

**ALBERTA TRANSPORTATION AND  
ECONOMIC CORRIDORS GRMP  
NORTH CENTRAL (ATHABASCA AND FORT  
McMURRAY DISTRICTS)  
INSTRUMENTATION MONITORING- FALL 2024**



Site Number	Location	Name	Hwy	km
NC110	HWY 754:06 C1 32.94	Wabasca Lake Slip 'n Slide	754:06	km 32.94
<b>Legal Description:</b> NW-27-80-25 W4		<b>UTM Co-ordinates</b>		
		12U E 321468	N	6207205

<b>Current Monitoring:</b>	17-Sep-2024	<b>Previous Monitoring</b>	13-Jun-2024
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinometers (SIs):</b> SI24-2 and SI24-3	<b>Pneumatic Piezometers (PN):</b> N/A	<b>Vibration Wire Piezometers (VW):</b> VW24-2A, VW24-2B, VW24-3A and VW24-3B	<b>Standpipe Piezometers (SP):</b> SP24-1 and SP24-4
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAA's:</b> N/A	<b>Others:</b>

Readout Equipment Used			
<b>Slope Inclinometers:</b> RST Digital Inclinometer probe with a 2 ft. wheelbase and a RST Pocket PC readout.	<b>Pneumatic Piezometers:</b>	<b>Vibration Wire Piezometers:</b> Geokon GK404 digital readout	<b>Standpipe Piezometers:</b> DGSI dipmeter
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAA's:</b>	<b>Others:</b>
<b>Notes:</b>			
- SI24-2 was found to have been sheared off at approximately 2.0 m below ground surface since the spring of 2024 readings.			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	<p>SI24-3 showed a rate of movement of 216.5 mm/yr over 0.6 m to 3.7 m depth since the spring 2024 readings. This corresponds to an increase in the rate of movement by 201.7 mm/yr.</p> <p>Standpipe piezometer SP24-1 showed an increase in groundwater level of 0.17 m since the spring 2024 readings. The current groundwater level of 1.67 m below ground surface is the highest measured since the instrument was initialized. SP24-4 showed a decrease in groundwater level of 1.61 m since the spring 2024 readings.</p> <p>Vibrating wire piezometers VW24-2B and VW24-3A showed decreases in groundwater level of 0.03 m and 0.13 m, respectively, since the spring 2024 readings. VW24-2B showed an increase in groundwater level of 0.38 m since the spring 2024 readings. The groundwater level recorded in VW24-3B during this monitoring event is the highest measured since it was initialized.</p>

<b>Future Work:</b>	VW24-2A has malfunctioned for two reading cycles in a row and it will be removed from future reading cycles. The instruments should be read again in the spring of 2025.
<b>Instrumentation Repairs:</b>	
<b>Additional Comments:</b>	

<b>Attachments:</b>	<ul style="list-style-type: none"> <li>• Table NC110-1 Fall 2024 – HWY 754:06 Wabasca Lake Slip 'n Slide, Slope Inclinator Instrumentation Reading Summary</li> <li>• Table NC110-2 Fall 2024 – HWY 754:06 Wabasca Lake Slip 'n Slide, Standpipe Piezometer Instrumentation Reading Summary</li> <li>• Table NC110-3 Fall 2024 – HWY 754:06 Wabasca Lake Slip 'n Slide, Vibrating Wire Piezometer Instrumentation Reading Summary</li> <li>• Statement of Limitations and Conditions</li> <li>• APPENDIX A – NC110-1 FALL 2024 <ul style="list-style-type: none"> <li>○ Field Inspector's report</li> <li>○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC110)</li> <li>○ SI Reading Plots</li> <li>○ Figure NC110-1 (Piezometric Depths)</li> <li>○ Figure NC110-2 (Piezometric Elevations)</li> </ul> </li> </ul>
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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

