



Environmental Assessments & Approvals

October 2nd 2019

AEC 08-098

Previn Court Homes
C/O Urban Ecosystems Ltd.
7050 Weston Road Suite 705
Woodbridge, Ontario
L4L 8G7

Attention: Daniel Schembri

Re: **Previn Court Homes - Water Level Monitoring**

Dear Sir/Madam:

Azimuth Environmental Consulting, Inc. was retained to conduct a scoped test pit and monitoring program within Lot 23, Concession 7 in the City of Barrie (the "Site"). The Site is currently vacant forest and shrub land, and is located on the south west side of Ferndale Drive, approximately 140 m south of the Ferndale Drive and Edgehill Drive intersection (Figure 2). The purpose of this technical memorandum is to summarize the test pit program and shallow ground water data collected to date.

Test Pit Program

A field program was conducted by Azimuth staff on April 25th 2019 during which the weather was 18°C and sunny. Test pits were advanced at six (6) locations, spread evenly across the Site. The test pits were advanced using an excavator rented and operated by Eisses Brothers Excavating. The test pit location coordinates are shown in the below Table 1.

Test pits were typically about 2 m wide and 4 m long, and were advanced between 1.6 to 2.9 m below ground surface (mbgs). In general, the subsurface material was composed of topsoil overlying medium to coarse sand with varying amounts of gravel. The material was primarily loose, and was dark brown, brown, red brown, or grey in colour. Ground water seeps were noted in the side walls or the bottom of all test pits advanced. Test pit logs for the field program are appended.



Plastic standpipes were installed in each test pit prior to back filling to enable ground water measurement. Each standpipe was 2 inches in diameter and contained a 5 foot section of perforated pipe at the bottom to allow for ground water flow.

Table 1: Summary of Test Pit Locations

Test Pit ID	Ground Elevation*(masl)	Approximate Base of Excavation (masl)	Approximate Coordinates	
			Easting	Northing
TP-1	251.50	249.06	601652.41	4914863.47
TP-2	242.16	239.66	601492.39	4914781.35
TP-3	238.51	236.28	601676.56	4914732.98
TP-4	238.69	237.07	601557.81	4914681.05
TP-5	240.49	238.41	601602.15	4914765.26
TP-6	237.91	234.97	601665.76	4914605.42

*Based on survey completed by Dino Astri Surveying Inc. in 2019

Ground Water Measurement

Manual measurements were also collected in all six standpipes on April 30th, May 30th, June 26th, and August 2nd 2019. The below Table 2 shows the manual measurements collected.

Table 2: Manual Ground Water Monitoring Summary

Location ID	Manual Water Levels (masl)			
	30-Apr-19	30-May-19	26-Jun-19	02-Aug-19
SP-1	239.40	239.43	239.37	239.21
SP-2	240.55	240.53	240.42	240.21
SP-3	238.33	238.35	238.30	238.02
SP-4	238.23	238.17	238.13	237.95
SP-5	239.36	239.31	239.22	239.04
SP-6	236.67	236.66	236.60	236.39

Notes

Blue highlight indicates the high manual measurement for that location

Typically, the spring high conditions are measured within the months of March, April, May, or June. Based on Azimuth's experience with similar monitoring programs in the Barrie area in 2019, the spring high period occurred late April to early May. In Table 3, the blue highlighted areas represent the highest manual measurement recorded for each location. The high measurement was collected at four locations in April, and at two locations in May. Due to the small variation between April and May (0.02m and 0.03m) for the locations that observed the high in May, the April measurements can be considered the peak ground water conditions for the Site. These conditions are shown on



Figure 3 with extrapolated contours. The inferred shallow ground water flow direction is south east

Data loggers set to record automatic water level measurements every hour were installed within three standpipes (SP-2, SP-3, & SP-6) to collect data between April 30th and August 2nd 2019. Hydrographs for each standpipe are appended. The hydrographs confirm that the April 30th 2019 manual measurement represents peak ground water conditions at the Site (+/- 0.10m) and should be used in detailed design.

