

PTS File No: 30000  
 Client: Example Reports

TABLE 1

**SOIL MOISTURE RETENTION CURVE FITTING FOR QUANTIFYING THE HYDRAULIC FUNCTIONS OF UNSATURATED SOILS**

PROJECT NAME: Capillarity Parameters  
 PROJECT NO: 123456  
 SAMPLE ID: MW-1 at 15.1 ft.

**van Genuchten Parameters**

alpha (1/cm)	7.595E-03
n	2.421
residual water	0.230
total water	1.000
m	0.587
Water Perm (mD)	961
Air Perm (mD)	5189
R <sup>2</sup>	0.99951

**Notes:** alpha, n, and residual saturation are capillary parameters defined by the following equation (van Genuchten, 1980), with  $m = 1 - 1/n$ ,  $S$  = water saturation, and  $h$  = capillary head (cm):

$$S_r + [(S_s - S_r) / (1 + (ah)^n)^m]$$

**Laboratory Measured Data**

Capillary Head (cm)	MW-1 at 15.1 ft. Volumetric Moisture	Predicted Moisture by Curve Fit	RPD (%)
0.00	1.000	1.000	0.00%
6.21	1.000	1.000	-0.03%
13.98	1.000	0.998	-0.20%
24.85	1.000	0.992	-0.79%
38.83	0.973	0.977	0.42%
55.92	0.940	0.948	0.88%
76.11	0.907	0.901	-0.66%
99.41	0.827	0.835	1.06%
155.32	0.673	0.681	1.07%
223.67	0.540	0.544	0.76%
304.43	0.440	0.448	1.74%
397.63	0.387	0.384	-0.70%
621.30	0.327	0.314	-3.95%
1397.91	0.267	0.257	-3.71%
2485.18	0.240	0.242	0.76%

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TABLE 2

**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

PROJECT NAME: Capillarity Parameters  
 PROJECT NO: 123456  
 SAMPLE ID: MW-1 at 15.1 ft.

**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

Capillary Head (cm)	(van Genuchten, 1980) Volumetric Moisture	(Mualem, 1976) Effective Water Perm.	(Mualem, 1976) Effective Air Perm.
0.001	1.000	9.61E+02	7.12E-18
0.02	1.000	9.61E+02	1.33E-12
0.04	1.000	9.61E+02	2.21E-11
0.05	1.000	9.61E+02	5.46E-11
0.08	1.000	9.61E+02	3.67E-10
0.09	1.000	9.61E+02	5.91E-10
1	1.000	9.59E+02	1.02E-05
1.2	1.000	9.58E+02	2.14E-05
1.3	1.000	9.58E+02	2.96E-05
1.5	1.000	9.58E+02	5.29E-05
2	1.000	9.56E+02	1.70E-04
3	1.000	9.52E+02	8.78E-04
5	1.000	9.42E+02	6.96E-03
7	1.000	9.31E+02	2.72E-02
9	0.999	9.18E+02	7.52E-02
11	0.999	9.05E+02	1.69E-01
15	0.998	8.74E+02	5.92E-01
20	0.995	8.32E+02	1.89E+00
25	0.992	7.86E+02	4.60E+00
30	0.988	7.38E+02	9.49E+00
35	0.982	6.88E+02	1.74E+01
40	0.976	6.39E+02	2.92E+01
45	0.968	5.89E+02	4.58E+01
50	0.960	5.41E+02	6.80E+01
60	0.940	4.50E+02	1.32E+02
70	0.916	3.68E+02	2.26E+02
75	0.904	3.31E+02	2.84E+02
80	0.890	2.97E+02	3.49E+02
85	0.877	2.66E+02	4.22E+02
90	0.863	2.37E+02	5.02E+02
95	0.848	2.11E+02	5.87E+02
100	0.834	1.88E+02	6.78E+02
120	0.776	1.16E+02	1.08E+03
140	0.720	7.16E+01	1.51E+03
160	0.669	4.45E+01	1.93E+03
180	0.624	2.81E+01	2.31E+03
200	0.584	1.80E+01	2.65E+03
220	0.550	1.18E+01	2.95E+03
240	0.520	7.94E+00	3.20E+03

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**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

PROJECT NAME: Capillarity Parameters  
 PROJECT NO: 123456  
 SAMPLE ID: MW-1 at 15.1 ft.

