

Appendix E5. Permeability Testing Data

Drillhole	Inclined Test Interval		Interval Length (m)	Vertical Test Interval		Head (kPa)	Time (min)	Take (L)	Flow (L/min)	Avg. Flow, Q (L/min)	Head (m)	Q (m ³ /day)	Gauge Pressure, P _g (m)	Depth to Static Water Level, h _s (m in vertical dimension)	Net Injection Pressure, P _i (m)	T transmissivity, T (m ² /day)	Hydraulic Conductivity			Average K, (cm/s)				
	Top (m)	Bottom (m)		Top (m)	Bottom (m)												K _v (m/day)	K _h (cm/s)	K _z (m/s)					
WV05-156 (PZ-B)	150.3	156.1	5.8	144.1	149.6	150	0														1.72E-07			
						5	0.0	0.0	0.00	15.00	0.00	15.00	23.3	39.15	0.00E+00	0.00E+00	0.00E+00	0.00E+00						
						10	0.0	0.0																
	135.0	156.1	21.0	129.5	149.6	500	0	1.0	0.1	0.10	50.00	0.14	50.00	23.3	74.15	1.72E-03	2.98E-04	3.44E-07	3.44E-09					
						10																		
						100	0																	
						0.5	10.0	20.0																
						1.5	13.0	13.0																
						2	10.0	20.0																
						3	12.0	12.0																
						4	10.0	10.0																
						5	15.0	15.0																
						6	13.0	13.0																
	7	10.0	10.0																					
	8	11.0	11.0																					
	10	24.0	12.0	11.86	10.00	17.07	10.00	23.3	34.17	4.44E-01	2.11E-02	2.44E-05	2.44E-07											
	200	0																						
	1	30.0	30.0																					
	2	30.0	30.0																					
	3	29.0	29.0	29.67	20.00	42.72	20.00	23.3	44.17	8.59E-01	4.08E-02	4.72E-05	4.72E-07											
	150	0																						
	1	23.0	23.0																					
	2	25.0	25.0																					
	3	22.0	22.0																					
	4	25.0	25.0																					
	5	24.0	24.0																					
	6	21.0	21.0																					
	7	25.0	25.0																					
	8	19.0	19.0																					
9	22.0	22.0																						
10	22.0	22.0	22.80	15.00	32.83	15.00	23.3	39.17	7.44E-01	3.54E-02	4.09E-05	4.09E-07												
300	0																							
1	35.0	35.0																						
2	36.0	36.0																						
3	34.0	34.0																						
4	37.0	37.0																						
5	35.0	35.0	35.40	30.00	50.98	30.00	23.3	54.17	8.35E-01	3.97E-02	4.60E-05	4.60E-07												
100	0																							
1	18.0	18.0																						
2	19.0	19.0																						
3	19.0	19.0																						
4	19.0	19.0	18.75	10.00	27.00	10.00	23.3	34.17	7.01E-01	3.34E-02	3.86E-05	3.86E-07												
117.3	156.1	38.7	112.5	149.6	100	0																		
WV05-156 (PZ-B)	156.1	38.7	112.5	149.6	100	1	15.0	15.0																
					2	18.0	18.0																	
					3	16.0	16.0																	
					4	14.0	14.0																	
					5	14.0	14.0																	
					7	28.0	14.0																	
					10	39.0	13.0	14.20	10.00	20.45	10.00	23.3	34.17	5.31E-01	1.37E-02	1.59E-05	1.59E-07							
					250	0																		
					1	19.0	19.0																	
					2	20.0	20.0																	
					3	21.0	21.0																	
5	35.0	17.5																						
7	34.0	17.0																						
10	51.0	17.0	17.17	25.00	24.72	25.00	23.3	49.17	4.46E-01	1.15E-02	1.33E-05	1.33E-07												
400	0																							
1	20.0	20.0																						
2	19.0	19.0																						
3	19.0	19.0																						
4	19.0	19.0																						
5	21.0	21.0																						
11	112.0	18.7	19.44	40.00	28.00	40.00	23.3	64.17	3.87E-01	1.00E-02	1.16E-05	1.16E-07												
200	0																							
2	27.0	13.5																						
5	37.0	12.3																						
10	31.0	6.2	12.92	20.00	18.60	20.00	23.3	44.17	3.74E-01	9.66E-03	1.12E-05	1.12E-07												