Should you have any questions or wish to discuss the report in greater detail, please do not hesitate to contact the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

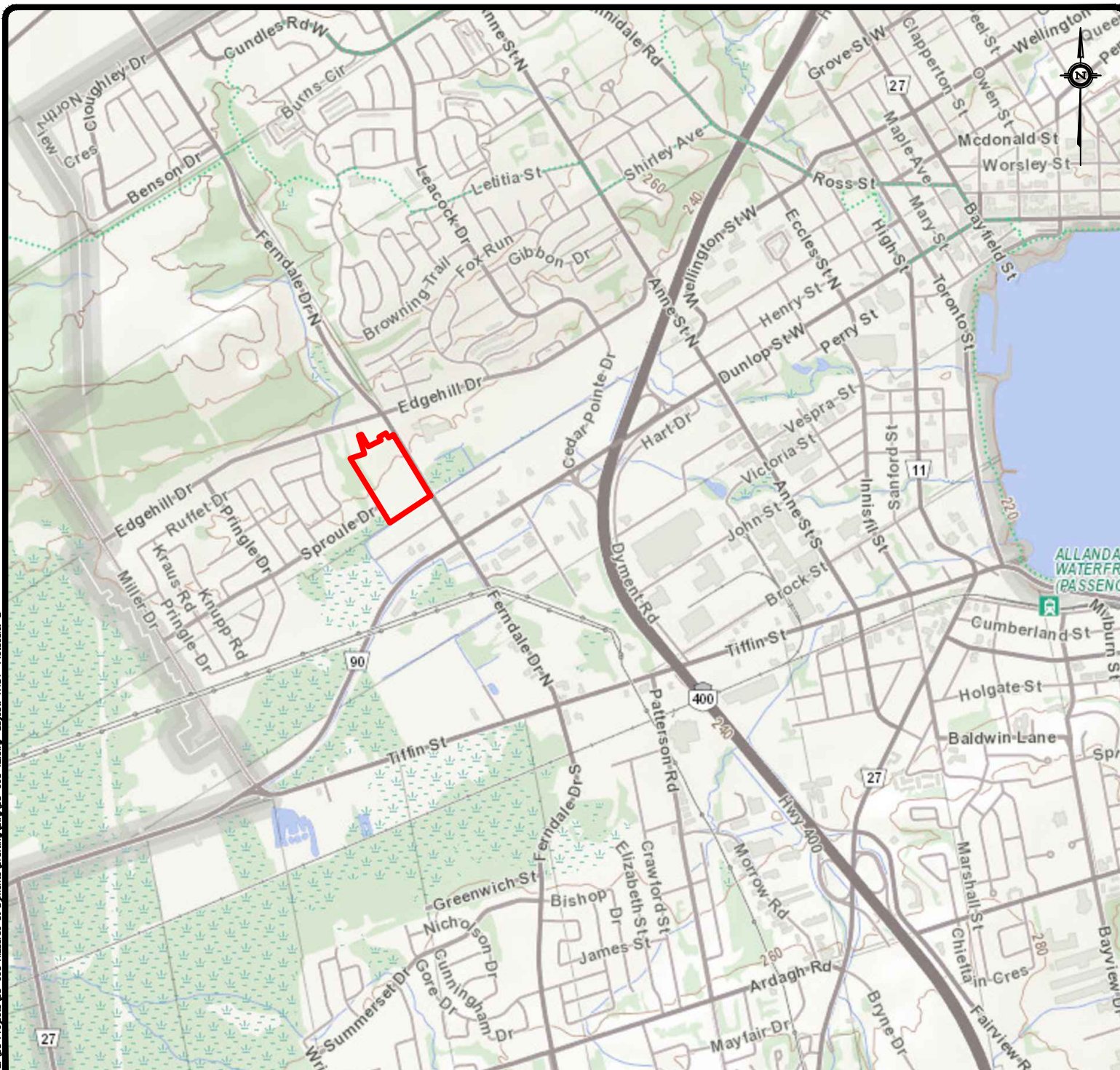
Jennifer Millington, M.A.Sc., P.Geo.
Hydrogeologist



APPENDIX A

Figures

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LEGEND:

— Approx. Study Area

REG MAP

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Regional Site Location

Rizzardo at Dyments Creek
Ferndale Drive, Barrie

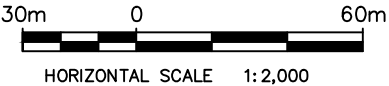
DATE ISSUED: September 2019	Figure No.
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PROJECT NO.: 08-098	
REFERENCE: MNR	

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LEGEND:

— Approx. Study Area



Site Layout

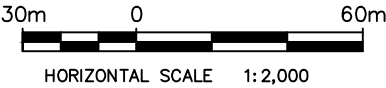
Previn Court Homes at Dyments Creek
Ferndale Drive, Barrie

