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August 28, 2018

File No. 18-119-01

Secure Energy Services
47 Terracon Place
Winnipeg, Manitoba
R2J 4B3

ATTENTION: Jared Andrews

RE: Hydraulic Conductivity Test Results, Miller Environmental Corporation, St. Jean Baptiste, MB

ENG-TECH Consulting Limited (ENG-TECH) collected on August 3, 2018 seven (7) Shelby tube samples from the above project and completed the requested hydraulic conductivity testing on three (3) samples selected by MB Sustainable Development. The seven (7) Shelby Tube samples were extracted on August 13, 2018 at ENG-TECH laboratory.

The samples labelled as #S2, #S5 and #S7 were prepared for testing in accordance with ASTM D5084-16a, *Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter*. The final hydraulic conductivity values (k_{20}) of 3.3×10^{-8} cm/sec, 1.8×10^{-8} cm/sec and 5.8×10^{-9} cm/sec were obtained for the samples identified as #S2, #S5 and #S7, respectively. The hydraulic conductivity test data is outlined in Table 1, while the graphical representations of the hydraulic conductivity versus elapsed time are shown in Figures 1 to 3. Photographs of the samples are attached

ENG-TECH trusts the above is all the information you require. If you have any questions, please contact the undersigned.

Sincerely,
ENG-TECH Consulting Limited

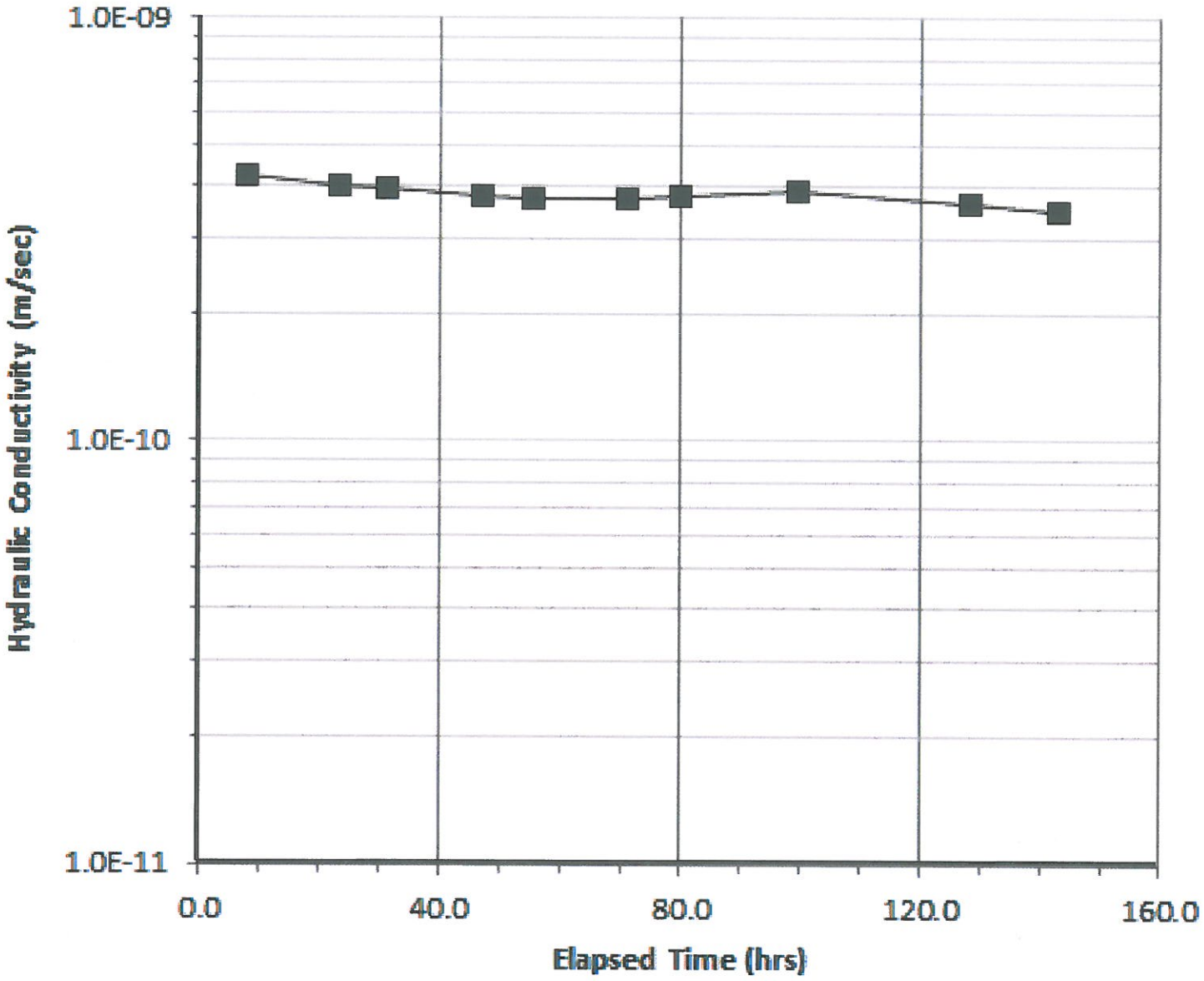
Clark Hryhoruk, M.Sc., P.Eng.
President, Geotechnical Engineer

