

**MEASUREMENT OF HYDRAULIC CONDUCTIVITY OF SATURATED POROUS MATERIALS
USING A FLEXIBLE WALL PERMEAMETER
ASTM D 5084 - 03 METHOD C TEST WITH INCREASING TAILWATER LEVEL
FLUID: DEAIRED TAP WATER WITH 0.005 N CaSO4**

PROJECT NAME: GeoPro, Inc. - 2016 Laboratory Testing	PROJECT NUMBER: 02156304.0013
SAMPLE ID: GeoPro's TG Lite 45	DATE: 8/10/2016
BENTONITE - 30.00%	PANEL IDENTIFICATION: Lenexa Perm Board
DEIONIZED WATER - 70.00%	BURETTE AREA: 0.312 cm ²
	BURETTE INCREMENT LENGTH: 1.000 cm
	VOLUME PER INCREMENT: 0.312 cm ³

Sample tested after a 24 hour curing period.

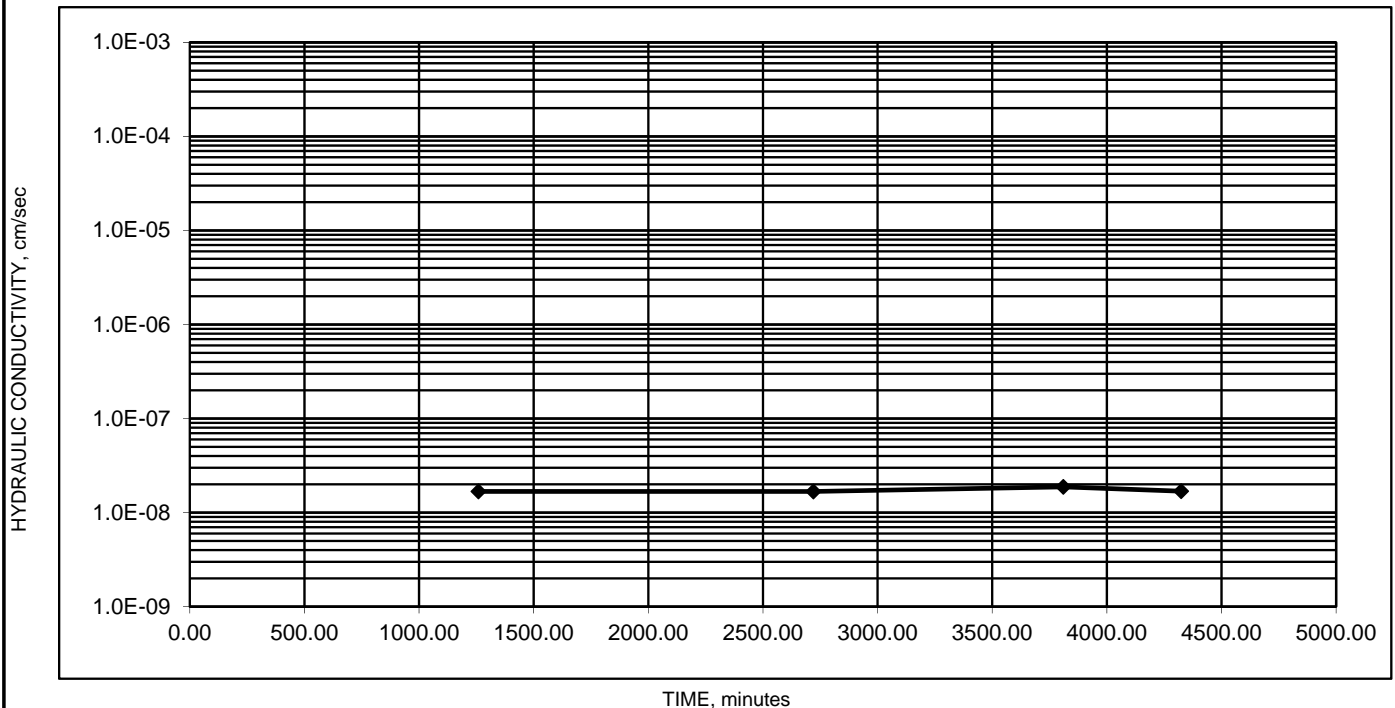
INITIAL				ADDITIONAL DATA			
MOISTURE%	DENSITY			SPECIFIC GRAVITY:	2.70	RECOMPACTED?:	YES
W & T, g	WET WT, g	90.9		SPECIFIC GRAVITY:	ASSUMED	PROCTOR, pcf:	NA
D & T, g	DIA, in	2.421	6.15	POROSITY, %:	NA	OPTIMUM, %:	NA
T, g	HT, in	0.999	2.54	SATURATION, %:	NA	COMPACTION, %:	NA
	AREA	29.70		VOID RATIO:	NA	OVER OPTIMUM, %:	NA
MOIST-URE, %	DENSITY:	75.3	PCF WET				
NA	DENSITY:	NA	PCF DRY				

SATURATION:	LATERAL PRESS.: 104.0 psi	BACK PRESSURE (=UPPER=LOWER): 100.0 psi	
DURING TEST:	LATERAL PRESS.: 104.0 psi	H2: 100.0 psi	H1: 100.0 psi
	BIAS PRESSURE (=H1-H2) 0.0 psi		