DATE ISSUED:	September 2019	Figure No. 2
CREATED BY:	JLM	
PROJECT NO.:	08-098	
REFERENCE:	Simcoe County Mapping	



LEGEND:

- Approx. Study Area
- ✚ Stand Pipe Locations
- 239.58 Ground Water Elevation
- 0.5m Ground Water Contours
- - - Inferred 0.5m Ground Water Contours



High Ground Water Conditions
(April 30th, 2019)

Previn Court Homes at Dyments Creek
Ferndale Drive, Barrie

DATE ISSUED:	September 2019	Figure No. 3
CREATED BY:	JLM	
PROJECT NO.:	08-098	
REFERENCE:	Simcoe County Mapping	



APPENDIX B

Test Pit Logs

TEST PIT LOG

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-1	Contractor	Eisses Brothers Excavating	Elevation	251.50
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.61	<u>Topsoil</u> Dark brown topsoil, sandy, roots and organics, loose, moist	NA			-
0.61	2.44	<u>Sand</u> Red brown medium to coarse sand, trace gravel, slight layering, loose, moist to saturated. Turning grey at 1.8m	NA			-
-						
Test Pit Terminated at 2.44 mbgs. Significant ponding at the bottom of test pit upon completion.						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 2.45 mbgs. Water level at 1.92 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

JOB No.	08-098
TEST PIT No.	TP-1
FIELD STAFF	JM

TEST PIT LOG

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-2	Contractor	Eisses Brothers Excavating	Elevation	242.16
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.30	<u>Topsoil</u> Dark brown topsoil, sandy, roots and organics, loose, moist	NA			-
0.30	2.50	<u>Sand</u> Red brown medium sand, trace gravel, loose, moist to saturated. Turning grey at 0.9 m	NA			-
-						
Test Pit Terminated at 2.50 mbgs. Significant cave in at 0.9mbgs with ground water seeps. Excavator went as far down as possible before installing standpipe.						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 2.50 mbgs. Water level at 1.69 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

JOB No.	08-098
TEST PIT No.	TP-2
FIELD STAFF	JM

TEST PIT LOG

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-3	Contractor	Eisses Brothers Excavating	Elevation	238.51
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.20	<u>Topsoil</u> Dark brown topsoil, sandy, roots and organics, loose, moist	NA			-
0.20	2.23	<u>Sand</u> Brown medium to coarse sand, loose, moist to saturated, significant ground water seeps at 0.5m	NA			-
-						
Test Pit Terminated at 2.23 mbgs. Significant seepage within the test pit starting around 0.5m						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 2.23 mbgs. Water level at 0.30 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

JOB No.	08-098
TEST PIT No.	TP-3
FIELD STAFF	JM

TEST PIT LOG

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-4	Contractor	Eisses Brothers Excavating	Elevation	238.69
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.20	<u>Topsoil</u> Dark brown topsoil, sandy, roots and organics, loose, moist	NA			-
0.20	1.62	<u>Sand</u> Brown coarse sand, loose, homogeneous, moist to saturated at 0.90m.	NA			-
-						
Test Pit Terminated at 1.62 mbgs. Significant cave in and ground water seeps starting at 0.90 m. Ground water seeps were very silty.						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 1.62 mbgs. Water level at 0.93 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

JOB No.	08-098
TEST PIT No.	TP-4
FIELD STAFF	JM

TEST PIT LOG

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-5	Contractor	Eisses Brothers Excavating	Elevation	240.49
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.10	<u>Topsoil</u> Dark brown topsoil, sandy, roots and organics, loose, moist	NA			-
0.10	2.08	<u>Sand</u> Brown medium sand, becoming coarse at 1.55m, loose, moist to saturated at 1.55m. Turning grey at 1.55m	NA			-
-						
Test Pit Terminated at 2.08 mbgs. Ground water seeps starting at 1.55 m upon completion.						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 2.08 mbgs. Water level at 1.21 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

JOB No.	08-098
TEST PIT No.	TP-5
FIELD STAFF	JM

TEST PIT LOG

Environmental Assessments & Approvals

Project Name/ Project Client	Previn Court	Project Address	Ferndale Street North Barrie	Date	April 25th 2019
Test Pit Number	TP-6	Contractor	Eisses Brothers Excavating	Elevation	237.91
Equipment	Excavator	Test Pit Size	2.0 x 4.0 (L x W)	Datum	Ground Surface
Temperature	18°C	Weather	Sunny	Sample Type	-

