Attachment H
Assessment of Potential for DRAs to Generate Leachate

CDM	**Job#:** 68838-64986.17	**Calc by:** M. Nelson
Client: Energy Fuels (USA) Inc.	**Checked by:** M. Smith	**Date:** February 14, 2013
Project: Daneros Mine EA	**Date:** February 27, 2013	**Calc No.**
Detail: Estimate of percolation through Development Rock Area	**Reviewed:**	**Revision:**
	Date:	**Date:**

Calculation Brief Title:

Estimation of Percolation through Mine Rock Stockpiles Using UNSAT-H

1.0 Purpose/Objective

The purpose of this calculation is to estimate percolation through the Daneros Mine development rock area using UNSAT-H (Fayer 2000). UNSAT-H is a fortran-based model that is used to simulate one-dimensional flow of water, vapor, and heat in soils. The code addresses the processes of precipitation, evaporation, plant transpiration, storage, and deep drainage.

2.0 Procedure

- Estimate physical and hydrological characteristics of development rock using site specific sampling and laboratory analyses.
- Compile climate data from locations as close as possible to the site.
- Estimate percolation through development rock areas using UNSAT-H.

3.0 References/Data Sources

Advanced Terra Testing (ATT), 2012, *Laboratory data for soil water characteristic curve, saturated hydraulic conductivity, grain size analyses, and moisture content*. These data were developed from samples collected at the Daneros Mine in May, 2012.

Benson, C., 2006, *An Introduction to Water Balance Modeling*, in: Benson, C., Albright, B., Rock, S., Valceschini, R., Waugh, J., Alternative Covers for Landfills, Waste Repositories, and Mine Wastes Workshop, November.

Fala, O., Molson, J., Aubertin, M., Bussiere, B, 2005, *Numerical Modeling of Flow and Capilary Barrier Effects in Unsaturated Waste Rock Piles*, Mine Water and the Environment, Vol. 24.

Fayer, M.J., 2000, *UNSAT-H Version 3.0: Unsaturated Soil Water and Heat Flow Model Theory, User Manual, and Examples*.

Ford, R.C., Pierce, S.A., Ankeny, M.D., Kelsey, J., 2000, *Evaluation and Management of Acid Drainage Risk from Spent Ore, El Abra Mine, Chile*, in Semi-Arid Mine Waste Issues, ICARD 2000-Proceedings from the 5th International Conference on Acid Mine Drainage.

CLIMATEDATA, 2008, *Climate data from Blanding, Utah, La Sal, Utah and Grand Junction, Colorado weather stations,* Volume 19.0, NCDC Summary of the Day-West 1, Hydrosphere Data Products, 2008

Seki, K., 2007, *SWRC Fit- A Nonlinear Fitting Program with a Water Retention Curve for Soils Having Unimodal and Bimodal Pore Structure*, Hydrology and Earth System Sciences Discussions, Vol 4.

Swanson, D.A., Savci, G., Danziger, G., Williamson, A., Barnes, C., 2000, *Unsaturated Hydrologic Assessment of Waste Rock Stockpiles in Semi-Arid Climates*, in Semi-Arid Mine Waste Issues, ICARD 2000-Proceedings from the 5th International Conference on Acid Mine Drainage.

4.0 Assumptions

- This estimate assumes that the samples and associated laboratory data are representative of the development rock pile. An inherent uncertainty in this assumption relates to the presence of cobbles and boulders in the piles, which will not fit in the laboratory capillary moisture test apparatus. However, infiltration and percolation under unsaturated conditions occurs preferentially through the fine-grained materials (Swanson et al 2000). Therefore, this assumption is considered adequate for the purposes of this estimate.

- This estimate includes development rock extending to a depth of 3 meters. Any water flux passing through the 3 meter depth is assumed to percolate to the base of the pile. This is a conservative assumption.

- The estimate assumes that there is no zone of saturation within the development rock pile (i.e., no groundwater is present within the pile). This assumption is supported by the fact that there are no observed springs or seeps emanating from the development rock pile or surrounding areas.

5.0 Calculations

The UNSAT-H model was chosen for this evaluation because it simulates both downward movement of water into the development rock piles during infiltration and upward movement of water from the rock piles caused by evaporation. Consideration of upward unsaturated flow is critical for accurate simulation of percolation through mine rock piles in semiarid and arid environments (Swanson et al. 2000). Unsaturated flow models based on Richard's equation for simulation of unsaturated flow have been used extensively to model flow through mine waste piles

(e.g. Ford et al, 2000; Swanson et al., 2000, Fala et al., 2005). Benson et al. (2006) provides basic requirements for unsaturated flow models including:

- the model must simulate unsaturated flow in a rigorous manner (i.e. must solve Richards equation);
- The model must include a surface boundary simulating soil-atmosphere interactions (precipitation, infiltration, evaporation, runoff); and
- The model must integrate climatic data into the solution.

UNSAT-H meets these requirements. Although the EPA Hydrological Evaluation of Landfill Performance model (HELP) has been used in the past for these types of estimates, HELP does not meet the criterion of rigorously simulating upward movement of water through the vadose zone through application of Richard's equation. The UNSAT-H model is a fortran-based finite difference 1-dimensional model that simulates liquid water flow using Richard's equation and water vapor diffusion using Fick's law. UNSAT-H also is capable of simulating heat flow and plant transpiration, although these options were not applied in this estimation.

Additional details of the calculation methods and procedure applied by UNSAT-H are presented in Fayer (2000) and are not discussed further in this document. This discussion provides a summary of the modeling approach including description of model nodes and boundary conditions, description of climate data sources, and definition of soil characteristics. Detailed model input files and output files are presented as attachments to this document.

The UNSAT-H model used for the Daneros Mine incorporated the following:

- The model used a 3 meter thick profile, and included 111 nodes. The nodes are spaced very close in the upper portion of the soil profile and are more widely spaced in the deeper portion of the profile. The node spacing is included in the input file and additional information is included in the input list file. Input files and input list files are included in Attachment 1.
- Three models were evaluated were evaluated. Each model included layers of soil overlaying inert material (derived from vent shaft construction) overlying development rock. The following table illustrates the models evaluated.

Model	Upper soil layer	Middle Inert Material Layer	Lower Development Rock Layer
1	23 cm (9 inches)	23 cm (9 inches)	254 cm (8.3 ft)
2	23 cm (9 inches)	38 cm (15 inches)	239 cm (7.8 ft)
3	30 cm (12 inches)	61 cm (24 inches)	209 cm (6.9 ft)

- Hydrologic properties of development rock, inert materials and soil are based on site-specific samples collected by Energy Fuels (USA) Inc. and laboratory analyses completed by Advanced Terra Testing in Lakewood, Colorado. These data are included in Attachment 2. Capillary moisture data were fit to the van Genuchten model using the program SWCC Fit (Seki 2007). The van Genutchen-Burdine model was used for estimation of the unsaturated hydraulic conductivity. The SWCC Fit output files for the Daneros Mine are included in Attachment 2. Vapor flow was simulated using a tortuosity of 0.66 and a vapor diffusivity of 0.27 centimeter squared per second. The average soil temperature was assumed to be 283 degrees Kelvin.

- The model simulated percolation occurring during an average precipitation year (assumed to be 1980) based on data collected at Blanding, Utah. Total annual precipitation during 1980 was 33.2 cm (13.1 inches) as compared to a long-term average of 33.0 (13.0) inches over the period of 1906 to 2012.

- Climate data including daily temperature, wind speed, wind direction, precipitation and relative humidity were compiled from a weather station located near the mine at Blanding, Utah. Average percent cloud cover data were compiled from Grand Junction, Colorado data. Solar radiation data for the site were compiled from the National Solar Radiation Database. Other meteorological parameters included in the model include an albedo of 0.4, and average annual atmospheric pressure of 852 millibars.

- A variable flux atmospheric boundary was applied at the surface and a unit gradient boundary was applied at the bottom of the 3 meter profile. Vapor pressure at the surface was computed based on the daily atmospheric humidity specified in the climate input files. The daily temporal distribution of potential evaporation was assumed to be sinusoidal.

- The model was run using a 99 year initialization period followed by an average precipitation year. The initialization period is based on sequential average precipitation years to reduce the potential effect of initial conditions of soil moisture at each node on the estimated percolation.

- A matric suction of 1.5×10^{-6} centimeters was used for the initial conditions at all nodes. A sensitivity analysis was conducted to evaluate the effect of this initial assumption on the estimated matric suction after the 99 year warm-up period for the model was complete. This analysis showed that the model results are not sensitive to the initial assumption of matric suction.

Table 1 summarizes the results of the modeling effort for the Daneros Mine. The corresponding UNSAT-h output files are included in Attachment 1.

Table 1. Summary of UNSAT-h modeling results (all results in centimeters).

Model	**Annual Potential Evaporation**	**Annual Precipitation**	**Annual Runoff**	**Annual Infiltration**	**Annual Actual Evaporation**	**Annual Percolation**
1	190	33.2	0	33.2	33.2	0.00278
2	190	33.2	0	33.2	33.2	0.00266
3	190	33.2	0	33.2	33.2	0.00250

Based on the UNSAT-h simulations, the annual percolation is estimated to range from 0.00278 to 0.00250 centimeters per year, which is considered negligible. The simulations show the importance of evaluating upward movement of water from the rock piles caused by evaporation because the majority of water that infiltrates the surface of the development rock piles evaporates in the semi-arid environment present at the Daneros Mine.

The estimates show that increasing the thickness of the soil and inert material layers does not markedly affect estimated percolation, and that estimated percolation is low with all models.

6.0 Conclusions

The UNSAT-h simulations suggest that significant percolation from the base of the development rock area is unlikely. However, a small amount of percolation is estimated for all simulations. The simulations further suggest that infiltration of precipitation followed by upward evaporative flux of water stored within the development rock areas are dominant mechanisms controlling the volume of

percolation through the development rock areas. The thickness of the soil and inert material layers are less important controls on the expected volume of percolation.

7.0 Other Considerations

The results of this simulation correspond to the input parameters including the development rock, inert material, and soil physical and hydrologic parameters, and the available climate data. Site-specific climate data are not available for the Daneros Mine, and differences between actual climate conditions at the site and the data compiled from the Blanding and Grand Junction weather stations could result in variations in percolation estimates through the piles. In addition, exclusion of cobbles and boulders from laboratory analyses of samples may affect the estimated percolation rates. However, available laboratory instruments do not facilitate inclusion of these larger particle sizes. Unsaturated flow through mine waste piles is controlled by the finer grained particles (Swanson et al. 2000). Therefore, estimation of physical and hydrological characteristics of the development rock based on use of the available laboratory instruments is considered adequate for the purposes of this estimate.

Attachment 1: Input, input list, and output files

```
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980
avg precipitation
0,1, IPLANT,NGRAV
365,1,366, IFDEND,IDTBEG,IDTEND
2009, 100, 0, 2, 100, IYS,NYEARS,ISTEAD,IFLIST,NFLIST
0,24.0, NPRINT,STOPHR
0,10,0,0.001, ISMETH,INMAX,ISWDIF,DMAXBA
1.0,1.0E-20,0, DELMAX,DELMIN,OUTTIM
2.0,1.0E2,0.0,0.0,0.0, RFACT,RAINIF,DHTOL,DHMAX,DHFACT
4,1,0.3, KOPT,KEST,WTF
0,1,2,1, ITOPBC,IEVOPT,NFHOUR,LOWER
1.0,1.0E7,0.0,0.48, HIRRI,HDRY,HTOP,RHA
1,0,1, IETOPT,ICLOUD,ISHOPT
1,0.1, IRAIN,HPR
0,0.0,0.0,0.0,0, IHYS,AIRTOL,HYSTOL,HYSMXH,HYFILE
0,0,0.0, IHEAT,ICONVH,DMAXHE
0,0.0,0.0,0.0, UPPERH,TSMEAN,TSAMP,QHCTOP
0,0.0,0.0, LOWERH QHLEAK, TGRAD
1,0.66,283.0,0.27, IVAPOR,TORT,TSOIL,VAPDIF
3,111, MATN,NPT
1,0.02, 1,0.05, 1,0.1, 1,0.2
1,0.3, 1,0.4, 1,0.5, 1,0.6
1,0.7, 1,0.8, 1,0.9, 1,1.0
1,2.0, 1,3.0, 1,4.0, 1,5.0
1,6.0, 1,7.0, 1,8.0, 1,9.0
1,10.0, 1,11.0, 1,12.0, 1,13.0
1,14.0, 1,15.0, 1,16.0, 1,17.0
1,18.0, 1,19.0, 1,20.0, 1,22.0
2,24.0, 2,26.0, 2,28.0, 2,30.0
2,32.0, 2,34.0, 2,36.0, 2,38.0
2,40.0, 2,42.0, 2,44.0, 3,46.0
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3,56.0, 3,58.0, 3,60.0, 3,62.0
3,64.0, 3,66.0, 3,68.0, 3,70.0
3,72.0, 3,74.0, 3,76.0, 3,78.0
3,80.0, 3,82.0, 3,84.0, 3,86.0
3,88.0, 3,90.0, 3,92.0, 3,94.0
3,96.0, 3,98.0, 3,100.0, 3,105.0
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3,130.0, 3,135.0, 3,140.0, 3,145.0
3,150.0, 3,155.0, 3,160.0, 3,165.0
3,170.0, 3,175.0, 3,180.0, 3,185.0
3,190.0, 3,195.0, 3,200.0, 3,205.0
3,210.0, 3,215.0, 3,220.0, 3,225.0
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3,290.0, 3,295.0, 3,300.0
Daneros Soil van Genuchten parameters
0.34842, 3.5692E-07, 0.43868, 1.1058, THET,THTR,VGA,VGN
Daneros Soil van Genuchten hydraulic conductivity
1.0, 3.492, 0.43868, 1.1058, 2.0, RKMOD,SK,VGA,VGN,EPIT
```

```
Daneros Vent Cuttings van Genuchten parameters
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Daneros Vent Cuttings van Genuchten hydraulic conductivity
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Daneros Development Rock van Genuchten parameters
0.31313, 2.1323E-06, 6.6591, 1.0966, THET,THTR,VGA,VGN
Daneros Devlopment Rock van Genuchten hydraulic conductivity
1.0, 43.2, 6.6591, 1.0966, 2.0, RKMOD,SK,VGA,VGN,EPIT
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2009_BL_85R.CSV
2010_BL_85R.CSV
2011_BL_85R.CSV
2012_BL_85L.CSV
2013_BL_85R.CSV
2014_BL_85R.CSV
2015_BL_85R.CSV
2016_BL_85L.CSV
2017_BL_85R.CSV
2018_BL_85R.CSV
2019_BL_85R.CSV
2020_BL_85L.CSV
2021_BL_85R.CSV
2022_BL_85R.CSV
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2025_BL_85R.CSV
2026_BL_85R.CSV
2027_BL_85R.CSV
2028_BL_85L.CSV
2029_BL_85R.CSV
2030_BL_85R.CSV
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2103_BL_85R.CSV
2104_BL_85L.CSV
2105_BL_85R.CSV
2106_BL_85R.CSV
2107_BL_85R.CSV
2108_BL_85L.CSV