Lucas Green, P.Eng.  
Geotechnical Engineer

**Table NC110-1: Fall 2024 – Hwy 754:06 Wabasca Lake Slip n’ Slide Inclinator Instrumentation Reading Summary**

Date Monitored: September 17, 2024

<b>INSTRUMENT #</b>	<b>DATE INITIALIZED</b>	<b>TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)</b>	<b>MAXIMUM RATE OF MOVEMENT (mm/yr)</b>	<b>CURRENT STATUS OF SI</b>	<b>DATE OF PREVIOUS READING</b>	<b>INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)</b>	<b>CURRENT RATE OF MOVEMENT (mm/yr)</b>	<b>CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)</b>
<i>SI24-2</i>	<i>February 1, 2024</i>	<i>8.6 over 1.8 m to 3.6 m depth in 236° direction</i>	<i>56.6 in June 2024</i>	<i>Sheared off at 2.0 m</i>	<i>June 13, 2024</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
SI24-3	February 1, 2024	62.1 over 0.6 m to 3.7 m depth in 240° direction	216.5 in September 2024	Operational	June 13, 2024	56.9	216.5	201.7

Drawing 32122-NC110 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table NC110-2: Fall 2024 – Hwy 754:06 Wabasca Lake Slip n’ Slide Standpipe Piezometer Instrumentation Reading Summary**

Date Monitored: September 17, 2024

<b>INSTRUMENT #</b>	<b>DATE INITIALIZED</b>	<b>TIP DEPTH (m)</b>	<b>GROUND ELEV. (m)</b>	<b>CURRENT STATUS</b>	<b>HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)</b>	<b>CURRENT GROUNDWATER DEPTH BGS (m)</b>	<b>PREVIOUS GROUNDWATER DEPTH BGS (m)</b>	<b>CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)</b>
SP24-1	Jan. 29, 2024	19.40	-	Operational	1.67 on September 17, 2024	1.67	1.84	0.17
SP24-4	Feb. 1, 2024	17.34	-	Operational	3.61 on June 13, 2024	5.22	3.61	-1.61

Drawing 32122-NC110 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

**Table NC110-3: Fall 2024 – Hwy 754:06 Wabasca Lake Slip n’ Slide Vibrating Wire Piezometer Instrumentation Reading Summary**

Date Monitored: September 17, 2024

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)	CURRENT GROUNDWATER DEPTH BGS (m)	PREVIOUS GROUNDWATER DEPTH BGS (MAY 1, 2024) (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
VW24-2A (171163)	February 2, 2024	3.6	-	<i>Not Functioning</i>	2.64 on May 1, 2024	N/A	2.64	-
VW24-2B (163823)	February 2, 2024	15.0	-	Operational	8.96 on June 13, 2024	8.99	8.96	-0.03
VW24-3A (171177)	February 2, 2024	3.7	-	Operational	1.58 on June 13, 2024	1.71	1.58	-0.13
VW24-3B (163840)	February 2, 2024	12.1	-	Operational	2.97 on September 17, 2024	2.97	3.35	0.38

Drawing 32122-NC110 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



## STATEMENT OF LIMITATIONS AND CONDITIONS

### 1. STANDARD OF CARE

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- 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 are judgmental in nature. 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 persons making use of such documents or records with our express written consent should 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 persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should 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 on the basis of conditions in evidence at the time of site inspections and on the basis of 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 as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons 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 should 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 detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
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**THURBER** ENGINEERING LTD.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022163)  
NORTH CENTRAL (ATHABASCA AND FORT McMURRAY DISTRICTS)  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2024**

**APPENDIX A  
DATA PRESENTATION**

**SITE NC110: HWY 754:06 WABASCA LAKE SLIP N' SLIDE**

ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
 NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS  
 INSTRUMENTATION MONITORING FIELD SUMMARY (NC110)  
 FALL 2024