**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

Capillary Head (cm)	(van Genuchten, 1980) Volumetric Moisture	(Mualem, 1976) Effective Water Perm.	(Mualem, 1976) Effective Air Perm.
260	0.494	5.43E+00	3.42E+03
280	0.471	3.78E+00	3.61E+03
300	0.452	2.69E+00	3.77E+03
320	0.434	1.94E+00	3.91E+03
340	0.419	1.42E+00	4.03E+03
360	0.406	1.06E+00	4.13E+03
380	0.393	8.01E-01	4.22E+03
400	0.383	6.12E-01	4.30E+03
420	0.373	4.73E-01	4.37E+03
440	0.364	3.69E-01	4.43E+03
460	0.357	2.92E-01	4.49E+03
480	0.349	2.32E-01	4.54E+03
500	0.343	1.86E-01	4.58E+03
550	0.329	1.11E-01	4.67E+03
600	0.318	6.95E-02	4.74E+03
650	0.309	4.49E-02	4.80E+03
700	0.301	3.00E-02	4.84E+03
750	0.294	2.05E-02	4.88E+03
800	0.289	1.44E-02	4.91E+03
850	0.284	1.03E-02	4.94E+03
900	0.280	7.53E-03	4.96E+03
950	0.276	5.59E-03	4.98E+03
1000	0.273	4.21E-03	5.00E+03
1050	0.270	3.22E-03	5.01E+03
1100	0.268	2.49E-03	5.03E+03
1150	0.265	1.95E-03	5.04E+03
1200	0.263	1.54E-03	5.05E+03
1250	0.261	1.23E-03	5.06E+03
1300	0.260	9.88E-04	5.07E+03
1350	0.258	8.02E-04	5.07E+03
1400	0.257	6.56E-04	5.08E+03
1450	0.255	5.40E-04	5.09E+03
1500	0.254	4.47E-04	5.09E+03
1550	0.253	3.73E-04	5.10E+03
1600	0.252	3.13E-04	5.10E+03
1650	0.251	2.64E-04	5.10E+03
1700	0.250	2.24E-04	5.11E+03
1750	0.249	1.90E-04	5.11E+03
1800	0.249	1.63E-04	5.12E+03

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**TABLE 2**

**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

PROJECT NAME: Capillarity Parameters  
 PROJECT NO: 123456  
 SAMPLE ID: MW-1 at 15.1 ft.