```
-------------------------------------------------------------------------------
!                              Program DATAINH                                !
!                                Version 3.01                                 !
-------------------------------------------------------------------------------
 Input Filename: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil
 Date Processed: 28 Feb 2013
 Time Processed: 14:21:31.35
 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

 General options:

 IPLANT =    0        NGRAV =    1
 IFDEND =  365       IDTBEG =    1       IDTEND =  366
    IYS = 2009       NYEARS =  100       ISTEAD =    0
 IFLIST =    2       NFLIST =  100
 NPRINT =    0       STOPHR = 2.400E+01
 ISMETH =    0       INMAX  =   10       ISWDIF =    0       DMAXBA = 0.100E-02
 DELMAX = 1.000E+00  DELMIN = 1.000E-20  OUTTIM = 1.000E+00
  RFACT = 2.000E+00  RAINIF = 1.000E+02   DHTOL = 0.000E+00
  DHMAX = 0.000E+00  DHFACT = 0.000E+00
   KOPT =    4         KEST =    1          WTF = 3.000E-01
 ITOPBC =    0       IEVOPT =    1       NFHOUR =    2        LOWER =    1
  HIRRI = 1.000E+00    HDRY = 1.000E+07    HTOP = 0.000E+00     RHA = 4.800E-01
 IETOPT =    1       ICLOUD =    0       ISHOPT =    1
  IRAIN =    1          HPR = 1.000E-01

 Hysteresis options:

   IHYS =    0       AIRTOL = 0.000E+00  HYSTOL = 0.000E+00  HYSMXH = 0.000E+00

 Heat flow options:

  IHEAT =    0       ICONVH =    0       DMAXHE = 0.000E+00
 UPPERH =    0       TSMEAN = 0.000E+00   TSAMP = 0.000E+00  QHCTOP = 0.000E+00
 LOWERH =    0       QHLEAK = 0.000E+00   TGRAD = 0.000E+00

 Vapor flow options:

 IVAPOR =    1         TORT = 6.600E-01   TSOIL = 2.830E+02  VAPDIF = 2.700E-01

 Grid options:

   MATN =    3          NPT =  111

 Soil hydraulic properties:

   KOPT = 4: van Genuchten hydraulic functions

   Material No.    1
   THETA = f(H), Daneros Soil van Genuchten parameters
               THET = 0.34842        THTR = 3.56920E-07   ALPHA = 0.43868
```

```
                N =  1.1058           M = 9.56773E-02
  K =f(H), Daneros Soil van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  3.4920           A = 0.43868
                N =  1.1058           M = 9.56773E-02    EPIT =  2.0000

  Material No.    2
  THETA = f(H), Daneros Vent Cuttings van Genuchten parameters
             THET = 0.37476        THTR = 3.72910E-07   ALPHA = 0.27231
                N =  1.1839           M = 0.15533
  K =f(H), Daneros Vent Cuttings van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  15.480           A = 0.27231
                N =  1.1839           M = 0.15533        EPIT =  2.0000

  Material No.    3
  THETA = f(H), Daneros Development Rock van Genuchten parameters
             THET = 0.31313        THTR = 2.13230E-06   ALPHA =  6.6591
                N =  1.0966           M = 8.80905E-02
  K =f(H), Daneros Devlopment Rock van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  43.200           A =  6.6591
                N =  1.0966           M = 8.80905E-02    EPIT =  2.0000
-------------------------------------------------------------------------------
 Surface node bounding values:

  HIRRI = 1.000E+00   THETA = 3.373E-01   K = 3.687E-01   C =-1.023E-02
   HDRY = 1.000E+07   THETA = 6.908E-02   K = 5.936E-10   C =-7.309E-10
-------------------------------------------------------------------------------
 Initial Conditions:

  NDAY =   0
```

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.02	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
2	0.05	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
3	0.10	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
4	0.20	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
5	0.30	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
6	0.40	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
7	0.50	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
8	0.60	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
9	0.70	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
10	0.80	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
11	0.90	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
12	1.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
13	2.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
14	3.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
15	4.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
16	5.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
17	6.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
18	7.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
19	8.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
20	9.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0

21	10.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
22	11.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
23	12.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
24	13.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
25	14.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
26	15.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
27	16.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
28	17.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
29	18.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
30	19.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
31	20.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
32	22.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
33	24.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
34	26.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
35	28.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
36	30.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
37	32.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
38	34.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
39	36.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
40	38.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
41	40.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
42	42.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
43	44.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
44	46.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
45	48.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
46	50.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
47	52.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
48	54.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
49	56.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
50	58.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
51	60.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
52	62.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
53	64.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
54	66.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
55	68.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
56	70.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
57	72.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
58	74.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
59	76.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
60	78.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
61	80.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
62	82.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
63	84.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
64	86.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
65	88.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
66	90.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
67	92.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
68	94.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
69	96.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
70	98.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
71	100.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
72	105.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0

73	110.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
74	115.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
75	120.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
76	125.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
77	130.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
78	135.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
79	140.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
80	145.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
81	150.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
82	155.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
83	160.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
84	165.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
85	170.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
86	175.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
87	180.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
88	185.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
89	190.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
90	195.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
91	200.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
92	205.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
93	210.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
94	215.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
95	220.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
96	225.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
97	230.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
98	235.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
99	240.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
100	245.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
101	250.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
102	255.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
103	260.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
104	265.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
105	270.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
106	275.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
107	280.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
108	285.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
109	290.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
110	295.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
111	300.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0

Total Initial Storage (cm) = 1.953824E+01

ET parameters:

NFHOUR = 2: User subroutine for hourly PET provided

0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0150	0.0440
0.0699	0.0911	0.1061	0.1139	0.1139	0.1061	0.0911	0.0699
0.0440	0.0150	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

IETOPT = 1 and IHEAT = 0:
PET calculated from meteorological data
using subroutine CALPET

```
 ALBEDO =  4.000E-01
    ALT =  2.172E+03 (m)
     ZU =  2.000E+00 (m)
    PMB =  8.520E+02 (mb)

-------------------------------------------------------------------------------
 Lower Boundary Option:

   LOWER = 1:  unit gradient
-------------------------------------------------------------------------------

 Multiyear Option
 Sim Year    PET input file name
        1    2009_BL_85R.CSV
        2    2010_BL_85R.CSV
        3    2011_BL_85R.CSV
        4    2012_BL_85L.CSV
        5    2013_BL_85R.CSV
        6    2014_BL_85R.CSV
        7    2015_BL_85R.CSV
        8    2016_BL_85L.CSV
        9    2017_BL_85R.CSV
       10    2018_BL_85R.CSV
       11    2019_BL_85R.CSV
       12    2020_BL_85L.CSV
       13    2021_BL_85R.CSV
       14    2022_BL_85R.CSV
       15    2023_BL_85R.CSV
       16    2024_BL_85L.CSV
       17    2025_BL_85R.CSV
       18    2026_BL_85R.CSV
       19    2027_BL_85R.CSV
       20    2028_BL_85L.CSV
       21    2029_BL_85R.CSV
       22    2030_BL_85R.CSV
       23    2031_BL_85R.CSV
       24    2032_BL_85L.CSV
       25    2033_BL_85R.CSV
       26    2034_BL_85R.CSV
       27    2035_BL_85R.CSV
       28    2036_BL_85L.CSV
       29    2037_BL_85R.CSV
       30    2038_BL_85R.CSV
       31    2039_BL_85R.CSV
       32    2040_BL_85L.CSV
       33    2041_BL_85R.CSV
       34    2042_BL_85R.CSV
       35    2043_BL_85R.CSV
       36    2044_BL_85L.CSV
       37    2045_BL_85R.CSV
       38    2046_BL_85R.CSV
```

39 2047_BL_85R.CSV
40 2048_BL_85L.CSV
41 2049_BL_85R.CSV
42 2050_BL_85R.CSV
43 2051_BL_85R.CSV
44 2052_BL_85L.CSV
45 2053_BL_85R.CSV
46 2054_BL_85R.CSV
47 2055_BL_85R.CSV
48 2056_BL_85L.CSV
49 2057_BL_85R.CSV
50 2058_BL_85R.CSV
51 2059_BL_85R.CSV
52 2060_BL_85L.CSV
53 2061_BL_85R.CSV
54 2062_BL_85R.CSV
55 2063_BL_85R.CSV
56 2064_BL_85L.CSV
57 2065_BL_85R.CSV
58 2066_BL_85R.CSV
59 2067_BL_85R.CSV
60 2068_BL_85L.CSV
61 2069_BL_85R.CSV
62 2070_BL_85R.CSV
63 2071_BL_85R.CSV
64 2072_BL_85L.CSV
65 2073_BL_85R.CSV
66 2074_BL_85R.CSV
67 2075_BL_85R.CSV
68 2076_BL_85L.CSV
69 2077_BL_85R.CSV
70 2078_BL_85R.CSV
71 2079_BL_85R.CSV
72 2080_BL_85L.CSV
73 2081_BL_85R.CSV
74 2082_BL_85R.CSV
75 2083_BL_85R.CSV
76 2084_BL_85L.CSV
77 2085_BL_85R.CSV
78 2086_BL_85R.CSV
79 2087_BL_85R.CSV
80 2088_BL_85L.CSV
81 2089_BL_85R.CSV
82 2090_BL_85R.CSV
83 2091_BL_85R.CSV
84 2092_BL_85L.CSV
85 2093_BL_85R.CSV
86 2094_BL_85R.CSV
87 2095_BL_85R.CSV
88 2096_BL_85L.CSV
89 2097_BL_85R.CSV
90 2098_BL_85R.CSV

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      91    2099_BL_85R.CSV
      92    2100_BL_85L.CSV
      93    2101_BL_85R.CSV
      94    2102_BL_85R.CSV
      95    2103_BL_85R.CSV
      96    2104_BL_85L.CSV
      97    2105_BL_85R.CSV
      98    2106_BL_85R.CSV
      99    2107_BL_85R.CSV
     100    2108_BL_85L.CSV
```

IETOPT = 1: Meteorological Data

IDAY	Temperature Max F	Temperature Min F	Temperature Dew F	Solar Rad ly/d	Wind Speed mph	Cloud Cover tenth	Prec. in
1.	74.	52.	33.2	361.	7.2	4.3	0.00
2.	71.	52.	36.0	361.	7.2	4.3	0.00
3.	70.	52.	37.6	361.	7.6	4.3	0.00
4.	67.	52.	37.2	361.	7.6	4.3	0.00
5.	66.	50.	36.0	361.	6.8	4.3	0.00
6.	69.	52.	34.7	361.	7.8	4.3	0.00
7.	66.	49.	36.6	361.	7.3	4.3	0.00
8.	66.	50.	34.4	361.	7.9	4.3	0.00
9.	67.	48.	33.0	361.	6.9	4.3	0.51
10.	66.	48.	34.0	361.	8.4	4.3	0.35
11.	65.	46.	30.0	361.	7.9	4.3	0.23
12.	63.	45.	26.5	361.	7.7	4.3	0.15
13.	64.	46.	24.4	361.	7.0	4.3	0.00
14.	68.	45.	25.4	361.	6.8	4.3	0.20
15.	64.	46.	26.7	361.	6.7	4.3	0.00
16.	64.	43.	27.2	361.	7.8	4.3	0.00
17.	62.	43.	26.2	361.	6.9	4.3	0.20
18.	63.	43.	26.3	361.	7.4	4.3	0.64
19.	60.	44.	27.7	361.	8.6	4.3	0.55
20.	63.	46.	27.7	361.	6.9	4.3	0.01
21.	59.	43.	26.5	361.	8.4	4.3	0.00
22.	57.	41.	28.7	361.	6.5	4.3	0.00
23.	60.	40.	29.9	361.	6.0	4.3	0.00
24.	55.	41.	25.6	361.	6.9	4.3	0.00
25.	54.	38.	26.3	361.	7.9	4.3	0.00
26.	56.	38.	26.4	361.	6.9	4.3	0.00
27.	55.	43.	31.4	361.	7.4	4.3	0.00
28.	55.	41.	33.2	361.	9.5	4.3	0.03
29.	54.	39.	30.4	361.	7.0	4.3	0.62
30.	57.	39.	29.9	361.	7.5	4.3	0.00
31.	53.	39.	28.5	361.	7.9	4.3	0.00
32.	53.	38.	26.9	241.	10.7	5.4	0.00
33.	55.	38.	25.8	241.	6.4	5.4	0.00
34.	53.	38.	24.0	241.	7.1	5.4	0.00
35.	54.	38.	26.1	241.	6.2	5.4	0.00

