

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



Site Number	Location	Name	Hwy	km
NC087	HWY 63:02	Fischer Trail	63:02	Km 20.67
Legal Description: 8-22-69-17 W4		UTM Co-ordinates		
		12U E 404181	N	6094051

Current Monitoring:	8-Jun-2024	Previous Monitoring	1-Oct-2023
Instruments Read By:	Mr. Niraj Regmi, G.I.T and Mr. Nixon Mationg, of Thurber		

Instruments Read During This Site Visit			
Slope Inclinometers (SIs): N/A	Pneumatic Piezometers (PN): PN17-3 and PN17-5	Vibration Wire Piezometers (VW): N/A	Standpipe Piezometers (SP): SP17-4 and SP17-6
Load Cell (LC): N/A	Strain Gauges: N/A	SAs: N/A	Others:

Readout Equipment Used			
Slope Inclinometers:	Pneumatic Piezometers: RST C108 pneumatic piezometer reader	Vibration Wire Piezometers:	Standpipe Piezometers: DGSI dipmeter
Load Cell:	Strain Gauges:	SAs:	Others:

Notes:
<ul style="list-style-type: none"> - A site plan showing instrument locations is included in Appendix A. - Historical Slope Inclinator movements are summarized in Table NC087-1, attached. - Standpipe and pneumatic piezometer plots are included in Appendix A. - Pneumatic Piezometer readings are summarized in Table NC087-2, attached. - Standpipe Piezometer readings are summarized in Table NC087-3, attached.

Discussion	
Zones of New Movement:	None
Interpretation of Monitoring Results:	<p>The groundwater level decreased by 1.10 m in PN17-3 since the fall of 2023 readings. PN17-5 showed an increase in groundwater level of 0.21 m since the fall of 2023 readings, corresponding to an above-ground (artesian) groundwater level of 0.32 m.</p> <p>Standpipe piezometers SP17-4 and SP17-6 showed increases in groundwater level of 0.78 m and 0.65 m, respectively, since the fall of 2023 readings.</p>
Future Work:	The instruments should be read again in the fall of 2024.
Instrumentation Repairs:	No instrument repairs are required at this time.
Additional Comments:	

Attachments:	<ul style="list-style-type: none">• Table NC087-1 Spring 2024 – HWY 63:02 Fischer Trail (km 20.67) Slope Inclinator Instrumentation Reading Summary• Table NC087-2 Spring 2024 – HWY 63:02 Fischer Trail (km 20.67) Pneumatic Piezometer Instrumentation Reading Summary• Table NC087-3 Spring 2024 – HWY 63:02 Fischer Trail (km 20.67) Standpipe Piezometer Instrumentation Reading Summary • Statement of Limitations and Conditions • APPENDIX A – NC087-1 SPRING 2024<ul style="list-style-type: none">○ Field Inspector's report○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32122-NC087)○ Figure NC087-1 (Piezometric Depths)
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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 NC087-1 Spring 2024 – Hwy 63:02 Fischer Trail (Km 20.67) Slope Incliner Instrumentation Reading Summary

Date Monitored: Not Monitored

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS OF SI	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI17-1	September 15, 2017	37.9 over 6.9 m to 8.7 m depth in 230° direction	103.1 on October 18, 2017	Sheared at 8.1 m depth	May 26, 2018	N/A	N/A	N/A
SI17-2	September 15, 2017	46.3 over 5.0 m to 6.8 m depth in 240° direction	154.8 on October 18, 2017	Sheared at 6.6 m depth	May 26, 2018	N/A	N/A	N/A
		12.0 over 9.9 m to 11.7 m depth in 220° direction	22.4 on October 18, 2017			N/A	N/A	N/A
SI17-3	September 15, 2017	43.3 over 4.2 m to 6.0 m depth in 220° direction	133.2 on October 18, 2017	Sheared at 5.6 m depth	May 26, 2018	N/A	N/A	N/A
SI17-5	September 15, 2017	10.2 over 0.1 m to 1.3 m depth in 234° direction	54.6 on February 22, 2018	Damaged at 1.2 m below top of casing	May 27, 2019	N/A	N/A	N/A

Drawing 32122-NC087 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.



Table NC087-2 Spring 2024 – Hwy 63:02 Fischer Trail (Km 20.67) Pneumatic Piezometer Instrumentation Reading Summary

Date Monitored: June 8, 2024

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED GROUNDWATER LEVEL BGS (m)	MEASURED PORE PRESSURE (kPa)	CURRENT GROUNDWATER LEVEL BGS (m)	PREVIOUS GROUNDWATER LEVEL BGS (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN17-1 (37672)	September 15, 2017	13.00	-	Damaged	-0.31 on February 22, 2018	N/A	N/A	0.86 (May 28, 2022)	N/A
PN17-3 (37673)	September 15, 2017	7.60	-	Operational	0.48 on September 20, 2020	53.10	2.19	1.09	-1.10
PN17-5 (37671)	September 15, 2017	12.70	-	Operational	-5.09 on September 15, 2017	127.7	-0.32*	-0.11*	0.21

Drawing 32122-NC087 in Appendix A provides a sketch of the approximate location of the monitoring instrumentation for this site.

* Negative values correspond to an above-ground (artesian) groundwater level.



Table NC087-3 Spring 2024 – Hwy 63:02 Fischer Trail (Km 20.67) Standpipe Piezometer Instrumentation Reading Summary

Date Monitored: June 8, 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 (m)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
SP17-4	August 25, 2017	14.62	-	Operational	0.24 on October 18, 2017	0.43	1.21	0.78
SP17-6	August 25, 2017	14.70	-	Operational	0.13 on October 18, 2017	0.31	0.96	0.65

Drawing 32122-NC087 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

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

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

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

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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.
- d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

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THURBER ENGINEERING LTD.

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

SPRING 2024

**APPENDIX A
DATA PRESENTATION AND SITE PLANS**

SITE NC087: HWY 63:02 FISCHER TRAIL (km 20.67)

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS
NORTH CENTRAL REGION - ATHABASCA AND FORT McMURRAY DISTRICTS
INSTRUMENTATION MONITORING FIELD SUMMARY (NC087)
SPRING 2023**

Location: HWY 63:02 (km 20.666) - Fischer Trail File Number: 32122 Probe: Cable:	Readout: RST PN C108 Unit 4/ DGSI Dipmeter Casing Diameter: 2.75" Temp (deg C): 19 Read by: NKR/OTE
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PNEUMATIC PIEZOMETER (PN) READINGS

PN #	Serial	GPS Location (UTM 12)		Location	Date	Reading (kPa)	Comments
		Northing	Easting				
PN17-1	37672	404119	6094128	Attached to SI17-1	27-May-23		Pressure continued rising up to 600 kPa, most likely damaged. Reading doesn't stabilize
PN17-3	37673	404181	6094051	Attached to SI17-3	27-May-23	63.7	
PN17-5	37671	404173	6094098	Attached to SI17-5	27-May-23	125.3	

STANDPIPE PIEZOMETER (SP) READINGS

SP#	GPS Location (UTM 12)		Date	Stick-up (m)	Water level below top of pipe (m)	Comments
	Northing	Easting				
SP17-4	404145	6094147	27-May-23	0.97	1.92	
SP17-6	404205	6094050	27-May-23	0.95	1.73	

INSPECTOR REPORT

Call James Fischer at 780-623-8637 to enter private property
- Make another attempt to read PN17-1 in Spring 2023

**FIGURE NC087-1
PIEZOMETER DATA FOR HWY 63:02 - FISCHER TRAIL**