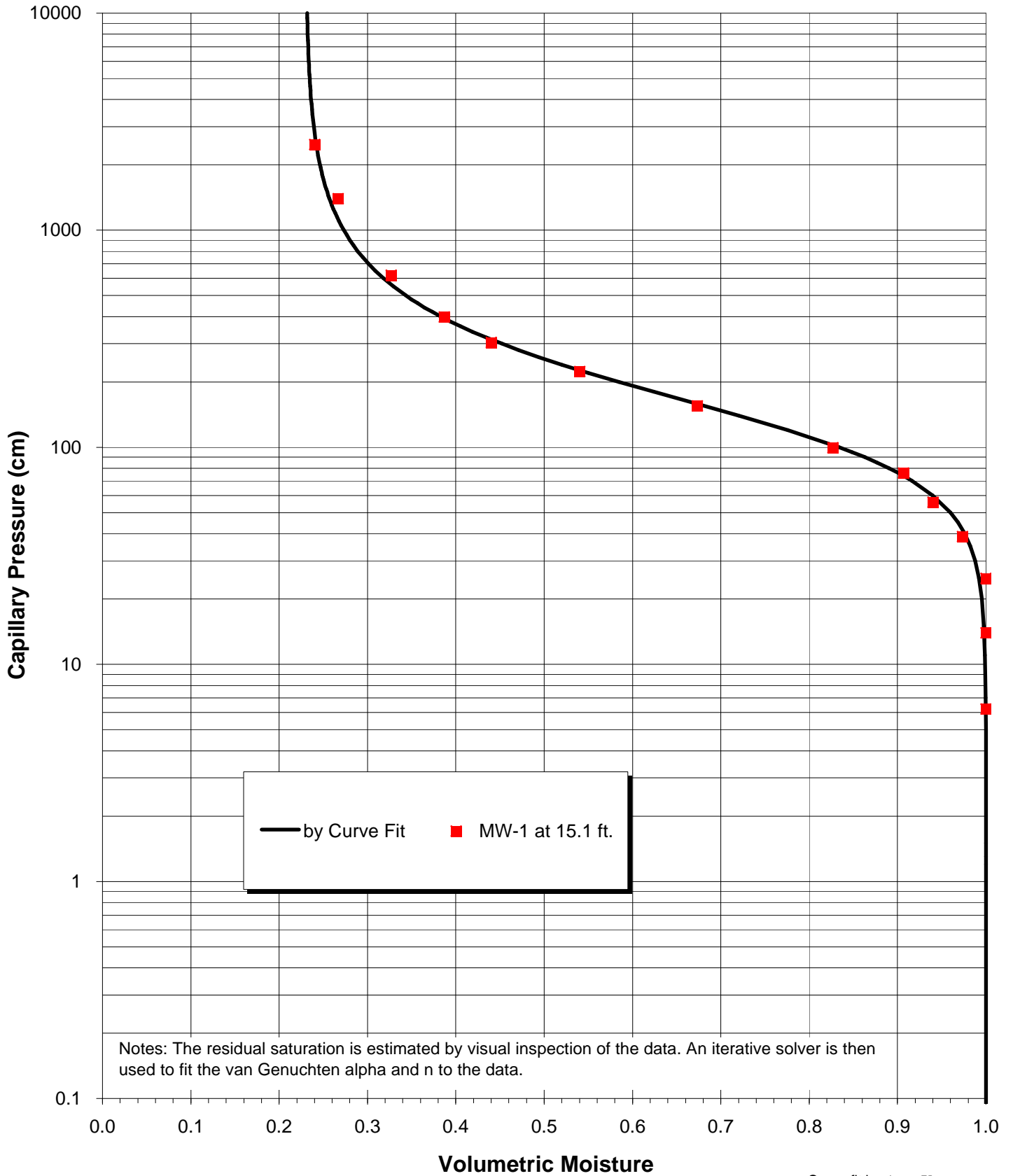
**FUNCTIONAL RELATIONSHIPS BASED ON DERIVED CAPILLARY PARAMETERS**

Capillary Head (cm)	(van Genuchten, 1980) Volumetric Moisture	(Mualem, 1976) Effective Water Perm.	(Mualem, 1976) Effective Air Perm.
1850	0.248	1.40E-04	5.12E+03
1900	0.247	1.21E-04	5.12E+03
1950	0.247	1.04E-04	5.12E+03
2000	0.246	9.08E-05	5.13E+03
2200	0.244	5.35E-05	5.14E+03
2400	0.242	3.30E-05	5.14E+03
2600	0.241	2.12E-05	5.15E+03
2800	0.240	1.40E-05	5.15E+03
3000	0.239	9.57E-06	5.16E+03
3200	0.238	6.69E-06	5.16E+03
3400	0.238	4.78E-06	5.16E+03
3600	0.237	3.48E-06	5.16E+03
3800	0.236	2.58E-06	5.17E+03
4000	0.236	1.94E-06	5.17E+03
4200	0.236	1.48E-06	5.17E+03
4400	0.235	1.14E-06	5.17E+03
4600	0.235	8.92E-07	5.17E+03
4800	0.235	7.05E-07	5.17E+03
5000	0.234	5.62E-07	5.17E+03
5200	0.234	4.52E-07	5.17E+03
5400	0.234	3.66E-07	5.18E+03
5600	0.234	2.99E-07	5.18E+03
5800	0.234	2.46E-07	5.18E+03
6000	0.233	2.04E-07	5.18E+03
6500	0.233	1.31E-07	5.18E+03
7000	0.233	8.67E-08	5.18E+03
7500	0.232	5.91E-08	5.18E+03
8000	0.232	4.13E-08	5.18E+03
8500	0.232	2.95E-08	5.18E+03
9000	0.232	2.15E-08	5.18E+03
9500	0.232	1.59E-08	5.18E+03
10000	0.232	1.20E-08	5.18E+03

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**CAPILLARY CURVE FIT: MW-1 at 15.1 ft.**



Notes: The residual saturation is estimated by visual inspection of the data. An iterative solver is then used to fit the van Genuchten alpha and n to the data.

CAPILLARY CURVE FIT: MW-1 at 15.1 ft.