36.	53.	39.	23.8	241.	6.1	5.4	0.00
37.	55.	37.	22.3	241.	6.5	5.4	0.00
38.	57.	39.	24.2	241.	7.3	5.4	0.03
39.	53.	40.	27.2	241.	6.3	5.4	0.00
40.	53.	37.	28.7	241.	6.6	5.4	0.00
41.	50.	36.	27.8	241.	6.5	5.4	0.00
42.	49.	36.	28.5	241.	5.6	5.4	0.00
43.	48.	34.	27.7	241.	6.3	5.4	0.00
44.	48.	35.	27.7	241.	6.0	5.4	0.08
45.	49.	35.	25.9	241.	6.2	5.4	0.79
46.	49.	31.	22.6	241.	6.4	5.4	0.16
47.	47.	33.	22.9	241.	6.1	5.4	0.00
48.	50.	33.	23.0	241.	6.8	5.4	0.20
49.	48.	33.	22.4	241.	6.0	5.4	0.17
50.	48.	33.	21.1	241.	6.2	5.4	0.27
51.	52.	36.	22.1	241.	6.9	5.4	0.48
52.	46.	34.	23.2	241.	6.2	5.4	0.66
53.	47.	34.	26.0	241.	6.5	5.4	0.02
54.	46.	31.	21.2	241.	6.6	5.4	0.00
55.	45.	29.	20.9	241.	7.3	5.4	0.00
56.	43.	31.	23.4	241.	5.8	5.4	0.00
57.	46.	31.	19.8	241.	6.9	5.4	0.00
58.	38.	29.	19.2	241.	7.8	5.4	0.00
59.	41.	25.	19.0	241.	7.9	5.4	0.00
60.	40.	27.	15.3	241.	6.2	5.4	0.00
61.	44.	23.	22.1	241.	6.4	5.4	0.00
62.	42.	29.	21.8	198.	6.6	5.8	0.09
63.	43.	30.	22.9	198.	6.5	5.8	0.00
64.	42.	27.	20.9	198.	6.8	5.8	0.00
65.	41.	25.	19.8	198.	6.3	5.8	0.24
66.	38.	16.	20.8	198.	5.3	5.8	0.07
67.	40.	26.	22.4	198.	5.5	5.8	0.00
68.	38.	27.	21.7	198.	6.5	5.8	0.00
69.	38.	24.	20.6	198.	7.1	5.8	0.00
70.	39.	24.	18.9	198.	5.7	5.8	0.20
71.	40.	27.	22.7	198.	6.8	5.8	0.13
72.	38.	25.	19.2	198.	9.7	5.8	0.00
73.	38.	25.	19.7	198.	6.1	5.8	0.00
74.	42.	25.	22.2	198.	6.9	5.8	0.00
75.	38.	24.	16.5	198.	7.8	5.8	0.00
76.	38.	23.	16.0	198.	7.0	5.8	0.00
77.	39.	24.	15.4	198.	6.5	5.8	0.00
78.	39.	24.	17.9	198.	6.5	5.8	0.00
79.	41.	25.	17.8	198.	7.6	5.8	0.00
80.	39.	25.	17.5	198.	6.2	5.8	0.00
81.	41.	26.	18.4	198.	7.0	5.8	0.02
82.	37.	26.	19.2	198.	6.3	5.8	0.10
83.	36.	23.	17.1	198.	6.7	5.8	0.06
84.	36.	23.	15.9	198.	7.2	5.8	0.39
85.	34.	24.	17.9	198.	5.9	5.8	0.00
86.	38.	26.	17.2	198.	7.2	5.8	0.00
87.	40.	29.	18.4	198.	6.4	5.8	0.13

88.	40.	27.	19.3	198.	5.4	5.8	0.00
89.	40.	27.	19.6	198.	6.3	5.8	0.00
90.	40.	28.	22.6	198.	6.0	5.8	0.00
91.	40.	26.	22.6	198.	5.7	5.8	0.00
92.	39.	28.	21.6	198.	6.0	5.8	0.47
93.	41.	26.	22.3	284.	6.2	6.1	0.00
94.	41.	28.	22.3	284.	6.5	6.1	0.00
95.	38.	27.	21.5	284.	7.2	6.1	0.00
96.	38.	25.	20.1	284.	6.6	6.1	0.00
97.	36.	25.	19.8	284.	6.6	6.1	0.00
98.	39.	23.	18.7	284.	6.4	6.1	0.00
99.	37.	23.	18.7	284.	6.6	6.1	0.00
100.	41.	24.	20.3	284.	6.8	6.1	0.00
101.	40.	27.	22.2	284.	6.2	6.1	0.00
102.	41.	28.	24.0	284.	6.2	6.1	0.00
103.	42.	27.	23.6	284.	6.3	6.1	0.00
104.	39.	28.	21.9	284.	6.8	6.1	0.00
105.	38.	25.	21.2	284.	7.1	6.1	0.00
106.	37.	23.	18.8	284.	6.1	6.1	0.00
107.	38.	24.	18.2	284.	6.0	6.1	0.00
108.	39.	24.	17.3	284.	6.0	6.1	0.00
109.	38.	25.	18.3	284.	6.2	6.1	0.00
110.	42.	26.	19.6	284.	6.3	6.1	0.00
111.	39.	25.	19.6	284.	5.9	6.1	0.23
112.	41.	25.	21.4	284.	6.1	6.1	0.02
113.	39.	26.	20.2	284.	6.7	6.1	0.03
114.	40.	24.	18.0	284.	6.2	6.1	0.08
115.	40.	25.	18.7	284.	5.8	6.1	0.01
116.	42.	27.	21.1	284.	6.4	6.1	0.00
117.	40.	29.	23.7	284.	7.4	6.1	0.00
118.	49.	29.	23.9	284.	7.0	6.1	0.00
119.	41.	28.	22.9	284.	7.0	6.1	0.13
120.	41.	27.	21.2	284.	7.5	6.1	0.00
121.	40.	25.	19.2	284.	6.4	6.1	0.00
122.	41.	25.	19.1	284.	7.1	6.1	0.00
123.	38.	24.	20.0	284.	6.4	6.1	0.00
124.	38.	22.	16.6	310.	6.9	6.2	0.03
125.	37.	24.	20.0	310.	6.4	6.2	0.07
126.	38.	27.	20.4	310.	6.5	6.2	0.10
127.	42.	28.	21.2	310.	7.1	6.2	0.09
128.	41.	27.	20.5	310.	7.8	6.2	0.02
129.	42.	23.	18.1	310.	6.5	6.2	0.00
130.	40.	25.	20.1	310.	6.7	6.2	0.01
131.	39.	27.	19.7	310.	7.0	6.2	0.42
132.	42.	26.	19.9	310.	6.3	6.2	0.00
133.	43.	25.	18.1	310.	7.2	6.2	0.00
134.	42.	26.	19.5	310.	6.7	6.2	0.02
135.	45.	27.	20.1	310.	6.4	6.2	0.02
136.	40.	28.	21.4	310.	6.9	6.2	0.01
137.	41.	30.	23.4	310.	6.7	6.2	0.06
138.	47.	28.	22.6	310.	7.7	6.2	0.00
139.	43.	29.	21.4	310.	6.5	6.2	0.00

140.	46.	31.	22.3	310.	6.7	6.2	0.00
141.	44.	30.	23.3	310.	6.5	6.2	0.00
142.	46.	29.	22.4	310.	6.7	6.2	0.00
143.	44.	32.	23.4	310.	6.5	6.2	0.00
144.	47.	32.	22.4	310.	7.5	6.2	0.00
145.	44.	31.	21.7	310.	7.3	6.2	0.00
146.	44.	30.	22.4	310.	7.0	6.2	0.00
147.	44.	30.	20.9	310.	8.6	6.2	0.00
148.	41.	30.	21.7	310.	7.4	6.2	0.00
149.	41.	31.	23.8	310.	7.0	6.2	0.00
150.	40.	28.	26.0	310.	7.9	6.2	0.00
151.	40.	31.	22.7	310.	7.9	6.2	0.00
152.	44.	29.	20.2	413.	7.2	6.2	0.00
153.	42.	27.	18.2	413.	7.8	6.2	0.00
154.	45.	27.	17.6	413.	6.4	6.2	0.00
155.	47.	29.	18.1	413.	7.2	6.2	0.00
156.	48.	29.	15.1	413.	7.4	6.2	0.00
157.	52.	32.	17.8	413.	7.5	6.2	0.00
158.	50.	33.	22.4	413.	8.1	6.2	0.00
159.	49.	32.	24.7	413.	7.8	6.2	0.00
160.	51.	31.	18.7	413.	7.0	6.2	0.00
161.	51.	34.	20.9	413.	7.3	6.2	0.00
162.	51.	35.	23.0	413.	7.5	6.2	0.00
163.	55.	36.	24.5	413.	7.8	6.2	0.00
164.	54.	36.	21.7	413.	7.5	6.2	0.00
165.	53.	36.	20.2	413.	8.4	6.2	0.00
166.	53.	35.	16.3	413.	8.4	6.2	0.00
167.	54.	35.	20.4	413.	7.7	6.2	0.00
168.	53.	36.	23.2	413.	7.6	6.2	0.00
169.	52.	34.	22.1	413.	8.4	6.2	0.00
170.	53.	35.	22.4	413.	8.0	6.2	0.00
171.	57.	38.	24.8	413.	7.0	6.2	0.00
172.	56.	41.	23.0	413.	7.5	6.2	0.00
173.	58.	41.	23.7	413.	7.0	6.2	0.00
174.	58.	40.	22.3	413.	8.1	6.2	0.00
175.	57.	38.	25.5	413.	8.0	6.2	0.00
176.	58.	39.	23.9	413.	7.5	6.2	0.00
177.	56.	38.	24.4	413.	7.9	6.2	0.00
178.	56.	36.	20.6	413.	9.0	6.2	0.00
179.	55.	36.	20.2	413.	8.6	6.2	0.00
180.	51.	35.	20.6	413.	9.0	6.2	0.00
181.	56.	35.	19.6	413.	8.1	6.2	0.02
182.	57.	39.	20.3	413.	9.2	6.2	0.01
183.	58.	36.	21.3	516.	8.0	6.0	0.00
184.	58.	39.	23.6	516.	9.4	6.0	0.00
185.	57.	39.	24.3	516.	8.6	6.0	0.00
186.	59.	39.	23.7	516.	7.9	6.0	0.00
187.	57.	38.	23.3	516.	9.2	6.0	0.00
188.	53.	36.	25.5	516.	8.0	6.0	0.08
189.	54.	37.	25.7	516.	7.9	6.0	0.00
190.	56.	38.	24.8	516.	9.6	6.0	0.00
191.	57.	37.	24.3	516.	8.8	6.0	0.00

192.	54.	35.	21.1	516.	9.3	6.0	0.00
193.	52.	35.	18.7	516.	7.8	6.0	0.03
194.	53.	37.	25.3	516.	7.6	6.0	0.00
195.	59.	39.	21.0	516.	8.8	6.0	0.00
196.	60.	41.	21.2	516.	9.0	6.0	0.00
197.	59.	41.	22.3	516.	8.9	6.0	0.00
198.	60.	39.	23.4	516.	7.6	6.0	0.00
199.	64.	41.	22.5	516.	9.3	6.0	0.00
200.	60.	39.	21.8	516.	9.1	6.0	0.00
201.	61.	38.	17.6	516.	7.9	6.0	0.00
202.	60.	40.	18.5	516.	9.1	6.0	0.00
203.	61.	40.	20.7	516.	10.3	6.0	0.00
204.	60.	41.	22.4	516.	10.4	6.0	0.00
205.	61.	40.	24.0	516.	8.2	6.0	0.00
206.	59.	40.	27.4	516.	8.6	6.0	0.15
207.	61.	41.	27.0	516.	8.1	6.0	0.08
208.	65.	43.	24.9	516.	8.8	6.0	0.00
209.	64.	44.	24.9	516.	8.4	6.0	0.00
210.	69.	45.	20.1	516.	8.0	6.0	0.00
211.	66.	46.	24.0	516.	7.4	6.0	0.03
212.	65.	45.	23.8	516.	8.3	6.0	0.00
213.	65.	45.	22.5	593.	9.5	5.5	0.01
214.	60.	40.	26.9	593.	8.3	5.5	0.07
215.	65.	44.	24.6	593.	8.2	5.5	0.00
216.	63.	45.	25.6	593.	7.9	5.5	0.00
217.	65.	48.	24.1	593.	8.2	5.5	0.01
218.	67.	45.	25.0	593.	8.9	5.5	0.00
219.	69.	47.	26.7	593.	9.2	5.5	0.00
220.	68.	48.	27.7	593.	8.5	5.5	0.00
221.	70.	46.	26.4	593.	9.1	5.5	0.00
222.	67.	48.	24.4	593.	10.0	5.5	0.00
223.	68.	46.	19.3	593.	9.2	5.5	0.00
224.	69.	47.	23.8	593.	8.7	5.5	0.02
225.	69.	48.	26.4	593.	9.1	5.5	0.05
226.	72.	51.	24.6	593.	8.0	5.5	0.14
227.	71.	50.	28.8	593.	8.3	5.5	0.00
228.	76.	50.	26.2	593.	9.5	5.5	0.00
229.	69.	51.	26.8	593.	9.0	5.5	0.00
230.	76.	53.	29.1	593.	8.2	5.5	0.00
231.	77.	55.	31.6	593.	7.9	5.5	0.00
232.	79.	55.	31.1	593.	8.7	5.5	0.00
233.	73.	51.	27.1	593.	9.1	5.5	0.00
234.	68.	48.	29.2	593.	8.2	5.5	0.00
235.	69.	48.	30.4	593.	7.1	5.5	0.00
236.	71.	51.	30.4	593.	8.4	5.5	0.08
237.	74.	52.	30.2	593.	7.8	5.5	0.00
238.	76.	52.	27.7	593.	9.2	5.5	0.00
239.	76.	56.	28.5	593.	8.7	5.5	0.00
240.	78.	55.	27.2	593.	8.4	5.5	0.00
241.	78.	56.	26.8	593.	8.4	5.5	0.00
242.	80.	55.	25.7	593.	8.9	5.5	0.00
243.	81.	56.	24.9	593.	8.1	5.5	0.00