H1 VALUE	H2 VALUE	ELAPSED TIME, min	DELTA H, cm	Ln H1/H2	HYD CON k, cm/sec	OUT FLOW cm ³	IN FLOW cm ³	OUT/IN RATIO	HYD GRAD	% FROM MEAN k	TEMP.: C	TEMP. CORR.:
8.9	65.5	0.00	56.6									
12.0	63.0	1259.00	51.0	0.104183	1.68E-08	0.97	0.78	1.24	20.1	3	23.8	0.914
15.2	60.4	2720.00	45.2	0.120729	1.68E-08	1.00	0.81	1.23	17.8	3	23.8	0.914
17.5	58.5	3810.00	41.0	0.097525	1.88E-08	0.72	0.59	1.21	16.2	8	22.4	0.944
18.4	57.7	4324.00	39.3	0.042348	1.69E-08	0.28	0.25	1.13	15.5	2	23.4	0.923

HYDRAULIC CONDUCTIVITY (k₂₀) = **AVERAGE 1.7E-08 cm/sec**

MAXIMUM	1.0E-03 TO 1.0E-04	2	0.75<	30	% < 25 AT
HYDRAULIC GRADIENT	1.0E-04 TO 1.0E-05	5	RATIO	MAX	> 1.0E-8
	1.0E-05 TO 1.0E-06	10	<1.25	HYDRAULIC GRADIENT	OR
	1.0E-06 TO 1.0E-07	20		% < 50 AT	
	less than 1.0E-07	30		ALLOWED	< 1.0E-8



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USING A FLEXIBLE WALL PERMEAMETER
ASTM D 5084 - 03 METHOD C TEST WITH INCREASING TAILWATER LEVEL
FLUID: DEAIRED TAP WATER WITH 0.005 N CaSO4**

PROJECT NAME: GeoPro, Inc. - 2016 Laboratory Testing	PROJECT NUMBER: 02156304.0015
SAMPLE ID: GeoPro's TG Lite / SS 100	DATE: 8/10/2016
BENTONITE - 11.11%	PANEL IDENTIFICATION: Lenexa Perm Board
SILICA SAND - 55.54%	BURETTE AREA: 0.312 cm ²
DEIONIZED WATER - 33.35%	BURETTE INCREMENT LENGTH: 1.000 cm
Sample tested after a 24 hour curing period.	VOLUME PER INCREMENT: 0.312 cm ³

INITIAL				ADDITIONAL DATA			
MOISTURE%	DENSITY			SPECIFIC GRAVITY:	2.70	RECOMPACTED?:	YES
W & T, g	WET WT, g	130.9		SPECIFIC GRAVITY:	ASSUMED	PROCTOR, pcf:	NA
D & T, g	DIA, in	2.427	6.16	POROSITY, %:	NA	OPTIMUM, %:	NA
T, g	HT, in	0.995	2.53	SATURATION, %:	NA	COMPACTION, %:	NA
	AREA	29.85		VOID RATIO:	NA	OVER OPTIMUM, %:	NA
MOIST-URE, %	DENSITY:	108.3	PCF WET				
NA	DENSITY:	NA	PCF DRY				

SATURATION:	LATERAL PRESS.: 104.0 psi	BACK PRESSURE (=UPPER=LOWER): 100.0 psi	
DURING TEST:	LATERAL PRESS.: 104.0 psi	H2: 100.0 psi	H1: 100.0 psi
	BIAS PRESSURE (=H1-H2) 0.0 psi		

H1 VALUE	H2 VALUE	ELAPSED TIME, min	DELTA H, cm	Ln H1/H2	HYD CON k, cm/sec	OUT FLOW cm ³	IN FLOW cm ³	OUT/IN RATIO	HYD GRAD	% FROM MEAN k	TEMP.: C	TEMP. CORR.:
7.6	63.2	0.00	55.6									
7.9	62.9	252.00	55.0	0.010850	8.65E-09	0.09	0.09	1.00	21.8	7	23.9	0.912
8.2	62.6	514.00	54.4	0.010969	8.37E-09	0.09	0.09	1.00	21.5	4	24.1	0.908
9.1	61.6	1437.00	52.5	0.035551	8.00E-09	0.28	0.31	0.90	20.8	1	22.5	0.942
9.4	61.3	1761.00	51.9	0.011494	7.30E-09	0.09	0.09	1.00	20.5	10	22.9	0.933

HYDRAULIC CONDUCTIVITY (k₂₀) = **AVERAGE 8.1E-09 cm/sec**

MAXIMUM	1.0E-03 TO 1.0E-04	2	0.75<	30	% < 25 AT
HYDRAULIC GRADIENT	1.0E-04 TO 1.0E-05	5	RATIO	MAX	> 1.0E-8
	1.0E-05 TO 1.0E-06	10	<1.25	HYDRAULIC GRADIENT	OR
	1.0E-06 TO 1.0E-07	20		% < 50 AT	
	less than 1.0E-07	30		ALLOWED	< 1.0E-8