Depth		Soil description	Samples		Headspace Combustible Vapour Concentration (ppm)	Remarks / Chemical Analysis
From (m)	To (m)		No.	Depth (mbgs)		
0.0	0.76	<u>Fill</u> Grey sand and gravel, loose, moist	NA			-
0.76	2.30	<u>Fill</u> Black coarse sand and granular asphalt, loose, moist	NA			-
2.30	2.94	<u>Sand</u> Brown medium sand, loose, homogeneous, moist to saturated	NA			-
Test Pit Terminated at 2.94 mbgs. Ground water seeps in the bottom of the test pit.						
Comments			Water Conditions in Test Pit			
Standpipe installed to a depth of 2.94 mbgs. Water level at 1.31 mbgs upon completion			☒ Wet upon completion ☐ Dry upon completion			

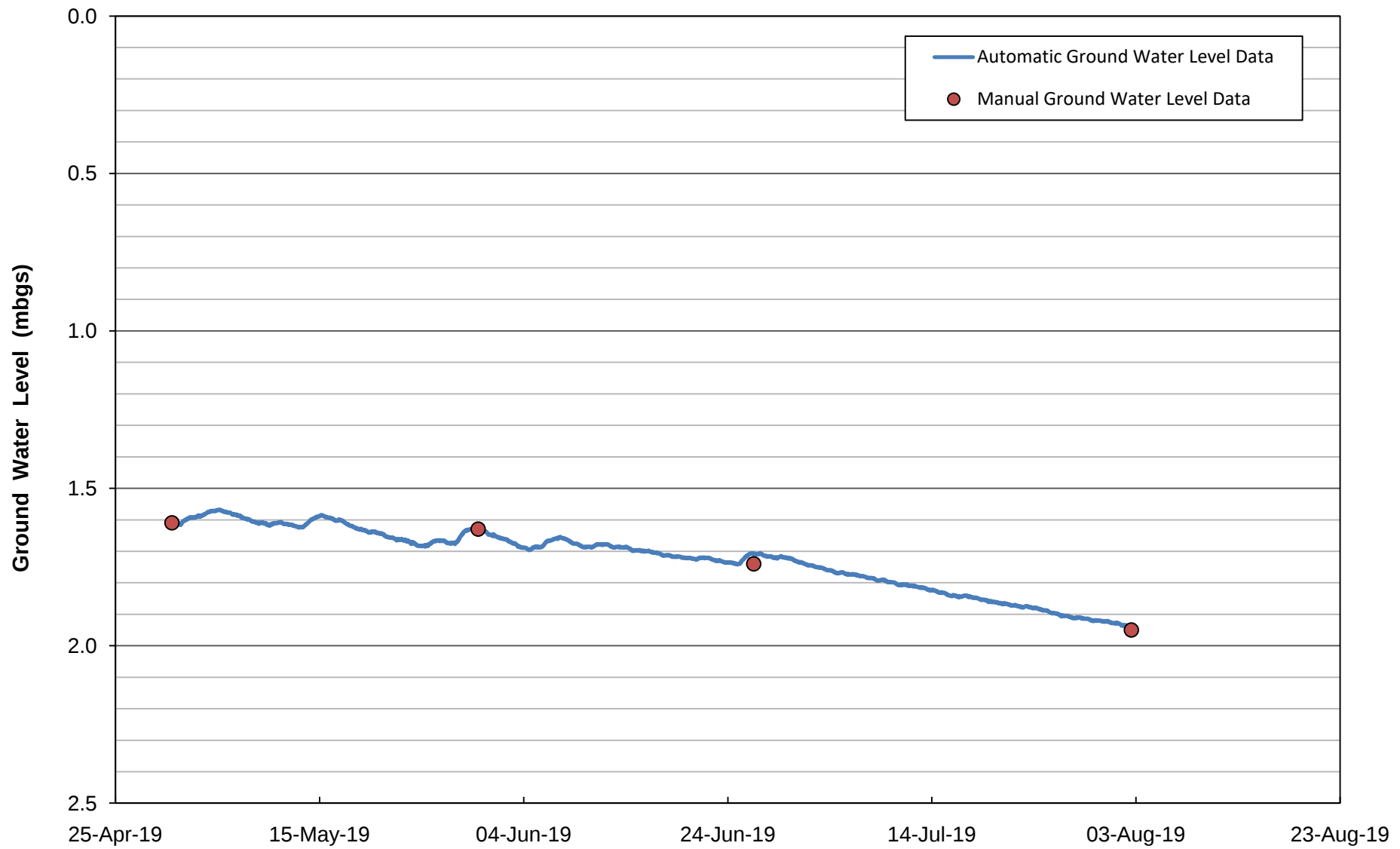
JOB No.	08-098
TEST PIT No.	TP-6
FIELD STAFF	JM