244.	84.	58.	24.7	636.	9.4	4.0	0.00
245.	81.	58.	24.6	636.	8.6	4.0	0.00
246.	81.	57.	26.1	636.	9.4	4.0	0.00
247.	73.	53.	28.1	636.	8.4	4.0	0.00
248.	75.	53.	29.6	636.	8.6	4.0	0.00
249.	76.	53.	29.6	636.	8.6	4.0	0.01
250.	68.	53.	29.1	636.	9.2	4.0	0.01
251.	70.	50.	29.3	636.	7.7	4.0	0.00
252.	73.	53.	28.0	636.	8.1	4.0	0.00
253.	76.	55.	27.1	636.	8.4	4.0	0.41
254.	79.	55.	23.7	636.	8.4	4.0	0.53
255.	77.	52.	25.2	636.	9.0	4.0	0.00
256.	76.	54.	27.1	636.	9.6	4.0	0.00
257.	81.	58.	27.0	636.	9.2	4.0	0.00
258.	81.	59.	25.3	636.	8.6	4.0	0.00
259.	82.	59.	27.6	636.	8.6	4.0	0.00
260.	84.	58.	26.1	636.	9.1	4.0	0.00
261.	84.	60.	28.6	636.	8.0	4.0	0.00
262.	84.	60.	26.6	636.	8.1	4.0	0.00
263.	86.	63.	26.2	636.	9.2	4.0	0.00
264.	87.	62.	28.2	636.	8.5	4.0	0.00
265.	87.	63.	25.9	636.	8.4	4.0	0.00
266.	86.	63.	27.1	636.	9.0	4.0	0.00
267.	86.	62.	27.1	636.	8.7	4.0	0.00
268.	85.	63.	29.2	636.	8.1	4.0	0.00
269.	82.	61.	29.1	636.	8.2	4.0	0.00
270.	84.	60.	30.5	636.	8.2	4.0	0.04
271.	86.	61.	31.4	636.	8.2	4.0	0.00
272.	87.	62.	34.9	636.	8.8	4.0	0.00
273.	81.	64.	33.7	636.	7.7	4.0	0.00
274.	89.	64.	27.1	645.	7.9	4.2	0.00
275.	87.	68.	28.7	645.	8.6	4.2	0.00
276.	91.	65.	33.7	645.	8.2	4.2	0.00
277.	88.	65.	33.9	645.	7.4	4.2	0.00
278.	87.	66.	35.0	645.	9.0	4.2	0.00
279.	86.	61.	37.2	645.	8.3	4.2	0.00
280.	86.	66.	37.2	645.	8.2	4.2	0.00
281.	88.	65.	39.7	645.	8.0	4.2	0.00
282.	85.	64.	41.0	645.	7.8	4.2	0.00
283.	85.	63.	41.1	645.	7.7	4.2	0.00
284.	89.	67.	39.5	645.	8.4	4.2	0.00
285.	89.	65.	37.9	645.	8.4	4.2	0.27
286.	90.	69.	39.5	645.	8.3	4.2	0.13
287.	87.	68.	42.1	645.	7.9	4.2	0.31
288.	89.	66.	43.6	645.	7.9	4.2	0.18
289.	90.	67.	43.1	645.	7.9	4.2	0.00
290.	88.	66.	42.8	645.	7.4	4.2	0.00
291.	88.	67.	40.3	645.	7.6	4.2	0.00
292.	86.	66.	40.7	645.	8.0	4.2	0.00
293.	89.	67.	43.6	645.	7.4	4.2	0.00
294.	90.	68.	44.0	645.	8.9	4.2	0.00
295.	86.	65.	43.7	645.	7.4	4.2	0.00

296.	82.	65.	46.8	645.	7.8	4.2	0.00
297.	85.	68.	46.6	645.	8.1	4.2	0.00
298.	86.	66.	48.2	645.	8.0	4.2	0.00
299.	87.	65.	48.5	645.	8.0	4.2	0.14
300.	85.	63.	48.3	645.	7.8	4.2	0.01
301.	84.	61.	46.2	645.	7.4	4.2	0.00
302.	88.	64.	43.3	645.	8.0	4.2	0.00
303.	82.	62.	42.3	645.	7.2	4.2	0.00
304.	85.	66.	44.0	645.	10.9	4.2	0.00
305.	84.	67.	46.2	585.	8.0	4.4	0.00
306.	82.	62.	50.2	585.	8.4	4.4	0.00
307.	81.	64.	49.3	585.	7.8	4.4	0.00
308.	83.	64.	49.3	585.	7.8	4.4	0.00
309.	80.	62.	50.9	585.	7.5	4.4	0.00
310.	82.	63.	49.2	585.	7.4	4.4	0.00
311.	83.	61.	47.4	585.	10.7	4.4	0.00
312.	85.	62.	45.6	585.	7.2	4.4	0.00
313.	85.	64.	45.1	585.	8.2	4.4	0.00
314.	84.	64.	45.7	585.	7.7	4.4	0.00
315.	85.	65.	43.2	585.	7.5	4.4	0.00
316.	83.	65.	41.7	585.	7.5	4.4	0.00
317.	83.	65.	41.8	585.	7.5	4.4	0.00
318.	83.	63.	42.0	585.	8.1	4.4	0.00
319.	81.	61.	43.6	585.	7.0	4.4	0.00
320.	83.	61.	44.2	585.	7.6	4.4	0.00
321.	85.	60.	44.4	585.	7.1	4.4	0.00
322.	84.	64.	42.3	585.	8.6	4.4	0.00
323.	84.	64.	42.0	585.	7.5	4.4	0.00
324.	84.	62.	44.6	585.	7.5	4.4	0.00
325.	82.	62.	43.9	585.	7.3	4.4	0.00
326.	83.	62.	42.0	585.	7.7	4.4	0.00
327.	84.	63.	40.9	585.	7.5	4.4	0.10
328.	85.	62.	41.8	585.	7.8	4.4	0.30
329.	83.	63.	41.4	585.	7.2	4.4	0.00
330.	82.	61.	44.0	585.	6.7	4.4	0.00
331.	80.	61.	41.5	585.	6.6	4.4	0.00
332.	85.	63.	37.4	585.	7.9	4.4	0.00
333.	85.	63.	40.7	585.	7.0	4.4	0.00
334.	85.	62.	42.2	585.	6.7	4.4	0.00
335.	80.	61.	43.6	585.	7.3	4.4	0.00
336.	77.	59.	44.0	464.	7.7	3.7	0.00
337.	81.	59.	41.4	464.	7.5	3.7	0.00
338.	82.	61.	41.2	464.	7.9	3.7	0.00
339.	80.	60.	40.3	464.	7.7	3.7	0.23
340.	82.	60.	40.2	464.	7.3	3.7	0.00
341.	77.	60.	41.0	464.	8.0	3.7	0.00
342.	79.	57.	39.3	464.	7.4	3.7	0.00
343.	77.	59.	39.5	464.	7.5	3.7	0.00
344.	74.	57.	41.7	464.	7.5	3.7	0.00
345.	75.	56.	42.2	464.	7.4	3.7	0.00
346.	75.	56.	41.9	464.	7.6	3.7	0.00
347.	78.	56.	39.7	464.	7.2	3.7	0.00

348.	78.	58.	37.2	464.	7.5	3.7	0.00
349.	76.	55.	36.3	464.	6.9	3.7	0.00
350.	77.	56.	36.1	464.	7.4	3.7	0.00
351.	76.	57.	39.4	464.	6.8	3.7	0.00
352.	74.	54.	35.8	464.	7.3	3.7	0.00
353.	70.	51.	36.0	464.	8.3	3.7	0.00
354.	71.	51.	34.9	464.	8.1	3.7	0.00
355.	74.	54.	36.7	464.	8.0	3.7	0.00
356.	69.	53.	35.4	464.	8.2	3.7	0.00
357.	72.	53.	33.3	464.	8.3	3.7	0.00
358.	74.	51.	33.9	464.	7.7	3.7	0.00
359.	71.	51.	32.5	464.	6.6	3.7	0.00
360.	75.	52.	29.9	464.	7.2	3.7	0.00
361.	76.	52.	30.2	464.	6.4	3.7	0.00
362.	75.	56.	32.7	464.	8.4	3.7	0.00
363.	71.	54.	32.5	464.	7.3	3.7	0.00
364.	72.	52.	35.7	464.	8.3	3.7	0.00
365.	74.	51.	31.5	464.	6.6	3.7	0.00

Potential Evaporation Values (no plants):

DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO
1	0.5270	2	0.4832	3	0.4842	4	0.4624	5	0.4253
6	0.5017	7	0.4211	8	0.4783	9	0.4413	10	0.4826
11	0.4790	12	0.4774	13	0.4760	14	0.4779	15	0.4474
16	0.4682	17	0.4267	18	0.4468	19	0.4719	20	0.4377
21	0.4516	22	0.3510	23	0.3422	24	0.3741	25	0.3726
26	0.3550	27	0.3560	28	0.3640	29	0.3173	30	0.3591
31	0.3470	32	0.3706	33	0.2802	34	0.3064	35	0.2760
36	0.2863	37	0.3040	38	0.3427	39	0.2710	40	0.2513
41	0.2308	42	0.1991	43	0.2031	44	0.2051	45	0.2259
46	0.2317	47	0.2220	48	0.2564	49	0.2296	50	0.2461
51	0.2961	52	0.2235	53	0.2153	54	0.2324	55	0.2286
56	0.1819	57	0.2499	58	0.2116	59	0.2053	60	0.2047
61	0.1647	62	0.1767	63	0.1766	64	0.1763	65	0.1583
66	0.0760	67	0.1295	68	0.1395	69	0.1403	70	0.1389
71	0.1424	72	0.1944	73	0.1366	74	0.1531	75	0.1807
76	0.1721	77	0.1758	78	0.1600	79	0.1949	80	0.1609
81	0.1869	82	0.1469	83	0.1493	84	0.1636	85	0.1263
86	0.1811	87	0.1873	88	0.1497	89	0.1623	90	0.1444
91	0.1283	92	0.1449	93	0.1815	94	0.2010	95	0.1948
96	0.1843	97	0.1788	98	0.1925	99	0.1778	100	0.1966
101	0.1817	102	0.1810	103	0.1842	104	0.1924	105	0.1807
106	0.1725	107	0.1845	108	0.1947	109	0.1929	110	0.2112
111	0.1884	112	0.1843	113	0.1929	114	0.1999	115	0.1966
116	0.2080	117	0.1978	118	0.2551	119	0.2002	120	0.2192
121	0.2023	122	0.2203	123	0.1773	124	0.2081	125	0.1853
126	0.2051	127	0.2396	128	0.2397	129	0.2231	130	0.2153
131	0.2241	132	0.2256	133	0.2553	134	0.2336	135	0.2506
136	0.2211	137	0.2218	138	0.2733	139	0.2433	140	0.2662

