not monitored for health and safety reasons; monitoring results for this tilt plate show a change in angle of tilt of approximately 9 degrees between August 2013 and June 2014.
- 3) TP3 and TP8 are destroyed, and TP2 is buried.

		NUTANA SLOPE INSTABILITY	
RESULTS OF TILT MONITORING May 2026 Monitoring			
	PROJECT	CA0029692.9234	FILE No.
	DESIGN		SCALE N/A
	CADD		REV.
	CHECK		
	REVIEW		
			FIGURE: B1



Notes:
1) Positive changes in tilt indicate tilting toward the monitoring structure.

		NUTANA SLOPE INSTABILITY	
RESULTS OF TILT MONITORING May 2026 Monitoring			
	PROJECT	CA0029692.9234	FILE No.
	DESIGN		SCALE N/A REV.
	CADD		
	CHECK		
	REVIEW		
			FIGURE: B2