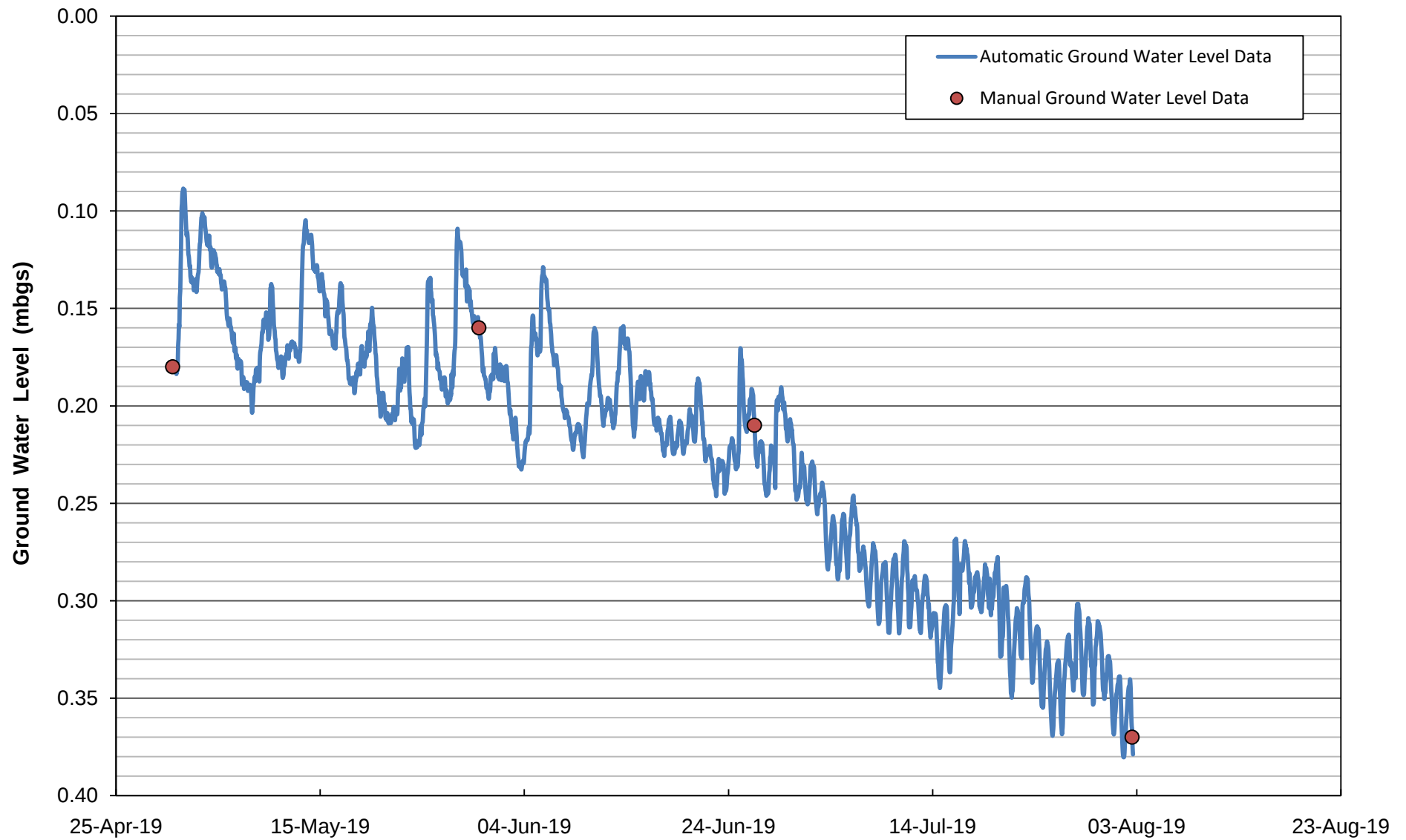
APPENDIX C

Hydrographs

SP-2: Ground Water Hydrograph



SP-3: Ground Water Hydrograph



SP-6: Ground Water Hydrograph