141	0.2441	142	0.2514	143	0.2427	144	0.3002	145	0.2692
146	0.2504	147	0.3018	148	0.2498	149	0.2260	150	0.1934
151	0.2446	152	0.3160	153	0.3171	154	0.3145	155	0.3548
156	0.3855	157	0.4140	158	0.4007	159	0.3456	160	0.3866
161	0.4031	162	0.3994	163	0.4254	164	0.4312	165	0.4609
166	0.4891	167	0.4504	168	0.4148	169	0.4238	170	0.4315
171	0.4295	172	0.4758	173	0.4659	174	0.5056	175	0.4561
176	0.4684	177	0.4575	178	0.5018	179	0.4844	180	0.4559
181	0.4726	182	0.5457	183	0.5399	184	0.5836	185	0.5432
186	0.5509	187	0.5672	188	0.4702	189	0.4811	190	0.5544
191	0.5404	192	0.5388	193	0.5017	194	0.4658	195	0.6027
196	0.6360	197	0.6072	198	0.5540	199	0.6623	200	0.6093
201	0.5973	202	0.6433	203	0.6815	204	0.6719	205	0.5801
206	0.5525	207	0.5599	208	0.6503	209	0.6406	210	0.6970
211	0.6397	212	0.6577	213	0.7590	214	0.5975	215	0.6847
216	0.6594	217	0.7128	218	0.7327	219	0.7645	220	0.7353
221	0.7643	222	0.8078	223	0.7889	224	0.7643	225	0.7704
226	0.7788	227	0.7529	228	0.8583	229	0.7933	230	0.8048
231	0.7968	232	0.8533	233	0.8212	234	0.7038	235	0.6598
236	0.7450	237	0.7544	238	0.8505	239	0.8570	240	0.8586
241	0.8712	242	0.9024	243	0.8843	244	0.9897	245	0.9245
246	0.9585	247	0.7983	248	0.8131	249	0.8219	250	0.7913
251	0.7144	252	0.7922	253	0.8427	254	0.8833	255	0.8724
256	0.9015	257	0.9465	258	0.9262	259	0.9254	260	0.9685
261	0.9089	262	0.9194	263	1.0207	264	0.9695	265	0.9800
266	1.0010	267	0.9791	268	0.9377	269	0.9047	270	0.9066
271	0.9239	272	0.9477	273	0.8687	274	0.9685	275	1.0191
276	0.9883	277	0.9149	278	1.0040	279	0.9099	280	0.9341
281	0.9132	282	0.8703	283	0.8540	284	0.9704	285	0.9614
286	0.9781	287	0.9105	288	0.8972	289	0.9235	290	0.8710
291	0.9073	292	0.9054	293	0.8799	294	0.9738	295	0.8405
296	0.8101	297	0.8694	298	0.8520	299	0.8398	300	0.8028
301	0.7836	302	0.8850	303	0.7938	304	1.0207	305	0.8062
306	0.7289	307	0.7214	308	0.7411	309	0.6697	310	0.7131
311	0.8649	312	0.7493	313	0.8155	314	0.7743	315	0.8014
316	0.7983	317	0.7997	318	0.8068	319	0.7163	320	0.7561
321	0.7423	322	0.8547	323	0.7984	324	0.7583	325	0.7420
326	0.7874	327	0.7961	328	0.8068	329	0.7731	330	0.7122
331	0.7096	332	0.8489	333	0.7841	334	0.7486	335	0.7290
336	0.5972	337	0.6403	338	0.6781	339	0.6557	340	0.6537
341	0.6449	342	0.6268	343	0.6267	344	0.5655	345	0.5600
346	0.5766	347	0.6033	348	0.6419	349	0.5884	350	0.6275
351	0.5712	352	0.5936	353	0.5752	354	0.5883	355	0.6085
356	0.5866	357	0.6293	358	0.5966	359	0.5449	360	0.6155
361	0.5817	362	0.6749	363	0.5915	364	0.5959	365	0.5631

Totals: PEVAPO = 190.4435

Precipitation/irrigation parameters:

IRAIN = 1: precipitation data provided

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
9	0.000	1.3000	1	1.000	3
	13.000	0.0007			
	14.000	0.0000			
10	0.000	0.8000	1	1.000	3
	8.000	0.0905			
	9.000	0.0000			
11	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
12	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
14	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
17	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
18	0.000	1.6000	1	1.000	3
	16.000	0.0308			
	17.000	0.0000			
19	0.000	1.4000	1	1.000	3
	14.000	0.0007			
	15.000	0.0000			
20	0.000	0.0300	1	1.000	2
	1.000	0.0000			
28	0.000	0.0800	1	1.000	2
	1.000	0.0000			
29	0.000	1.5000	1	1.000	3
	15.000	0.0708			
	16.000	0.0000			
38	0.000	0.0800	1	1.000	2
	1.000	0.0000			
44	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
45	0.000	2.0000	1	1.000	3
	20.000	0.0110			
	21.000	0.0000			
46	0.000	0.4000	1	1.000	3
	4.000	0.0102			
	5.000	0.0000			
48	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
49	0.000	0.4000	1	1.000	3
	4.000	0.0302			

	5.000	0.0000			
50	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
51	0.000	1.2000	1	1.000	3
	12.000	0.0206			
	13.000	0.0000			
52	0.000	1.6000	1	1.000	3
	16.000	0.0809			
	17.000	0.0000			
53	0.000	0.0500	1	1.000	2
	1.000	0.0000			
62	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
65	0.000	0.6000	1	1.000	3
	6.000	0.0103			
	7.000	0.0000			
66	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
70	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
71	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
81	0.000	0.0500	1	1.000	2
	1.000	0.0000			
82	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
83	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
84	0.000	0.9000	1	1.000	3
	9.000	0.0905			
	10.000	0.0000			
87	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
92	0.000	1.1000	1	1.000	3
	11.000	0.0906			
	12.000	0.0000			
111	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
112	0.000	0.0500	1	1.000	2
	1.000	0.0000			
113	0.000	0.0800	1	1.000	2
	1.000	0.0000			
114	0.000	0.2000	1	1.000	3

	2.000	0.0001			
	3.000	0.0000			
115	0.000	0.0300	1	1.000	2
	1.000	0.0000			
119	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
124	0.000	0.0800	1	1.000	2
	1.000	0.0000			
125	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
126	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
127	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
128	0.000	0.0500	1	1.000	2
	1.000	0.0000			
130	0.000	0.0300	1	1.000	2
	1.000	0.0000			
131	0.000	1.0000	1	1.000	3
	10.000	0.0705			
	11.000	0.0000			
134	0.000	0.0500	1	1.000	2
	1.000	0.0000			
135	0.000	0.0500	1	1.000	2
	1.000	0.0000			
136	0.000	0.0300	1	1.000	2
	1.000	0.0000			
137	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
181	0.000	0.0500	1	1.000	2
	1.000	0.0000			
182	0.000	0.0300	1	1.000	2
	1.000	0.0000			
188	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
193	0.000	0.0800	1	1.000	2
	1.000	0.0000			
206	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
207	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
211	0.000	0.0800	1	1.000	2
	1.000	0.0000			
213	0.000	0.0300	1	1.000	2

	1.000	0.0000			
214	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
217	0.000	0.0300	1	1.000	2
	1.000	0.0000			
224	0.000	0.0500	1	1.000	2
	1.000	0.0000			
225	0.000	0.1000	1	1.000	3
	1.000	0.0301			
	2.000	0.0000			
226	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
236	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
249	0.000	0.0300	1	1.000	2
	1.000	0.0000			
250	0.000	0.0300	1	1.000	2
	1.000	0.0000			
253	0.000	1.0000	1	1.000	3
	10.000	0.0405			
	11.000	0.0000			
254	0.000	1.3000	1	1.000	3
	13.000	0.0507			
	14.000	0.0000			
270	0.000	0.1000	1	1.000	3
	1.000	0.0001			
	2.000	0.0000			
285	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
286	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
287	0.000	0.7000	1	1.000	3
	7.000	0.0904			
	8.000	0.0000			
288	0.000	0.4000	1	1.000	3
	4.000	0.0602			
	5.000	0.0000			
299	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
300	0.000	0.0300	1	1.000	2
	1.000	0.0000			
327	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
328	0.000	0.7000	1	1.000	3
	7.000	0.0604			

```
        8.000   0.0000
   339  0.000   0.5000        1          1.000          3
        5.000   0.0803
        6.000   0.0000


   NWATER (number of days of rain/irrigation) = 77

   Total Water Applied (cm) =  3.323688E+01
-------------------------------------------------------------------------------
 Program DATAINH terminated normally.
```

UNSAT-H Version 3.01
INITIAL CONDITIONS

Input File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil_9CT\
Results File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil_9CT\
Date of Run: 28 Feb 2013
Time of Run: 08:16:03.53
Title:
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	2.000E-02	1.464E+06	0.0847	283.00	2	5.000E-02	1.462E+06	0.0847	283.00
3	1.000E-01	1.459E+06	0.0847	283.00	4	2.000E-01	1.453E+06	0.0847	283.00
5	3.000E-01	1.447E+06	0.0848	283.00	6	4.000E-01	1.441E+06	0.0848	283.00
7	5.000E-01	1.435E+06	0.0848	283.00	8	6.000E-01	1.429E+06	0.0849	283.00
9	7.000E-01	1.423E+06	0.0849	283.00	10	8.000E-01	1.417E+06	0.0849	283.00
11	9.000E-01	1.411E+06	0.0850	283.00	12	1.000E+00	1.406E+06	0.0850	283.00
13	2.000E+00	1.349E+06	0.0854	283.00	14	3.000E+00	1.295E+06	0.0858	283.00
15	4.000E+00	1.245E+06	0.0861	283.00	16	5.000E+00	1.198E+06	0.0865	283.00
17	6.000E+00	1.155E+06	0.0868	283.00	18	7.000E+00	1.114E+06	0.0871	283.00
19	8.000E+00	1.076E+06	0.0875	283.00	20	9.000E+00	1.040E+06	0.0878	283.00
21	1.000E+01	1.007E+06	0.0881	283.00	22	1.100E+01	9.756E+05	0.0884	283.00
23	1.200E+01	9.461E+05	0.0887	283.00	24	1.300E+01	9.182E+05	0.0889	283.00
25	1.400E+01	8.918E+05	0.0892	283.00	26	1.500E+01	8.667E+05	0.0895	283.00
27	1.600E+01	8.428E+05	0.0897	283.00	28	1.700E+01	8.200E+05	0.0900	283.00
29	1.800E+01	7.981E+05	0.0903	283.00	30	1.900E+01	7.771E+05	0.0905	283.00
31	2.000E+01	7.569E+05	0.0908	283.00	32	2.200E+01	7.187E+05	0.0913	283.00
33	2.400E+01	6.812E+05	0.0403	283.00	34	2.600E+01	6.411E+05	0.0407	283.00
35	2.800E+01	6.049E+05	0.0412	283.00	36	3.000E+01	5.723E+05	0.0416	283.00
37	3.200E+01	5.428E+05	0.0420	283.00	38	3.400E+01	5.162E+05	0.0424	283.00
39	3.600E+01	4.920E+05	0.0427	283.00	40	3.800E+01	4.701E+05	0.0431	283.00
41	4.000E+01	4.502E+05	0.0435	283.00	42	4.200E+01	4.319E+05	0.0438	283.00
43	4.400E+01	4.153E+05	0.0441	283.00	44	4.600E+01	3.975E+05	0.0750	283.00
45	4.800E+01	3.718E+05	0.0755	283.00	46	5.000E+01	3.488E+05	0.0760	283.00
47	5.200E+01	3.281E+05	0.0764	283.00	48	5.400E+01	3.093E+05	0.0769	283.00
49	5.600E+01	2.923E+05	0.0773	283.00	50	5.800E+01	2.768E+05	0.0777	283.00
51	6.000E+01	2.626E+05	0.0781	283.00	52	6.200E+01	2.497E+05	0.0785	283.00
53	6.400E+01	2.378E+05	0.0789	283.00	54	6.600E+01	2.268E+05	0.0792	283.00
55	6.800E+01	2.167E+05	0.0796	283.00	56	7.000E+01	2.074E+05	0.0799	283.00
57	7.200E+01	1.987E+05	0.0802	283.00	58	7.400E+01	1.907E+05	0.0806	283.00
59	7.600E+01	1.832E+05	0.0809	283.00	60	7.800E+01	1.762E+05	0.0812	283.00
61	8.000E+01	1.697E+05	0.0815	283.00	62	8.200E+01	1.636E+05	0.0818	283.00
63	8.400E+01	1.579E+05	0.0820	283.00	64	8.600E+01	1.525E+05	0.0823	283.00
65	8.800E+01	1.475E+05	0.0826	283.00	66	9.000E+01	1.427E+05	0.0828	283.00
67	9.200E+01	1.383E+05	0.0831	283.00	68	9.400E+01	1.340E+05	0.0833	283.00
69	9.600E+01	1.300E+05	0.0836	283.00	70	9.800E+01	1.263E+05	0.0838	283.00
71	1.000E+02	1.227E+05	0.0841	283.00	72	1.050E+02	1.144E+05	0.0846	283.00
73	1.100E+02	1.072E+05	0.0852	283.00	74	1.150E+02	1.007E+05	0.0857	283.00
75	1.200E+02	9.505E+04	0.0862	283.00	76	1.250E+02	8.998E+04	0.0866	283.00
77	1.300E+02	8.544E+04	0.0871	283.00	78	1.350E+02	8.138E+04	0.0875	283.00
79	1.400E+02	7.773E+04	0.0879	283.00	80	1.450E+02	7.445E+04	0.0882	283.00
81	1.500E+02	7.148E+04	0.0886	283.00	82	1.550E+02	6.880E+04	0.0889	283.00
83	1.600E+02	6.638E+04	0.0892	283.00	84	1.650E+02	6.418E+04	0.0895	283.00
85	1.700E+02	6.218E+04	0.0898	283.00	86	1.750E+02	6.037E+04	0.0900	283.00
87	1.800E+02	5.872E+04	0.0903	283.00	88	1.850E+02	5.722E+04	0.0905	283.00
89	1.900E+02	5.586E+04	0.0907	283.00	90	1.950E+02	5.461E+04	0.0909	283.00
91	2.000E+02	5.348E+04	0.0911	283.00	92	2.050E+02	5.245E+04	0.0913	283.00
93	2.100E+02	5.151E+04	0.0914	283.00	94	2.150E+02	5.065E+04	0.0916	283.00

```
   95 2.200E+02 4.988E+04 0.0917 283.00    96 2.250E+02 4.917E+04 0.0918 283.00
   97 2.300E+02 4.853E+04 0.0919 283.00    98 2.350E+02 4.796E+04 0.0920 283.00
   99 2.400E+02 4.744E+04 0.0921 283.00   100 2.450E+02 4.698E+04 0.0922 283.00
  101 2.500E+02 4.656E+04 0.0923 283.00   102 2.550E+02 4.620E+04 0.0924 283.00
  103 2.600E+02 4.588E+04 0.0924 283.00   104 2.650E+02 4.560E+04 0.0925 283.00
  105 2.700E+02 4.536E+04 0.0925 283.00   106 2.750E+02 4.517E+04 0.0926 283.00
  107 2.800E+02 4.501E+04 0.0926 283.00   108 2.850E+02 4.488E+04 0.0926 283.00
  109 2.900E+02 4.480E+04 0.0927 283.00   110 2.950E+02 4.474E+04 0.0927 283.00
  111 3.000E+02 4.473E+04 0.0927 283.00

 Initial Water Storage =  25.4038 cm

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day =   1, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08496     0.09044     0.08113     0.09088     0.09266
 Head (cm)         = 1.41507E+06 7.83928E+05 1.77249E+05 5.47296E+04 4.47818E+04
 LiqWater Flow (cm)=-8.66231E-03-8.44331E-03-4.49128E-03-1.40004E-03 7.94218E-06
 IsoVapor Flow (cm)=-4.53009E-04-3.15777E-04-7.16439E-05-5.21218E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  25.4038+ 0.0000+ 0.0000 - 0.0091- 0.0000-  0.0000 =   25.3946 vs.   25.3946

 Mass Balance =  3.3122E-07 cm;  Time step attempts =   42 and successes =   36
   Evaporation:  Potential =  0.5270 cm, Actual =  0.0091 cm
 RHMEAN = 34.6 %;  TMEAN = 290.4 K;  HDRY =  1.4151E+06 cm;  DAYUBC =    29

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08625     0.09052     0.08115     0.09083     0.09260
 Head (cm)         = 1.22671E+06 7.77394E+05 1.76696E+05 5.50703E+04 4.50912E+04
 LiqWater Flow (cm)=-1.74554E-03-9.03989E-03-4.42186E-03-1.39212E-03 7.87193E-06
 IsoVapor Flow (cm)=-8.67125E-05-3.35953E-04-7.02987E-05-5.22446E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  25.3997+ 0.0000+ 0.0000 - 0.0018- 0.0000-  0.0000 =   25.3979 vs.   25.3979

 Mass Balance = -3.0402E-07 cm;  Time step attempts =   61 and successes =   43
   Evaporation:  Potential =  0.5959 cm, Actual =  0.0018 cm
 RHMEAN = 39.8 %;  TMEAN = 289.6 K;  HDRY =  1.2267E+06 cm;  DAYUBC =    12
1

--------------------------------------------------------------------------------
                              UNSAT-H Version 3.01
                               SIMULATION SUMMARY

 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio
--------------------------------------------------------------------------------

 Transpiration Scheme is:           =    0
 Potential Evapotranspiration       =  1.9005E+02     [cm]
```

```
Potential Transpiration            =  0.0000E+00     [cm]
Actual Transpiration               =  0.0000E+00     [cm]
Potential Evaporation              =  1.9005E+02     [cm]
Actual Evaporation                 =  3.3240E+01     [cm]
Evaporation during Growth          =  0.0000E+00     [cm]
Total Runoff                       =  0.0000E+00     [cm]
Total Infiltration                 =  3.3237E+01     [cm]
Total Basal Liquid Flux (drainage) =  2.7820E-03     [cm]
Total Basal Vapor Flux (temp-grad) =  0.0000E+00     [cm]
Total Applied Water                =  3.3237E+01     [cm]
Actual Rainfall                    =  3.3237E+01     [cm]
Actual Irrigation                  =  0.0000E+00     [cm]
Total Final Moisture Storage       =  2.5398E+01     [cm]
Mass Balance Error                 =  1.3178E-04     [cm]
Total Successful Time Steps        =    169478
Total Attempted Time Steps         =    187092
Total Time Step Reductions (DHMAX) =         0
Total Changes in Surface Boundary  =     19962
Total Time Actually Simulated      =  3.6500E+02     [days]
```