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Drillhole	Inclined Test Interval		Interval Length (m)	Vertical Test Interval		Head (kPa)	Time (min)	Take (L)	Flow (L/min)	Avg. Flow, Q (L/min)	Head (m)	Q (m ³ /day)	Gauge Pressure, Pg (m)	Depth to Static Water Level, hs (m in vertical dimension)	Net Injection Pressure, Pi (m)	T transmissivity, T (m ² /day)	Hydraulic Conductivity			Average K, (cm/s)							
	Top (m)	Bottom (m)		Top (m)	Bottom (m)												K _v (m/day)	K _h (cm/s)	K _i (m/s)								
WV05-155 (PZ-A)	73.8	156.1	82.3	70.7	149.6	50	0													7.51E-06							
							1	18.0	18.0																		
							2	16.0	16.0																		
							3	17.0	17.0																		
							4	18.0	18.0																		
							5	15.0	15.0																		
							7	33.0	16.5																		
							10	49.0	16.3	16.69	5.00	24.03	5.00	23.3	29.15	7.32E-01	8.89E-03	1.03E-05	1.03E-07								
							250	0																			
							1	23.0	23.0																		
	3	42.0	21.0																								
	5	38.0	19.0	20.33	25.00	29.28	25.00	23.3	49.15	5.29E-01	6.42E-03	7.44E-06	7.44E-08														
	7	42.0	21.0																								
	500	0																									
	1	27.0	27.0																								
	2	25.0	25.0																								
	3	26.0	26.0																								
	4	23.0	23.0	24.75	50.00	35.64	50.00	23.3	74.15	4.27E-01	5.18E-03	6.00E-06	6.00E-08														
	5	25.0	25.0																								
	100	0																									
1	13.0	13.0																									
2	12.0	12.0																									
3	12.0	12.0																									
4	12.0	12.0	12.00	10.00	17.28	10.00	23.3	34.15	4.49E-01	5.46E-03	6.32E-06	6.32E-08															
5	12.0	12.0																									
74.7	83.8	9.1	71.6	80.4	150	0														1.81E-04							
						1	39.0	39.0																			
						2	39.0	39.0																			
						3	37.0	37.0																			
						4	40.0	40.0																			
						5	38.0	38.0	38.60	15.00	55.58	15.00	23.3	39.15	1.26E+00	1.38E-01	1.59E-04	1.59E-06									
						200	0																				
						1	55.0	55.0	55.00	20.00	79.20	20.00	23.3	44.15	1.59E+00	1.74E-01	2.02E-04	2.02E-06									
						2	55.0	55.0																			
						67.1	115.8	48.8	43.6	75.3	400	0															6.59E-07
2	3.0	1.5																									
4	3.0	1.5																									
6	3.0	1.5																									
8	2.0	1.0																									
10	2.0	1.0	1.30	40.00	1.87							40.00	16.8	57.31	2.90E-02	5.94E-04	6.88E-07	6.88E-09									
700	0																										
2	4.0	2.0																									
4	4.0	2.0																									
6	5.0	2.5																									
8	4.0	2.0																									
10	4.0	2.0	2.10	70.00	3.02	70.00	16.8	87.31	3.07E-02	6.30E-04	7.30E-07	7.30E-09															
500	0																										
2	2.0	1.0																									
4	4.0	1.3																									
5	4.0	1.3	1.24	50.00	1.79	50.00	16.8	67.31	2.36E-02	4.85E-04	5.61E-07	5.61E-09															
10	7.0	1.4																									
33.5	125.0	91.4	21.8	81.3	100	0													2.62E-06								
						1	7.0	7.0																			
						2	7.0	7.0																			
						3	7.0	7.0																			
						4	7.0	7.0																			
						5	7.0	7.0																			
						8	17.0	5.7																			
						10	10.0	5.0																			
						11	6.0	6.0	6.30	10.00	9.07	10.00	16.8	27.31	2.95E-01	3.22E-03	3.73E-06	3.73E-08									
						12	5.0	5.0																			
					600	0																					
					1	17.0	17.0																				
					2	16.0	16.0																				
					3	14.0	14.0																				
					4	13.0	13.0																				
					5	13.0	13.0																				
					8	36.0	12.0																				
					10	23.0	11.5	13.79	60.00	19.85	60.00	16.8	77.31	2.28E-01	2.49E-03	2.88E-06	2.88E-08										
					300	0																					
					2	13.0	6.5																				
4	11.0	5.5																									
6	10.0	5.0																									
8	11.0	5.5																									
9	6.0	6.0	5.70	30.00	8.21	30.00	16.8	47.31	1.54E-01	1.68E-03	1.95E-06	1.95E-08															
100	0																										
2	7.0	3.5																									
4	6.0	3.0																									
6	7.0	3.5																									
8	6.0	3.0	3.25	10.00	4.68	10.00	16.8	27.31	1.52E-01	1.66E-03	1.93E-06	1.93E-08															