<b>Location:</b> Hwy 754:06 WABASCA LAKE <b>File Number:</b> 45363 <b>Probe:</b> RST Set 8R <b>Cable:</b> RST Set 8R	<b>Readout:</b> RST Set 8R <b>Casing Diameter:</b> 2.75" <b>Temp:</b> 20 <b>Read by:</b> NKR/NRM
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**SLOPE INCLINOMETER (SI) READINGS**

SI#	GPS Location ( UTM 12)		Date	Stickup (m)	Readings Depth from top of casing (ft)	Azimuth of A+ Groove degree	Current Bottom Depth Readings				Size (")	Remarks
	Northing	Easting					A+	A-	B+	B-		
SI24-2	6206046	323071	17-Sep-24	-0.31	-60 to -2	225	0.001	-0.004	0.0244	-0.025	2.75	8 mm Allen Key Needed
SI24-3	6206017	323092	17-Sep-24	-0.23	-58 to -2	225	-752	-798	231	-235	2.75	8 mm Allen Key Needed

**VIBRATING WIRE PIEZOMETER (VW) READINGS**

PN #	Serial	GPS Location ( UTM 12)		Location	Date	Reading		Comments
		Northing	Easting			B Unit	°C	
VW24-2A	171163	6206046	323071	Attached to TH24-2	17-Sep-24	No Reading**	4.6	8 mm Allen Key Needed
VW24-2B	163823	6206046	323071	Attached to TH24-2	17-Sep-24	8633.2	7.7	8 mm Allen Key Needed
VW24-3A	171177	6206017	323092	Attached to TH24-3	17-Sep-24	8799.9	7.1	8 mm Allen Key Needed
VW24-3B	163840	6206017	323092	Attached to TH24-3	17-Sep-24	8585.3	4.4	8 mm Allen Key Needed

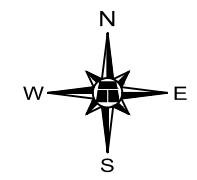
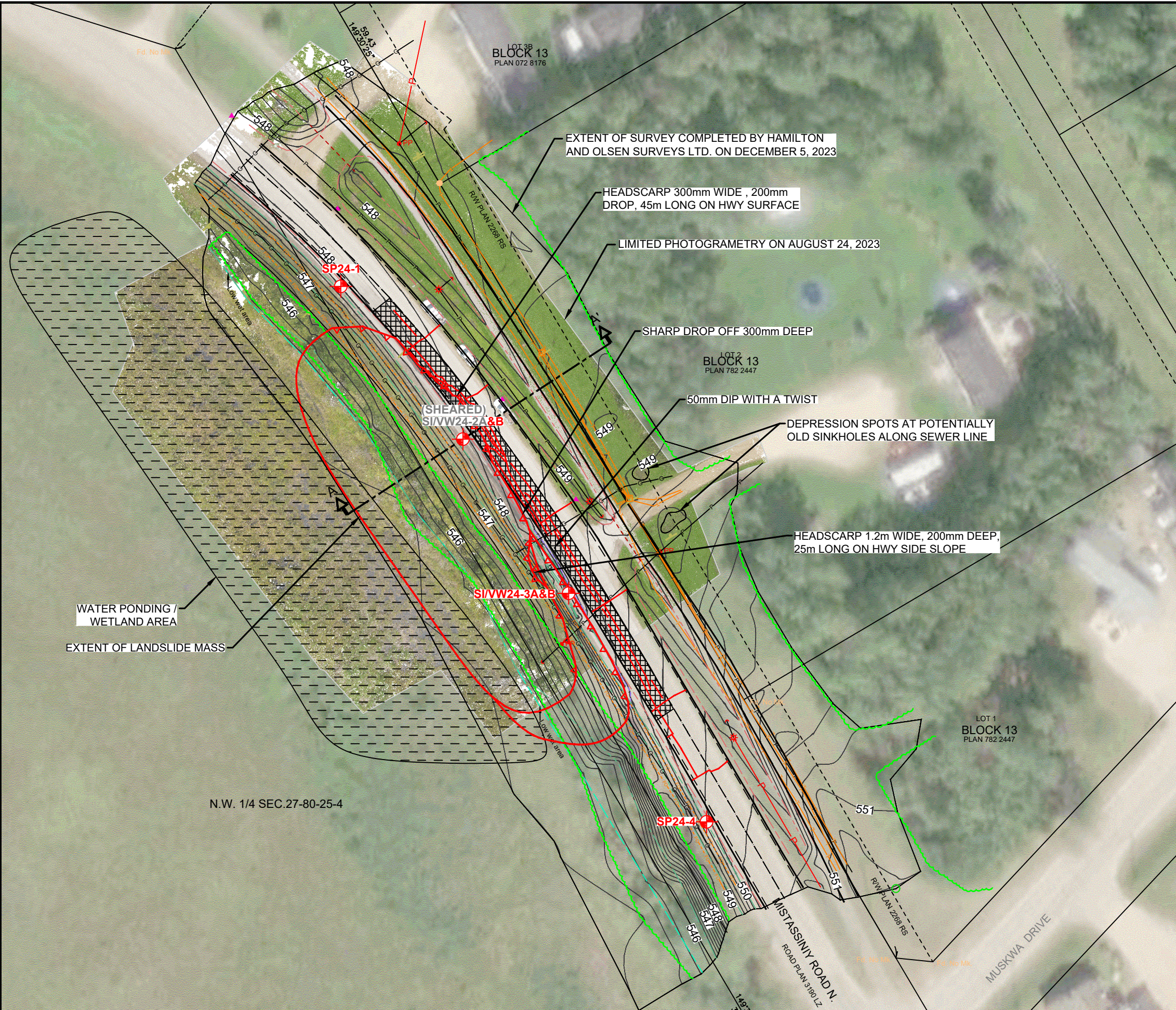
SP#	GPS Location ( UTM 12)		Date	Stick-up (m)	Water level below top of pipe (m)	Comments
	Northing	Easting				
SP24-1	6206076	323048	17-Sep-24	-0.13	1.54	1/2" Socket Needed to Open
SP24-4	6205973	323118	17-Sep-24	-0.13	5.09	Allen key