Total liquid water flow (cm) across different depths at the end of 3.6500E+02 days:

DEPTH	FLOW	DEPTH	FLOW	DEPTH	FLOW
0.020	-2.9157E-03	0.035	7.0217E-01	0.075	6.8945E-01
0.150	6.6430E-01	0.250	6.2944E-01	0.350	5.9746E-01
0.450	5.6885E-01	0.550	5.4330E-01	0.650	5.2036E-01
0.750	4.9960E-01	0.850	4.8065E-01	0.950	4.6324E-01
1.500	4.0422E-01	2.500	3.1776E-01	3.500	2.6236E-01
4.500	2.2311E-01	5.500	1.9337E-01	6.500	1.6986E-01
7.500	1.5074E-01	8.500	1.3484E-01	9.500	1.2139E-01
10.500	1.0987E-01	11.500	9.9898E-02	12.500	9.1185E-02
13.500	8.3517E-02	14.500	7.6726E-02	15.500	7.0678E-02
16.500	6.5263E-02	17.500	6.0395E-02	18.500	5.6001E-02
19.500	5.2023E-02	21.000	4.7224E-02	23.000	4.7287E-02
25.000	5.7865E-02	27.000	5.0529E-02	29.000	4.4216E-02
31.000	3.8750E-02	33.000	3.3998E-02	35.000	2.9865E-02
37.000	2.6275E-02	39.000	2.3171E-02	41.000	2.0507E-02
43.000	1.8243E-02	45.000	1.8317E-02	47.000	2.5983E-02
49.000	2.2158E-02	51.000	1.8837E-02	53.000	1.5940E-02
55.000	1.3398E-02	57.000	1.1157E-02	59.000	9.1715E-03
61.000	7.4052E-03	63.000	5.8278E-03	65.000	4.4150E-03
67.000	3.1462E-03	69.000	2.0045E-03	71.000	9.7579E-04
73.000	4.7888E-05	75.000	-7.8958E-04	77.000	-1.5457E-03
79.000	-2.2283E-03	81.000	-2.8445E-03	83.000	-3.4005E-03
85.000	-3.9020E-03	87.000	-4.3538E-03	89.000	-4.7606E-03
91.000	-5.1264E-03	93.000	-5.4547E-03	95.000	-5.7489E-03
97.000	-6.0118E-03	99.000	-6.2461E-03	102.500	-6.5550E-03
107.500	-6.9512E-03	112.500	-7.2290E-03	117.500	-7.4097E-03
122.500	-7.5096E-03	127.500	-7.5416E-03	132.500	-7.5163E-03
137.500	-7.4421E-03	142.500	-7.3260E-03	147.500	-7.1739E-03
152.500	-6.9908E-03	157.500	-6.7809E-03	162.500	-6.5479E-03
167.500	-6.2950E-03	172.500	-6.0250E-03	177.500	-5.7403E-03
182.500	-5.4430E-03	187.500	-5.1350E-03	192.500	-4.8177E-03
197.500	-4.4927E-03	202.500	-4.1612E-03	207.500	-3.8241E-03
212.500	-3.4824E-03	217.500	-3.1368E-03	222.500	-2.7880E-03
227.500	-2.4365E-03	232.500	-2.0829E-03	237.500	-1.7274E-03
242.500	-1.3705E-03	247.500	-1.0123E-03	252.500	-6.5323E-04
257.500	-2.9331E-04	262.500	6.7248E-05	267.500	4.2832E-04
272.500	7.8981E-04	277.500	1.1516E-03	282.500	1.5137E-03
287.500	1.8759E-03	292.500	2.2383E-03	297.500	2.6007E-03

300.000 2.7820E-03

```
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980
avg precipitation 9in soil 15in cuttings
0,1, IPLANT,NGRAV
365,1,366, IFDEND,IDTBEG,IDTEND
2009, 100, 0, 2, 100, IYS,NYEARS,ISTEAD,IFLIST,NFLIST
0,24.0, NPRINT,STOPHR
0,10,0,0.001, ISMETH,INMAX,ISWDIF,DMAXBA
1.0,1.0E-20,0, DELMAX,DELMIN,OUTTIM
2.0,1.0E2,0.0,0.0,0.0, RFACT,RAINIF,DHTOL,DHMAX,DHFACT
4,1,0.3, KOPT,KEST,WTF
0,1,2,1, ITOPBC,IEVOPT,NFHOUR,LOWER
1.0,1.0E7,0.0,0.48, HIRRI,HDRY,HTOP,RHA
1,0,1, IETOPT,ICLOUD,ISHOPT
1,0.1, IRAIN,HPR
0,0.0,0.0,0.0,0, IHYS,AIRTOL,HYSTOL,HYSMXH,HYFILE
0,0,0.0, IHEAT,ICONVH,DMAXHE
0,0.0,0.0,0.0, UPPERH,TSMEAN,TSAMP,QHCTOP
0,0.0,0.0, LOWERH QHLEAK, TGRAD
1,0.66,283.0,0.27, IVAPOR,TORT,TSOIL,VAPDIF
3,111, MATN,NPT
1,0.02, 1,0.05, 1,0.1, 1,0.2
1,0.3, 1,0.4, 1,0.5, 1,0.6
1,0.7, 1,0.8, 1,0.9, 1,1.0
1,2.0, 1,3.0, 1,4.0, 1,5.0
1,6.0, 1,7.0, 1,8.0, 1,9.0
1,10.0, 1,11.0, 1,12.0, 1,13.0
1,14.0, 1,15.0, 1,16.0, 1,17.0
1,18.0, 1,19.0, 1,20.0, 1,22.0
2,24.0, 2,26.0, 2,28.0, 2,30.0
2,32.0, 2,34.0, 2,36.0, 2,38.0
2,40.0, 2,42.0, 2,44.0, 2,46.0
2,48.0, 2,50.0, 2,52.0, 2,54.0
2,56.0, 2,58.0, 2,60.0, 3,62.0
3,64.0, 3,66.0, 3,68.0, 3,70.0
3,72.0, 3,74.0, 3,76.0, 3,78.0
3,80.0, 3,82.0, 3,84.0, 3,86.0
3,88.0, 3,90.0, 3,92.0, 3,94.0
3,96.0, 3,98.0, 3,100.0, 3,105.0
3,110.0, 3,115.0, 3,120.0, 3,125.0
3,130.0, 3,135.0, 3,140.0, 3,145.0
3,150.0, 3,155.0, 3,160.0, 3,165.0
3,170.0, 3,175.0, 3,180.0, 3,185.0
3,190.0, 3,195.0, 3,200.0, 3,205.0
3,210.0, 3,215.0, 3,220.0, 3,225.0
3,230.0, 3,235.0, 3,240.0, 3,245.0
3,250.0, 3,255.0, 3,260.0, 3,265.0
3,270.0, 3,275.0, 3,280.0, 3,285.0
3,290.0, 3,295.0, 3,300.0
Daneros Soil van Genuchten parameters
0.34842, 3.5692E-07, 0.43868, 1.1058, THET,THTR,VGA,VGN
Daneros Soil van Genuchten hydraulic conductivity
1.0, 3.492, 0.43868, 1.1058, 2.0, RKMOD,SK,VGA,VGN,EPIT
```

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Daneros Vent Cuttings van Genuchten parameters
0.37476, 3.7291E-07, 0.27231, 1.1839, THET,THTR,VGA,VGN
Daneros Vent Cuttings van Genuchten hydraulic conductivity
1.0, 15.48, 0.27231, 1.1839, 2.0, RKMOD,SK,VGA,VGN,EPIT
Daneros Development Rock van Genuchten parameters
0.31313, 2.1323E-06, 6.6591, 1.0966, THET,THTR,VGA,VGN
Daneros Devlopment Rock van Genuchten hydraulic conductivity
1.0, 43.2, 6.6591, 1.0966, 2.0, RKMOD,SK,VGA,VGN,EPIT
0, NDAY
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
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1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6,1.5E6
1.5E6,1.5E6,1.5E6
0.4,2171.7,2.0,852.0, ALBEDO,ALT,ZU,PMB
2009_BL_85R.CSV
2010_BL_85R.CSV
2011_BL_85R.CSV
2012_BL_85L.CSV
2013_BL_85R.CSV
2014_BL_85R.CSV
2015_BL_85R.CSV
2016_BL_85L.CSV
2017_BL_85R.CSV
2018_BL_85R.CSV
2019_BL_85R.CSV
2020_BL_85L.CSV
2021_BL_85R.CSV
2022_BL_85R.CSV
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2023_BL_85R.CSV
2024_BL_85L.CSV
2025_BL_85R.CSV
2026_BL_85R.CSV
2027_BL_85R.CSV
2028_BL_85L.CSV
2029_BL_85R.CSV
2030_BL_85R.CSV
2031_BL_85R.CSV
2032_BL_85L.CSV
2033_BL_85R.CSV
2034_BL_85R.CSV
2035_BL_85R.CSV
2036_BL_85L.CSV
2037_BL_85R.CSV
2038_BL_85R.CSV
2039_BL_85R.CSV
2040_BL_85L.CSV
2041_BL_85R.CSV
2042_BL_85R.CSV
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2049_BL_85R.CSV
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2068_BL_85L.CSV
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2072_BL_85L.CSV
2073_BL_85R.CSV
2074_BL_85R.CSV