CDH/pfpc

Attachments: Table 1 – Hydraulic Conductivity Test Data (Miller Environmental Corporation, St. Jean Baptiste, MB)
Figure 1 – Hydraulic Conductivity Versus Elapsed Time (#S2)
Figure 2 – Hydraulic Conductivity Versus Elapsed Time (#S5)
Figure 3 – Hydraulic Conductivity Versus Elapsed Time (#S7)
Photographs (1 to 6)

TABLE 1
HYDRAULIC CONDUCTIVITY TEST DATA
MILLER ENVIRONMENTAL CORPORATION, ST. JEAN BAPTISTE, MB

SAMPLE IDENTIFICATION	#S2	#S5	#S7
INITIAL VALUES			
ENG-TECH Reference No.	18-119-1-3	18-119-1-4	18-119-1-5
Length of Sample in Tube (cm)	52.0	63.5	63.5
Length (cm)	7.10	7.03	7.26
Diameter (cm)	7.19	7.18	7.19
Area (cm^2)	40.6	40.5	40.6
Volume (cm^3)	288.1	284.5	294.6
Water Content (%)	49.8	50.6	42.9
Bulk Dry Density (kg/m^3)	1143	1147	1288
Specific Gravity (G_s) (assumed)	2.70	2.70	2.70
Void Ratio	1.362	1.354	1.096
Degree of Saturation (%)	98.6	100	100
FINAL VALUES			
Length (cm)	7.18	7.09	7.38
Diameter (cm)	7.26	7.20	7.25
Area (cm^2)	41.4	40.7	41.3
Volume (cm^3)	297.1	288.5	304.5
Water Content (%)	54.2	51.7	41.0
Bulk Dry Density (kg/m^3)	1105	1141	1294
Specific Gravity (G_s) (assumed)	2.70	2.70	2.70
Void Ratio	1.443	1.366	1.087
Degree of Saturation (%)	100	100	100
CONSOLIDATION PHASE			
Confining Pressure (kPa)	103.4	103.4	103.4
Pore Water Pressure (kPa)	82.7	82.7	82.7
Effective Stress (kPa)	20.7	20.7	20.7
PERMEATION PHASE			
Confining Pressure (kPa)	103.4	103.4	103.4
Pore Water Pressure (kPa)	82.7	82.7	82.7
Effective Stress (kPa)	20.7	20.7	20.7
Hydraulic Gradient	15.7	15.9	15.2
Permeant Fluid	Potable Tap Water	Potable Tap Water	Potable Tap Water
HYDRAULIC CONDUCTIVITY AT TEST TEMPERATURE OF 25 °C (cm/sec)	3.7×10^{-8}	2.0×10^{-8}	6.5×10^{-9}
HYDRAULIC CONDUCTIVITY AT TEMPERATURE OF 20 °C (K_{20}) (cm/sec)	3.3×10^{-8}	1.8×10^{-8}	5.8×10^{-9}