**INSPECTOR REPORT**

8 mm Allen Key and 1/2" Socket needed to open flushmounts
SI 24-2 sheared off at 6ft 6 inch from top of casing
** No Reading



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- LEGEND**
- APPROXIMATE TEST HOLE LOCATION
  - CRACK
  - ACTIVE HEADSCARP
  - TREE LINE
  - POWER LINE
  - GAS LINE
  - FIBRE CABLE
  - TELEPHONE LINE
  - ASPHALT PATCH
  - SLOPE INCLINOMETER
  - STANDPIPE PIEZOMETER
  - VIBRATING WIRE PIEZOMETER



AIR PHOTO FROM ESRI WORLD IMAGERY EXPORTED ON FEBRUARY 21, 2024



**NORTH CENTRAL  
(ATHABASCA AND FORT MCMURRAY DISTRICTS)**

**NC110 - WABASCA LAKE SLIP N' SLIDE  
HWY 754:06 WABASCA, ALBERTA  
SITE PLAN**

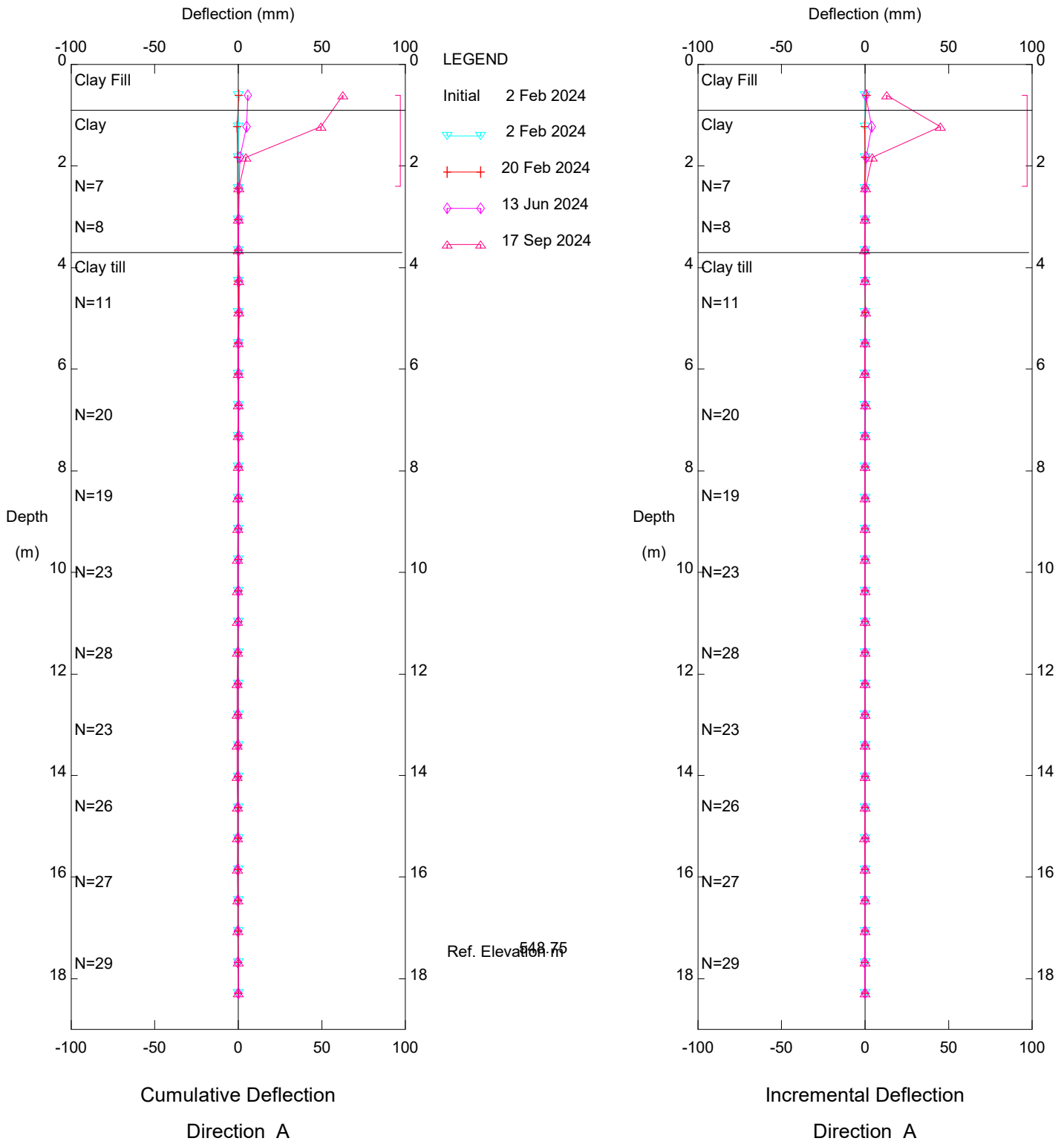
DWG No. 32122-NC110

DRAWN BY	ML
DESIGNED BY	JGP
APPROVED BY	TSA
SCALE	1:750
DATE	SEPTEMBER 2024
FILE No.	32122



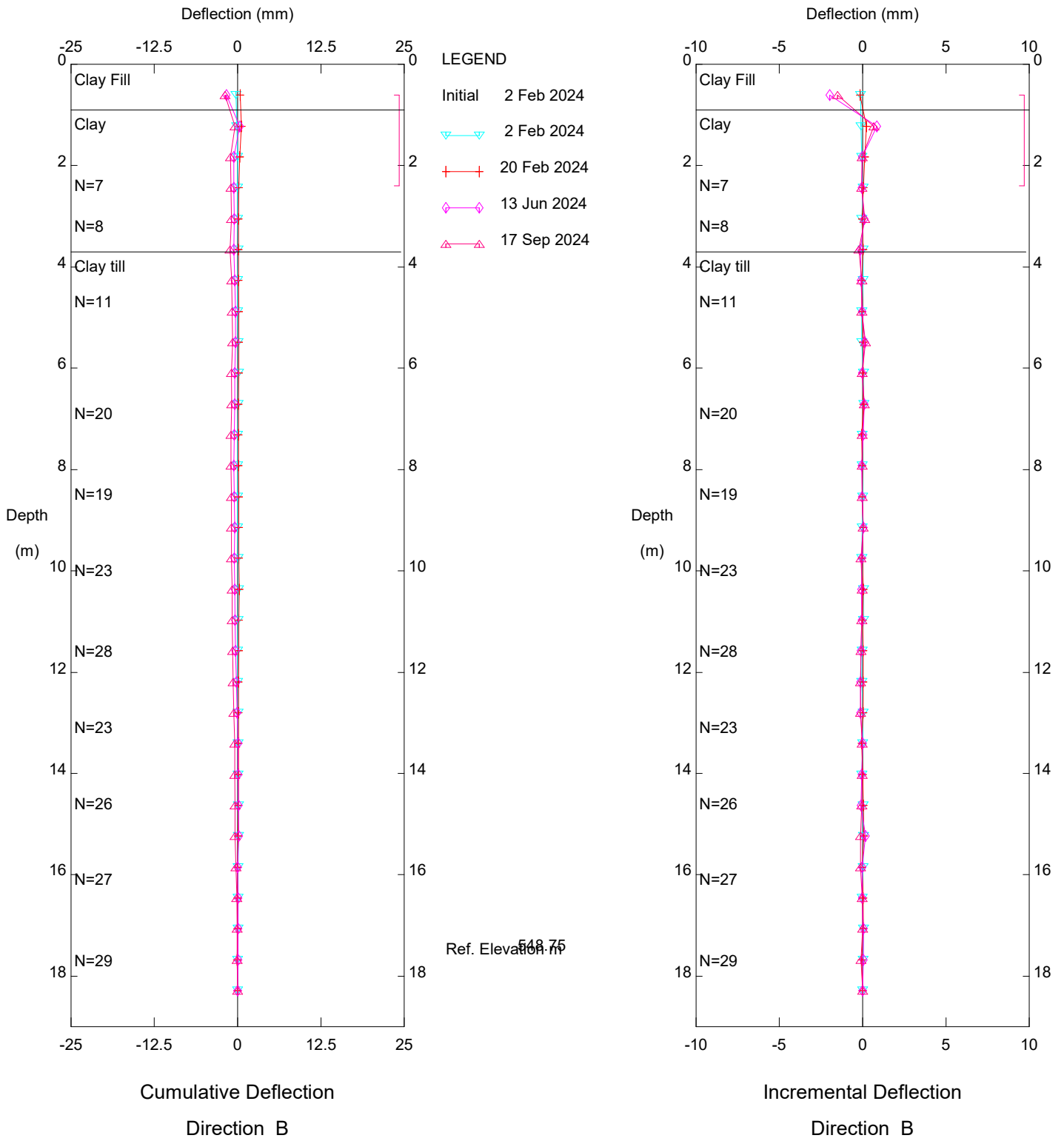


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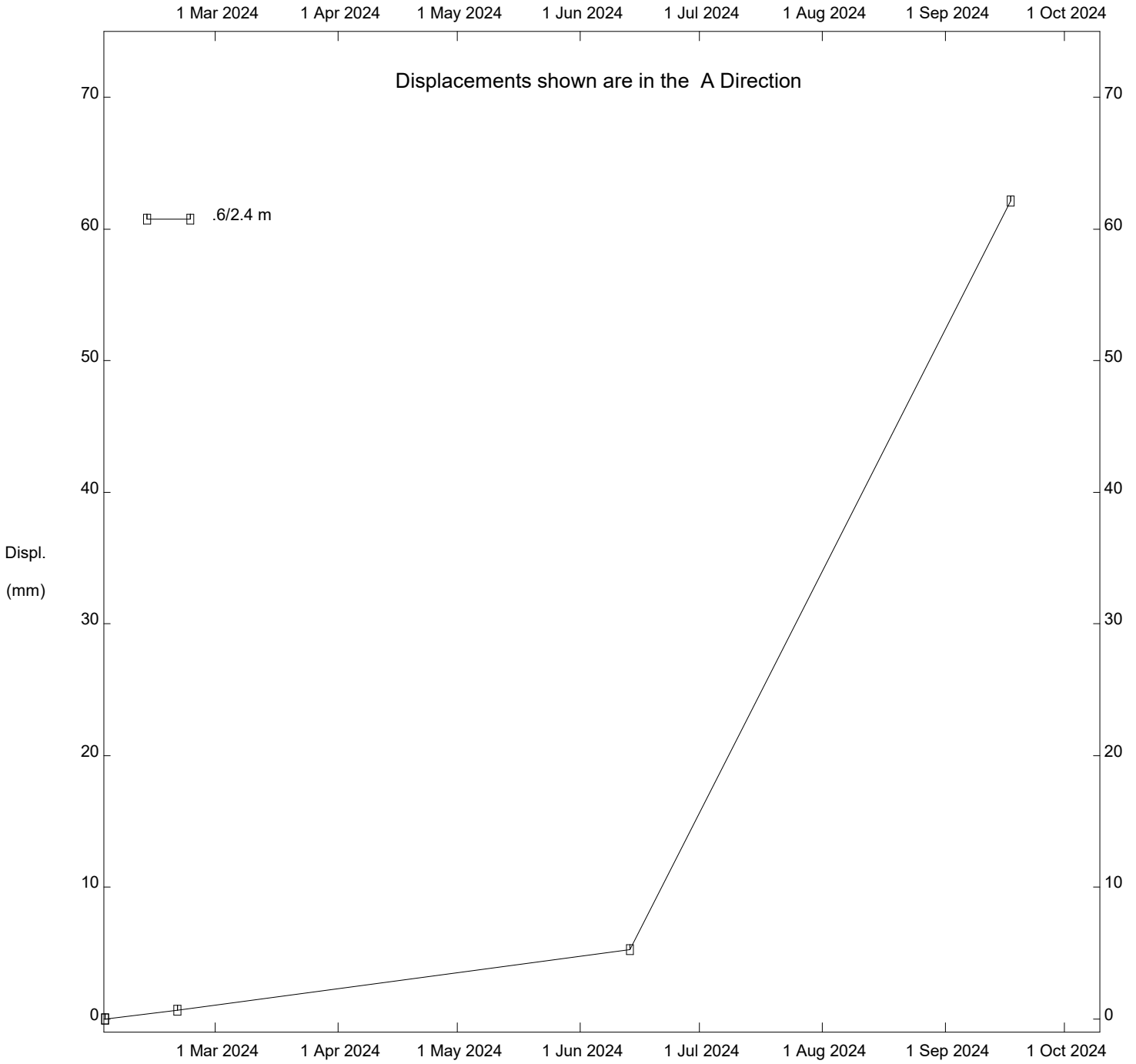
SI24-3, NC110 Wabasca Lake, Inclinometer 24-3