2075_BL_85R.CSV
2076_BL_85L.CSV
2077_BL_85R.CSV
2078_BL_85R.CSV
2079_BL_85R.CSV
2080_BL_85L.CSV
2081_BL_85R.CSV
2082_BL_85R.CSV
2083_BL_85R.CSV
2084_BL_85L.CSV
2085_BL_85R.CSV
2086_BL_85R.CSV
2087_BL_85R.CSV
2088_BL_85L.CSV
2089_BL_85R.CSV
2090_BL_85R.CSV
2091_BL_85R.CSV
2092_BL_85L.CSV
2093_BL_85R.CSV
2094_BL_85R.CSV
2095_BL_85R.CSV
2096_BL_85L.CSV
2097_BL_85R.CSV
2098_BL_85R.CSV
2099_BL_85R.CSV
2100_BL_85L.CSV
2101_BL_85R.CSV
2102_BL_85R.CSV
2103_BL_85R.CSV
2104_BL_85L.CSV
2105_BL_85R.CSV
2106_BL_85R.CSV
2107_BL_85R.CSV
2108_BL_85L.CSV

```
-------------------------------------------------------------------------------
!                              Program DATAINH                                !
!                                Version 3.01                                 !
-------------------------------------------------------------------------------
 Input Filename: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil
 Date Processed: 28 Feb 2013
 Time Processed: 14:30:48.61
 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

 General options:

 IPLANT =    0        NGRAV =    1
 IFDEND =  365       IDTBEG =    1       IDTEND =  366
    IYS = 2009       NYEARS =  100       ISTEAD =    0
 IFLIST =    2       NFLIST =  100
 NPRINT =    0       STOPHR = 2.400E+01
 ISMETH =    0       INMAX  =   10       ISWDIF =    0       DMAXBA = 0.100E-02
 DELMAX = 1.000E+00  DELMIN = 1.000E-20  OUTTIM = 1.000E+00
  RFACT = 2.000E+00  RAINIF = 1.000E+02   DHTOL = 0.000E+00
  DHMAX = 0.000E+00  DHFACT = 0.000E+00
   KOPT =    4         KEST =    1          WTF = 3.000E-01
 ITOPBC =    0       IEVOPT =    1       NFHOUR =    2        LOWER =    1
  HIRRI = 1.000E+00    HDRY = 1.000E+07    HTOP = 0.000E+00     RHA = 4.800E-01
 IETOPT =    1       ICLOUD =    0       ISHOPT =    1
  IRAIN =    1          HPR = 1.000E-01

 Hysteresis options:

   IHYS =    0       AIRTOL = 0.000E+00  HYSTOL = 0.000E+00  HYSMXH = 0.000E+00

 Heat flow options:

  IHEAT =    0       ICONVH =    0       DMAXHE = 0.000E+00
 UPPERH =    0       TSMEAN = 0.000E+00   TSAMP = 0.000E+00  QHCTOP = 0.000E+00
 LOWERH =    0       QHLEAK = 0.000E+00   TGRAD = 0.000E+00

 Vapor flow options:

 IVAPOR =    1         TORT = 6.600E-01   TSOIL = 2.830E+02  VAPDIF = 2.700E-01

 Grid options:

   MATN =    3          NPT =  111

 Soil hydraulic properties:

   KOPT = 4: van Genuchten hydraulic functions

   Material No.    1
   THETA = f(H), Daneros Soil van Genuchten parameters
               THET = 0.34842        THTR = 3.56920E-07   ALPHA = 0.43868
```

```
                N =  1.1058           M = 9.56773E-02
  K =f(H), Daneros Soil van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  3.4920           A = 0.43868
                N =  1.1058           M = 9.56773E-02    EPIT =  2.0000

  Material No.    2
  THETA = f(H), Daneros Vent Cuttings van Genuchten parameters
             THET = 0.37476        THTR = 3.72910E-07   ALPHA = 0.27231
                N =  1.1839           M = 0.15533
  K =f(H), Daneros Vent Cuttings van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  15.480           A = 0.27231
                N =  1.1839           M = 0.15533        EPIT =  2.0000

  Material No.    3
  THETA = f(H), Daneros Development Rock van Genuchten parameters
             THET = 0.31313        THTR = 2.13230E-06   ALPHA =  6.6591
                N =  1.0966           M = 8.80905E-02
  K =f(H), Daneros Devlopment Rock van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  43.200           A =  6.6591
                N =  1.0966           M = 8.80905E-02    EPIT =  2.0000
-------------------------------------------------------------------------------
 Surface node bounding values:

  HIRRI = 1.000E+00   THETA = 3.373E-01   K = 3.687E-01   C =-1.023E-02
   HDRY = 1.000E+07   THETA = 6.908E-02   K = 5.936E-10   C =-7.309E-10
-------------------------------------------------------------------------------
 Initial Conditions:

  NDAY =   0
```

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.02	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
2	0.05	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
3	0.10	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
4	0.20	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
5	0.30	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
6	0.40	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
7	0.50	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
8	0.60	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
9	0.70	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
10	0.80	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
11	0.90	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
12	1.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
13	2.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
14	3.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
15	4.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
16	5.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
17	6.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
18	7.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
19	8.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
20	9.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0

21	10.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
22	11.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
23	12.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
24	13.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
25	14.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
26	15.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
27	16.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
28	17.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
29	18.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
30	19.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
31	20.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
32	22.00	1	1.5000E+06	7.2266E-09	-5.9556E-09	0.0844	283.0
33	24.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
34	26.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
35	28.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
36	30.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
37	32.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
38	34.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
39	36.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
40	38.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
41	40.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
42	42.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
43	44.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
44	46.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
45	48.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
46	50.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
47	52.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
48	54.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
49	56.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
50	58.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
51	60.00	2	1.5000E+06	4.7229E-09	-4.2693E-09	0.0348	283.0
52	62.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
53	64.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
54	66.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
55	68.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
56	70.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
57	72.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
58	74.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
59	76.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
60	78.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
61	80.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
62	82.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
63	84.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
64	86.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
65	88.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
66	90.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
67	92.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
68	94.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
69	96.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
70	98.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
71	100.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
72	105.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0

73	110.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
74	115.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
75	120.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
76	125.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
77	130.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
78	135.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
79	140.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
80	145.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
81	150.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
82	155.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
83	160.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
84	165.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
85	170.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
86	175.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
87	180.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
88	185.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
89	190.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
90	195.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
91	200.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
92	205.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
93	210.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
94	215.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
95	220.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
96	225.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
97	230.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
98	235.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
99	240.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
100	245.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
101	250.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
102	255.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
103	260.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
104	265.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
105	270.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
106	275.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
107	280.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
108	285.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
109	290.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
110	295.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0
111	300.00	3	1.5000E+06	3.5682E-09	-4.2506E-09	0.0660	283.0

Total Initial Storage (cm) = 1.903931E+01

ET parameters:

NFHOUR = 2: User subroutine for hourly PET provided

0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0150	0.0440
0.0699	0.0911	0.1061	0.1139	0.1139	0.1061	0.0911	0.0699
0.0440	0.0150	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

IETOPT = 1 and IHEAT = 0:
PET calculated from meteorological data
using subroutine CALPET

```
 ALBEDO =  4.000E-01
    ALT =  2.172E+03 (m)
     ZU =  2.000E+00 (m)
    PMB =  8.520E+02 (mb)

-------------------------------------------------------------------------------
 Lower Boundary Option:

   LOWER = 1:  unit gradient
-------------------------------------------------------------------------------

 Multiyear Option
 Sim Year    PET input file name
        1    2009_BL_85R.CSV
        2    2010_BL_85R.CSV
        3    2011_BL_85R.CSV
        4    2012_BL_85L.CSV
        5    2013_BL_85R.CSV
        6    2014_BL_85R.CSV
        7    2015_BL_85R.CSV
        8    2016_BL_85L.CSV
        9    2017_BL_85R.CSV
       10    2018_BL_85R.CSV
       11    2019_BL_85R.CSV
       12    2020_BL_85L.CSV
       13    2021_BL_85R.CSV
       14    2022_BL_85R.CSV
       15    2023_BL_85R.CSV
       16    2024_BL_85L.CSV
       17    2025_BL_85R.CSV
       18    2026_BL_85R.CSV
       19    2027_BL_85R.CSV
       20    2028_BL_85L.CSV
       21    2029_BL_85R.CSV
       22    2030_BL_85R.CSV
       23    2031_BL_85R.CSV
       24    2032_BL_85L.CSV
       25    2033_BL_85R.CSV
       26    2034_BL_85R.CSV
       27    2035_BL_85R.CSV
       28    2036_BL_85L.CSV
       29    2037_BL_85R.CSV
       30    2038_BL_85R.CSV
       31    2039_BL_85R.CSV
       32    2040_BL_85L.CSV
       33    2041_BL_85R.CSV
       34    2042_BL_85R.CSV
       35    2043_BL_85R.CSV
       36    2044_BL_85L.CSV
       37    2045_BL_85R.CSV
       38    2046_BL_85R.CSV
```

39 2047_BL_85R.CSV
40 2048_BL_85L.CSV
41 2049_BL_85R.CSV
42 2050_BL_85R.CSV
43 2051_BL_85R.CSV
44 2052_BL_85L.CSV
45 2053_BL_85R.CSV
46 2054_BL_85R.CSV
47 2055_BL_85R.CSV
48 2056_BL_85L.CSV
49 2057_BL_85R.CSV
50 2058_BL_85R.CSV
51 2059_BL_85R.CSV
52 2060_BL_85L.CSV
53 2061_BL_85R.CSV
54 2062_BL_85R.CSV
55 2063_BL_85R.CSV
56 2064_BL_85L.CSV
57 2065_BL_85R.CSV
58 2066_BL_85R.CSV
59 2067_BL_85R.CSV
60 2068_BL_85L.CSV
61 2069_BL_85R.CSV
62 2070_BL_85R.CSV
63 2071_BL_85R.CSV
64 2072_BL_85L.CSV
65 2073_BL_85R.CSV
66 2074_BL_85R.CSV
67 2075_BL_85R.CSV
68 2076_BL_85L.CSV
69 2077_BL_85R.CSV
70 2078_BL_85R.CSV
71 2079_BL_85R.CSV
72 2080_BL_85L.CSV
73 2081_BL_85R.CSV
74 2082_BL_85R.CSV
75 2083_BL_85R.CSV
76 2084_BL_85L.CSV
77 2085_BL_85R.CSV
78 2086_BL_85R.CSV
79 2087_BL_85R.CSV
80 2088_BL_85L.CSV
81 2089_BL_85R.CSV
82 2090_BL_85R.CSV
83 2091_BL_85R.CSV
84 2092_BL_85L.CSV
85 2093_BL_85R.CSV
86 2094_BL_85R.CSV
87 2095_BL_85R.CSV
88 2096_BL_85L.CSV
89 2097_BL_85R.CSV
90 2098_BL_85R.CSV