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Drillhole	Inclined Test Interval		Interval Length (m)	Vertical Test Interval		Head (kPa)	Time (min)	Take (L)	Flow (L/min)	Avg. Flow, Q (L/min)	Head (m)	Q (m ³ /day)	Gauge Pressure, P _g (m)	Depth to Static Water Level, h _s (m in vertical dimension)	Net Injection Pressure, P _i (m)	T transmissivity, T (m ² /day)	Hydraulic Conductivity			Average K, (cm/s)					
	Top (m)	Bottom (m)		Top (m)	Bottom (m)												K _v (m/day)	K _h (cm/s)	K _i (m/s)						
	128.0	145.4	17.4	83.2	94.5	150	0													6.84E-05					
							1	23.0	23.0																
							2	22.0	22.0																
							3	25.0	25.0																
							4	19.0	19.0																
							6	45.0	22.5																
							7	24.0	24.0																
							10	67.0	22.3	22.55	15.00	32.47	15.00	14.9	30.47	9.46E-01	5.44E-02	6.30E-05	6.30E-07						
							250	0																	
							1	35.0	35.0																
	2	36.0	36.0																						
	5	108.0	36.0	35.75	25.00	51.48	25.00	14.9	40.47	1.13E+00	6.50E-02	7.52E-05	7.52E-07												
	8	108.0	36.0																						
	50	0																							
	1	17.0	17.0																						
	2	16.0	16.0																						
	4	31.0	15.5	16.12	5.00	23.22	5.00	14.9	20.47	1.01E+00	5.80E-02	6.71E-05	6.71E-07												
	5	16.0	16.0																						
118.0	194.2	76.2	76.7	126.3	100	0													2.18E-06						
						2	9.0	4.5																	
						4	7.0	3.5	3.83	10.00	5.52	10.00	15.4	25.93	1.89E-01	2.48E-03	2.87E-06	2.87E-08							
						6	7.0	3.5																	
						0																			
						2	14.0	7.0																	
						4	12.0	6.0																	
						6	10.0	5.0																	
						8	12.0	6.0	5.90	35.00	8.50	35.00	15.4	50.93	1.48E-01	1.94E-03	2.25E-06	2.25E-08							
						10	11.0	5.5																	
500	0																								
2	13.0	6.5																							
4	12.0	6.0	6.33	50.00	9.12	50.00	15.4	65.93	1.23E-01	1.61E-03	1.86E-06	1.86E-08													
6	13.0	6.5																							
200	0																								
2	7.0	3.5																							
4	6.0	3.0																							
6	7.0	3.5	3.25	20.00	4.68	20.00	15.4	35.93	1.16E-01	1.52E-03	1.76E-06	1.76E-08													
8	6.0	3.0																							

Assumptions:

Parameter	Symbol	Units	Value
Gauge Pressure	P _g	m	Various
Height of Flow Meter	h _f	m	0.90 (PZ-A); 0.56 (PZ-B)
Friction Losses	h _f	m	0
Radius of Influence	R	m	10
Radius of Borehole	r _b	m	0.03785