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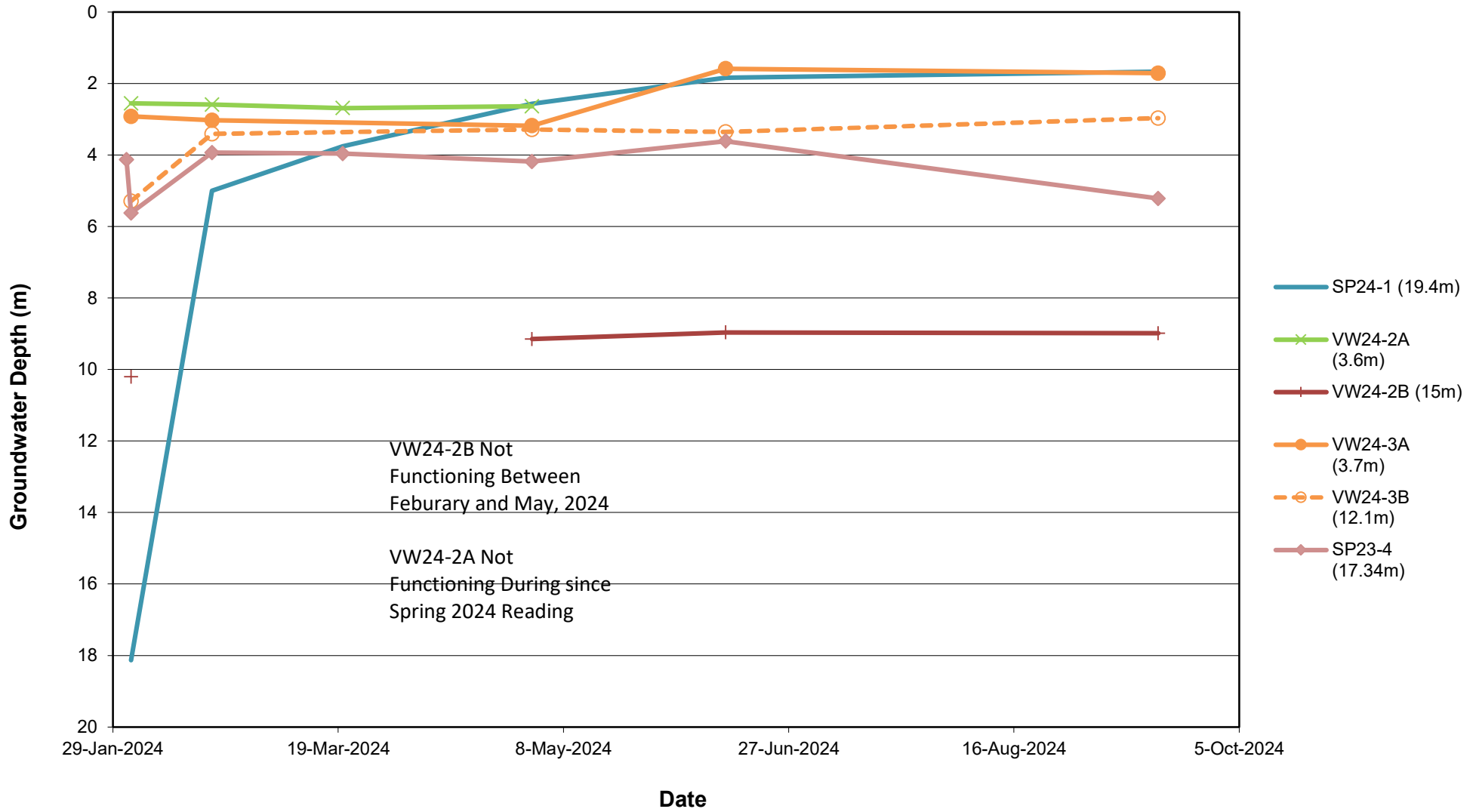
SI24-3, NC110 Wabasca Lake, Inclinometer 24-3

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SI24-3, NC110 Wabasca Lake, Inclinator 24-3

**FIGURE NC110 -1  
HWY 754:06 (NC110) - WABASCA LAKE PIEZOMETER DEPTHS**



**FIGURE NC110-2**  
**HWY 754:06 (NC110) - WABASCA LAKE PIEZOMETER ELEVATIONS**