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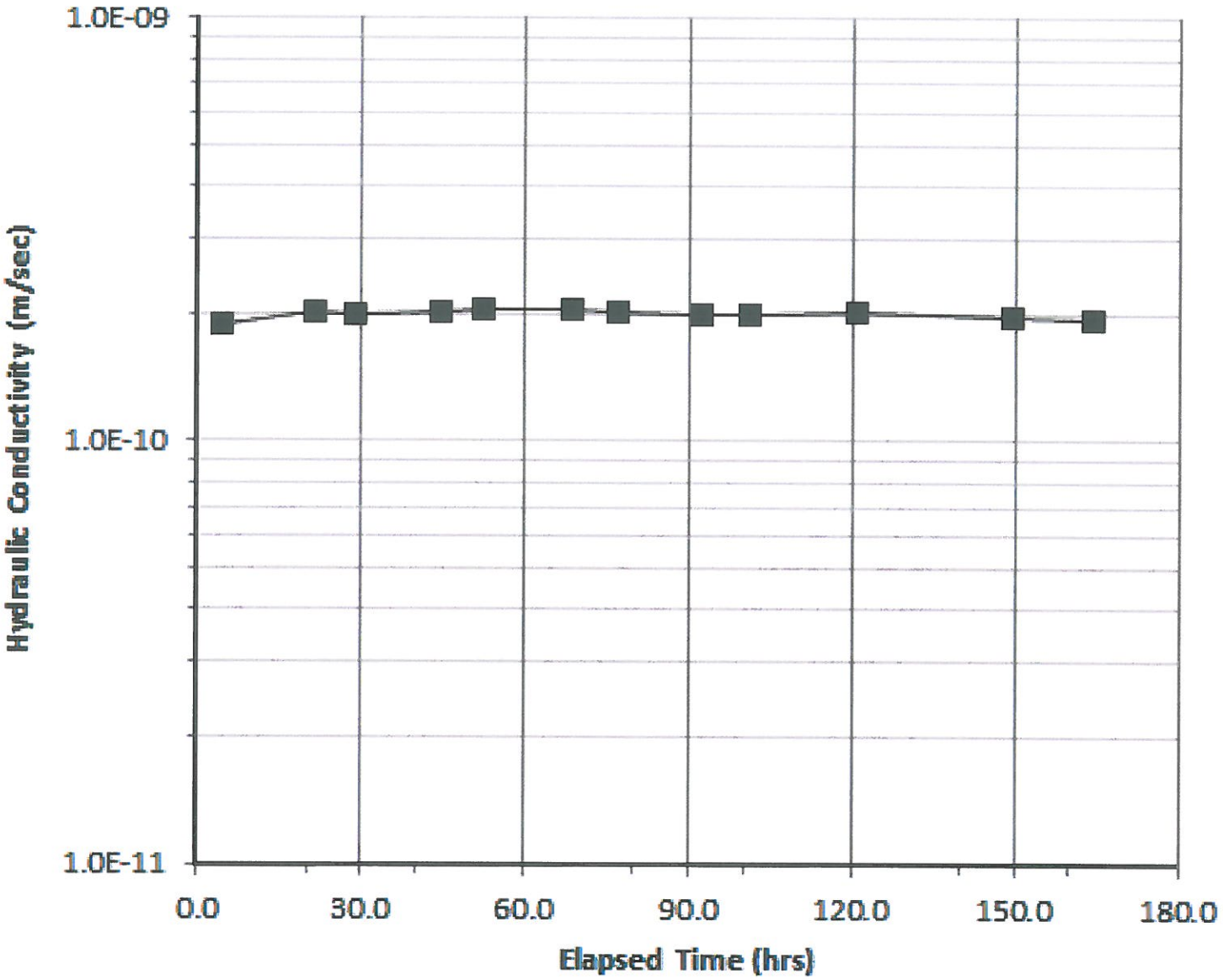
ENG. STAMP:

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
ENG-TECH Consulting Limited
No.2475

CLIENT: SECURE ENERGY SERVICES			PROJECT: MILLER ENVIRONMENTAL CORPORATION, ST. JEAN BAPTISTE, MB.
DATE: AUGUST 2018			FILE No.: 18-119-01
DRAWN BY: PFPC	FIGURE No.: 1	REV.:	SCALE: N/A

HYDRAULIC CONDUCTIVITY VERSUS ELAPSED TIME (#S2)



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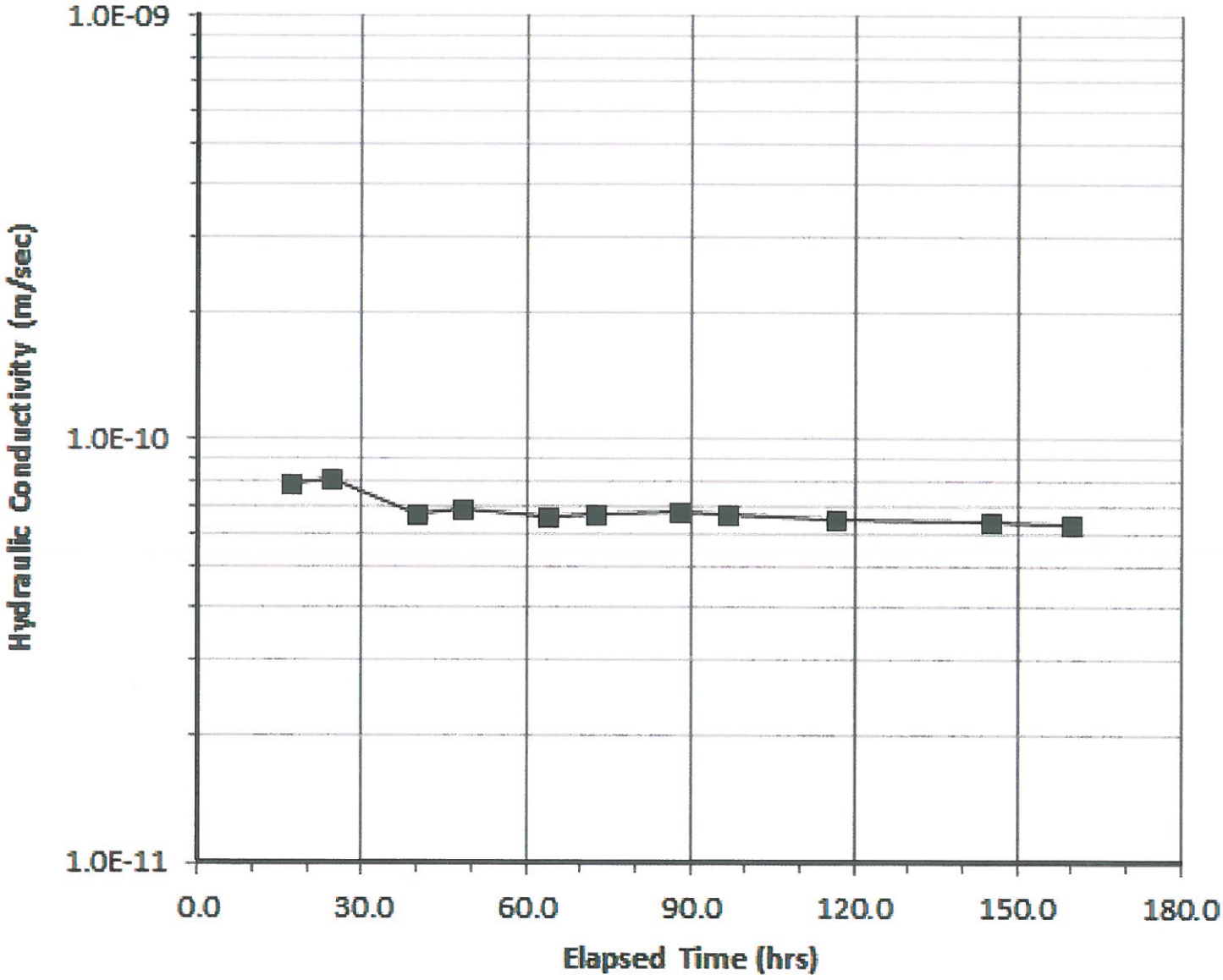
DRAWN BY: PFPC	FIGURE No.: 2	REV.:	SCALE: N/A

HYDRAULIC CONDUCTIVITY VERSUS ELAPSED TIME (#S5)



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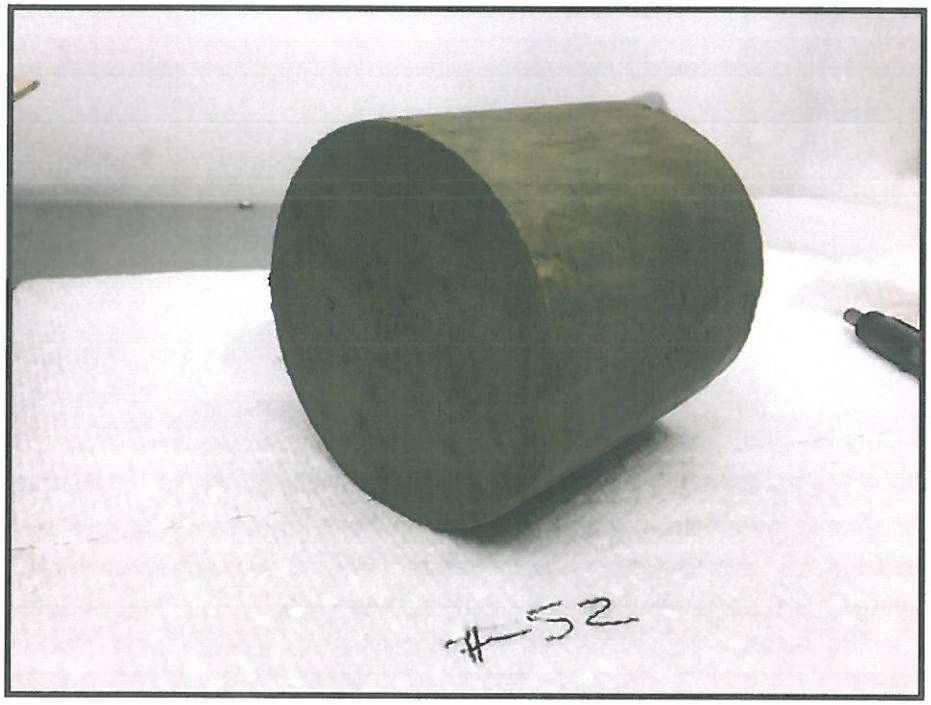
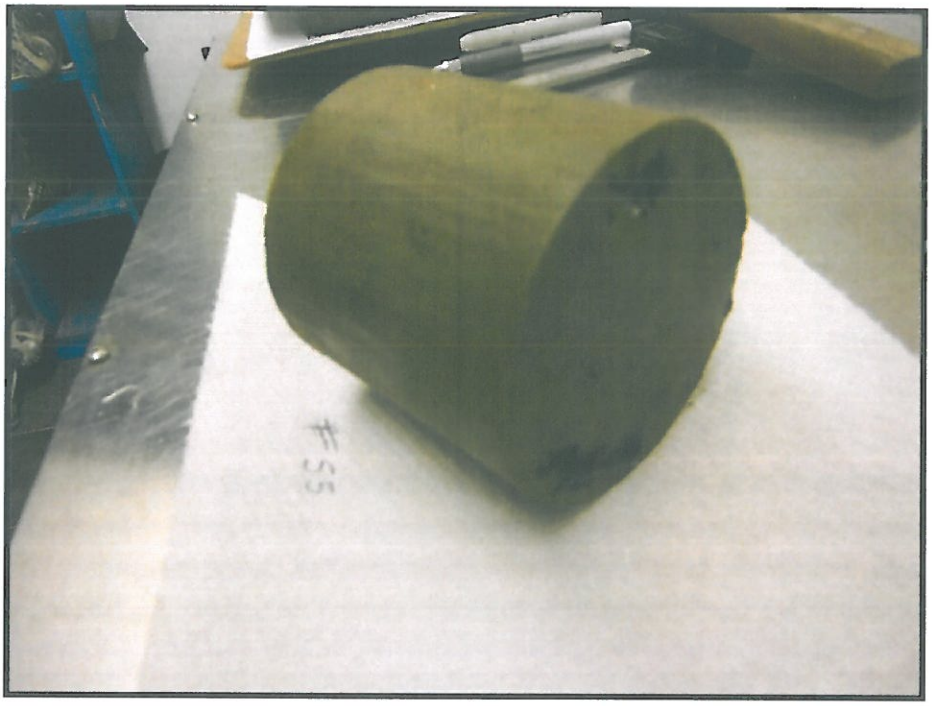
DATE: AUGUST 2018			FILE No.: 18-119-01	HYDRAULIC CONDUCTIVITY VERSUS ELAPSED TIME (#S7)
DRAWN BY: PFPC	FIGURE No.: 3	REV.:	SCALE: N/A	

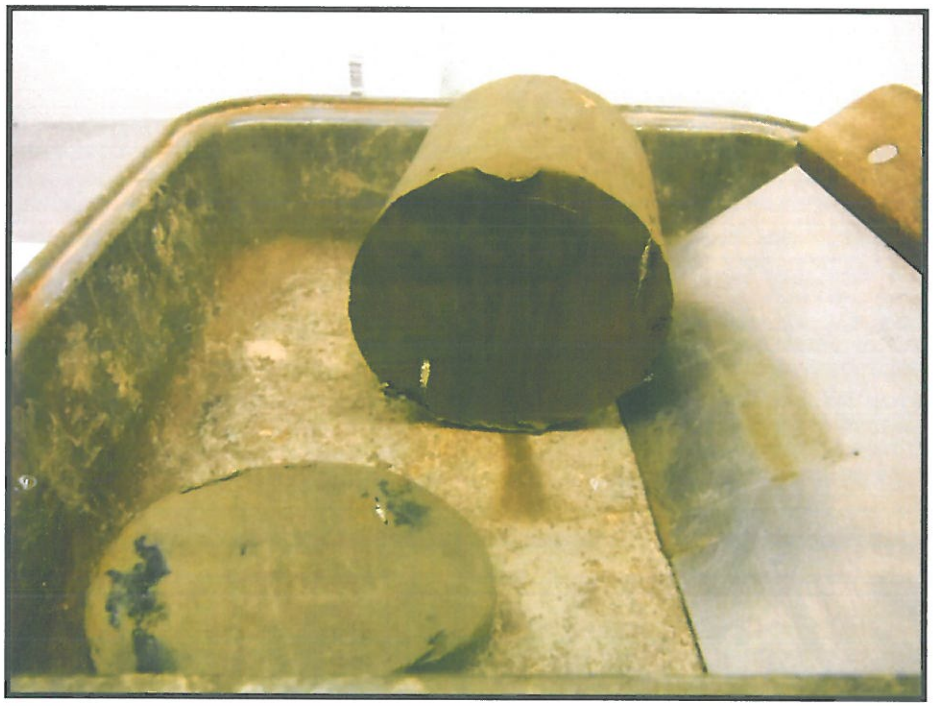


PHOTOGRAPH #1: Sample #S2 upon completion of test.

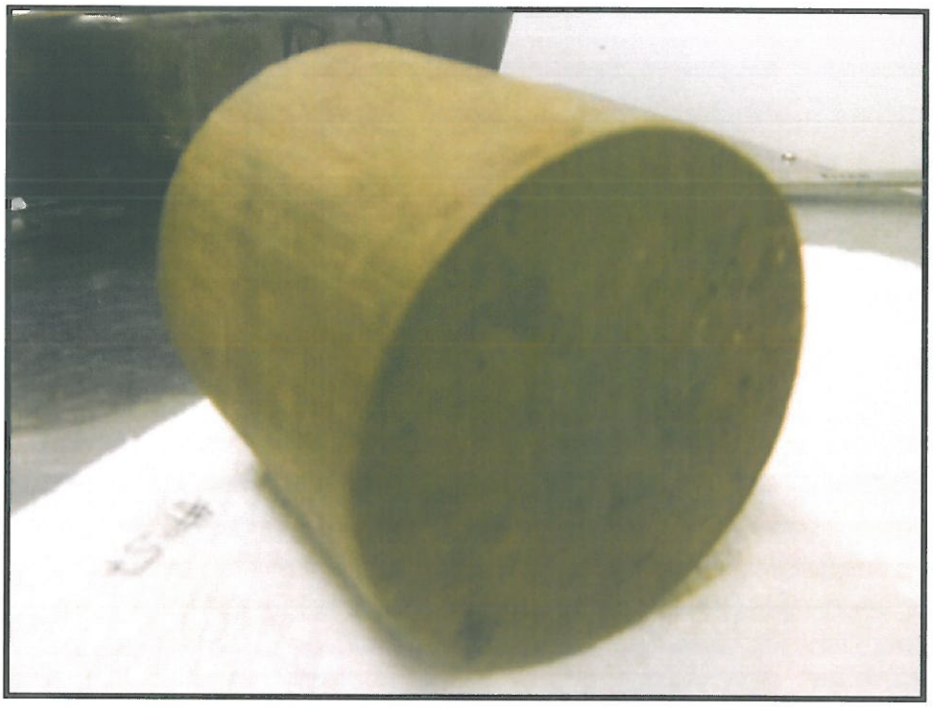
PHOTOGRAPH #2: Sample #S2 after breaking apart.



PHOTOGRAPH #3: Sample #S5 upon completion of test.



PHOTOGRAPH #4: Sample #S5 after breaking apart.



PHOTOGRAPH #5: Sample #S7 upon completion of test.

PHOTOGRAPH #6: Sample #S7 after breaking apart.