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      91    2099_BL_85R.CSV
      92    2100_BL_85L.CSV
      93    2101_BL_85R.CSV
      94    2102_BL_85R.CSV
      95    2103_BL_85R.CSV
      96    2104_BL_85L.CSV
      97    2105_BL_85R.CSV
      98    2106_BL_85R.CSV
      99    2107_BL_85R.CSV
     100    2108_BL_85L.CSV
```

IETOPT = 1: Meteorological Data

IDAY	Temperature Max F	Temperature Min F	Temperature Dew F	Solar Rad ly/d	Wind Speed mph	Cloud Cover tenth	Prec. in
1.	74.	52.	33.2	361.	7.2	4.3	0.00
2.	71.	52.	36.0	361.	7.2	4.3	0.00
3.	70.	52.	37.6	361.	7.6	4.3	0.00
4.	67.	52.	37.2	361.	7.6	4.3	0.00
5.	66.	50.	36.0	361.	6.8	4.3	0.00
6.	69.	52.	34.7	361.	7.8	4.3	0.00
7.	66.	49.	36.6	361.	7.3	4.3	0.00
8.	66.	50.	34.4	361.	7.9	4.3	0.00
9.	67.	48.	33.0	361.	6.9	4.3	0.51
10.	66.	48.	34.0	361.	8.4	4.3	0.35
11.	65.	46.	30.0	361.	7.9	4.3	0.23
12.	63.	45.	26.5	361.	7.7	4.3	0.15
13.	64.	46.	24.4	361.	7.0	4.3	0.00
14.	68.	45.	25.4	361.	6.8	4.3	0.20
15.	64.	46.	26.7	361.	6.7	4.3	0.00
16.	64.	43.	27.2	361.	7.8	4.3	0.00
17.	62.	43.	26.2	361.	6.9	4.3	0.20
18.	63.	43.	26.3	361.	7.4	4.3	0.64
19.	60.	44.	27.7	361.	8.6	4.3	0.55
20.	63.	46.	27.7	361.	6.9	4.3	0.01
21.	59.	43.	26.5	361.	8.4	4.3	0.00
22.	57.	41.	28.7	361.	6.5	4.3	0.00
23.	60.	40.	29.9	361.	6.0	4.3	0.00
24.	55.	41.	25.6	361.	6.9	4.3	0.00
25.	54.	38.	26.3	361.	7.9	4.3	0.00
26.	56.	38.	26.4	361.	6.9	4.3	0.00
27.	55.	43.	31.4	361.	7.4	4.3	0.00
28.	55.	41.	33.2	361.	9.5	4.3	0.03
29.	54.	39.	30.4	361.	7.0	4.3	0.62
30.	57.	39.	29.9	361.	7.5	4.3	0.00
31.	53.	39.	28.5	361.	7.9	4.3	0.00
32.	53.	38.	26.9	241.	10.7	5.4	0.00
33.	55.	38.	25.8	241.	6.4	5.4	0.00
34.	53.	38.	24.0	241.	7.1	5.4	0.00
35.	54.	38.	26.1	241.	6.2	5.4	0.00

36.	53.	39.	23.8	241.	6.1	5.4	0.00
37.	55.	37.	22.3	241.	6.5	5.4	0.00
38.	57.	39.	24.2	241.	7.3	5.4	0.03
39.	53.	40.	27.2	241.	6.3	5.4	0.00
40.	53.	37.	28.7	241.	6.6	5.4	0.00
41.	50.	36.	27.8	241.	6.5	5.4	0.00
42.	49.	36.	28.5	241.	5.6	5.4	0.00
43.	48.	34.	27.7	241.	6.3	5.4	0.00
44.	48.	35.	27.7	241.	6.0	5.4	0.08
45.	49.	35.	25.9	241.	6.2	5.4	0.79
46.	49.	31.	22.6	241.	6.4	5.4	0.16
47.	47.	33.	22.9	241.	6.1	5.4	0.00
48.	50.	33.	23.0	241.	6.8	5.4	0.20
49.	48.	33.	22.4	241.	6.0	5.4	0.17
50.	48.	33.	21.1	241.	6.2	5.4	0.27
51.	52.	36.	22.1	241.	6.9	5.4	0.48
52.	46.	34.	23.2	241.	6.2	5.4	0.66
53.	47.	34.	26.0	241.	6.5	5.4	0.02
54.	46.	31.	21.2	241.	6.6	5.4	0.00
55.	45.	29.	20.9	241.	7.3	5.4	0.00
56.	43.	31.	23.4	241.	5.8	5.4	0.00
57.	46.	31.	19.8	241.	6.9	5.4	0.00
58.	38.	29.	19.2	241.	7.8	5.4	0.00
59.	41.	25.	19.0	241.	7.9	5.4	0.00
60.	40.	27.	15.3	241.	6.2	5.4	0.00
61.	44.	23.	22.1	241.	6.4	5.4	0.00
62.	42.	29.	21.8	198.	6.6	5.8	0.09
63.	43.	30.	22.9	198.	6.5	5.8	0.00
64.	42.	27.	20.9	198.	6.8	5.8	0.00
65.	41.	25.	19.8	198.	6.3	5.8	0.24
66.	38.	16.	20.8	198.	5.3	5.8	0.07
67.	40.	26.	22.4	198.	5.5	5.8	0.00
68.	38.	27.	21.7	198.	6.5	5.8	0.00
69.	38.	24.	20.6	198.	7.1	5.8	0.00
70.	39.	24.	18.9	198.	5.7	5.8	0.20
71.	40.	27.	22.7	198.	6.8	5.8	0.13
72.	38.	25.	19.2	198.	9.7	5.8	0.00
73.	38.	25.	19.7	198.	6.1	5.8	0.00
74.	42.	25.	22.2	198.	6.9	5.8	0.00
75.	38.	24.	16.5	198.	7.8	5.8	0.00
76.	38.	23.	16.0	198.	7.0	5.8	0.00
77.	39.	24.	15.4	198.	6.5	5.8	0.00
78.	39.	24.	17.9	198.	6.5	5.8	0.00
79.	41.	25.	17.8	198.	7.6	5.8	0.00
80.	39.	25.	17.5	198.	6.2	5.8	0.00
81.	41.	26.	18.4	198.	7.0	5.8	0.02
82.	37.	26.	19.2	198.	6.3	5.8	0.10
83.	36.	23.	17.1	198.	6.7	5.8	0.06
84.	36.	23.	15.9	198.	7.2	5.8	0.39
85.	34.	24.	17.9	198.	5.9	5.8	0.00
86.	38.	26.	17.2	198.	7.2	5.8	0.00
87.	40.	29.	18.4	198.	6.4	5.8	0.13

88.	40.	27.	19.3	198.	5.4	5.8	0.00
89.	40.	27.	19.6	198.	6.3	5.8	0.00
90.	40.	28.	22.6	198.	6.0	5.8	0.00
91.	40.	26.	22.6	198.	5.7	5.8	0.00
92.	39.	28.	21.6	198.	6.0	5.8	0.47
93.	41.	26.	22.3	284.	6.2	6.1	0.00
94.	41.	28.	22.3	284.	6.5	6.1	0.00
95.	38.	27.	21.5	284.	7.2	6.1	0.00
96.	38.	25.	20.1	284.	6.6	6.1	0.00
97.	36.	25.	19.8	284.	6.6	6.1	0.00
98.	39.	23.	18.7	284.	6.4	6.1	0.00
99.	37.	23.	18.7	284.	6.6	6.1	0.00
100.	41.	24.	20.3	284.	6.8	6.1	0.00
101.	40.	27.	22.2	284.	6.2	6.1	0.00
102.	41.	28.	24.0	284.	6.2	6.1	0.00
103.	42.	27.	23.6	284.	6.3	6.1	0.00
104.	39.	28.	21.9	284.	6.8	6.1	0.00
105.	38.	25.	21.2	284.	7.1	6.1	0.00
106.	37.	23.	18.8	284.	6.1	6.1	0.00
107.	38.	24.	18.2	284.	6.0	6.1	0.00
108.	39.	24.	17.3	284.	6.0	6.1	0.00
109.	38.	25.	18.3	284.	6.2	6.1	0.00
110.	42.	26.	19.6	284.	6.3	6.1	0.00
111.	39.	25.	19.6	284.	5.9	6.1	0.23
112.	41.	25.	21.4	284.	6.1	6.1	0.02
113.	39.	26.	20.2	284.	6.7	6.1	0.03
114.	40.	24.	18.0	284.	6.2	6.1	0.08
115.	40.	25.	18.7	284.	5.8	6.1	0.01
116.	42.	27.	21.1	284.	6.4	6.1	0.00
117.	40.	29.	23.7	284.	7.4	6.1	0.00
118.	49.	29.	23.9	284.	7.0	6.1	0.00
119.	41.	28.	22.9	284.	7.0	6.1	0.13
120.	41.	27.	21.2	284.	7.5	6.1	0.00
121.	40.	25.	19.2	284.	6.4	6.1	0.00
122.	41.	25.	19.1	284.	7.1	6.1	0.00
123.	38.	24.	20.0	284.	6.4	6.1	0.00
124.	38.	22.	16.6	310.	6.9	6.2	0.03
125.	37.	24.	20.0	310.	6.4	6.2	0.07
126.	38.	27.	20.4	310.	6.5	6.2	0.10
127.	42.	28.	21.2	310.	7.1	6.2	0.09
128.	41.	27.	20.5	310.	7.8	6.2	0.02
129.	42.	23.	18.1	310.	6.5	6.2	0.00
130.	40.	25.	20.1	310.	6.7	6.2	0.01
131.	39.	27.	19.7	310.	7.0	6.2	0.42
132.	42.	26.	19.9	310.	6.3	6.2	0.00
133.	43.	25.	18.1	310.	7.2	6.2	0.00
134.	42.	26.	19.5	310.	6.7	6.2	0.02
135.	45.	27.	20.1	310.	6.4	6.2	0.02
136.	40.	28.	21.4	310.	6.9	6.2	0.01
137.	41.	30.	23.4	310.	6.7	6.2	0.06
138.	47.	28.	22.6	310.	7.7	6.2	0.00
139.	43.	29.	21.4	310.	6.5	6.2	0.00

140.	46.	31.	22.3	310.	6.7	6.2	0.00
141.	44.	30.	23.3	310.	6.5	6.2	0.00
142.	46.	29.	22.4	310.	6.7	6.2	0.00
143.	44.	32.	23.4	310.	6.5	6.2	0.00
144.	47.	32.	22.4	310.	7.5	6.2	0.00
145.	44.	31.	21.7	310.	7.3	6.2	0.00
146.	44.	30.	22.4	310.	7.0	6.2	0.00
147.	44.	30.	20.9	310.	8.6	6.2	0.00
148.	41.	30.	21.7	310.	7.4	6.2	0.00
149.	41.	31.	23.8	310.	7.0	6.2	0.00
150.	40.	28.	26.0	310.	7.9	6.2	0.00
151.	40.	31.	22.7	310.	7.9	6.2	0.00
152.	44.	29.	20.2	413.	7.2	6.2	0.00
153.	42.	27.	18.2	413.	7.8	6.2	0.00
154.	45.	27.	17.6	413.	6.4	6.2	0.00
155.	47.	29.	18.1	413.	7.2	6.2	0.00
156.	48.	29.	15.1	413.	7.4	6.2	0.00
157.	52.	32.	17.8	413.	7.5	6.2	0.00
158.	50.	33.	22.4	413.	8.1	6.2	0.00
159.	49.	32.	24.7	413.	7.8	6.2	0.00
160.	51.	31.	18.7	413.	7.0	6.2	0.00
161.	51.	34.	20.9	413.	7.3	6.2	0.00
162.	51.	35.	23.0	413.	7.5	6.2	0.00
163.	55.	36.	24.5	413.	7.8	6.2	0.00
164.	54.	36.	21.7	413.	7.5	6.2	0.00
165.	53.	36.	20.2	413.	8.4	6.2	0.00
166.	53.	35.	16.3	413.	8.4	6.2	0.00
167.	54.	35.	20.4	413.	7.7	6.2	0.00
168.	53.	36.	23.2	413.	7.6	6.2	0.00
169.	52.	34.	22.1	413.	8.4	6.2	0.00
170.	53.	35.	22.4	413.	8.0	6.2	0.00
171.	57.	38.	24.8	413.	7.0	6.2	0.00
172.	56.	41.	23.0	413.	7.5	6.2	0.00
173.	58.	41.	23.7	413.	7.0	6.2	0.00
174.	58.	40.	22.3	413.	8.1	6.2	0.00
175.	57.	38.	25.5	413.	8.0	6.2	0.00
176.	58.	39.	23.9	413.	7.5	6.2	0.00
177.	56.	38.	24.4	413.	7.9	6.2	0.00
178.	56.	36.	20.6	413.	9.0	6.2	0.00
179.	55.	36.	20.2	413.	8.6	6.2	0.00
180.	51.	35.	20.6	413.	9.0	6.2	0.00
181.	56.	35.	19.6	413.	8.1	6.2	0.02
182.	57.	39.	20.3	413.	9.2	6.2	0.01
183.	58.	36.	21.3	516.	8.0	6.0	0.00
184.	58.	39.	23.6	516.	9.4	6.0	0.00
185.	57.	39.	24.3	516.	8.6	6.0	0.00
186.	59.	39.	23.7	516.	7.9	6.0	0.00
187.	57.	38.	23.3	516.	9.2	6.0	0.00
188.	53.	36.	25.5	516.	8.0	6.0	0.08
189.	54.	37.	25.7	516.	7.9	6.0	0.00
190.	56.	38.	24.8	516.	9.6	6.0	0.00
191.	57.	37.	24.3	516.	8.8	6.0	0.00

192.	54.	35.	21.1	516.	9.3	6.0	0.00
193.	52.	35.	18.7	516.	7.8	6.0	0.03
194.	53.	37.	25.3	516.	7.6	6.0	0.00
195.	59.	39.	21.0	516.	8.8	6.0	0.00
196.	60.	41.	21.2	516.	9.0	6.0	0.00
197.	59.	41.	22.3	516.	8.9	6.0	0.00
198.	60.	39.	23.4	516.	7.6	6.0	0.00
199.	64.	41.	22.5	516.	9.3	6.0	0.00
200.	60.	39.	21.8	516.	9.1	6.0	0.00
201.	61.	38.	17.6	516.	7.9	6.0	0.00
202.	60.	40.	18.5	516.	9.1	6.0	0.00
203.	61.	40.	20.7	516.	10.3	6.0	0.00
204.	60.	41.	22.4	516.	10.4	6.0	0.00
205.	61.	40.	24.0	516.	8.2	6.0	0.00
206.	59.	40.	27.4	516.	8.6	6.0	0.15
207.	61.	41.	27.0	516.	8.1	6.0	0.08
208.	65.	43.	24.9	516.	8.8	6.0	0.00
209.	64.	44.	24.9	516.	8.4	6.0	0.00
210.	69.	45.	20.1	516.	8.0	6.0	0.00
211.	66.	46.	24.0	516.	7.4	6.0	0.03
212.	65.	45.	23.8	516.	8.3	6.0	0.00
213.	65.	45.	22.5	593.	9.5	5.5	0.01
214.	60.	40.	26.9	593.	8.3	5.5	0.07
215.	65.	44.	24.6	593.	8.2	5.5	0.00
216.	63.	45.	25.6	593.	7.9	5.5	0.00
217.	65.	48.	24.1	593.	8.2	5.5	0.01
218.	67.	45.	25.0	593.	8.9	5.5	0.00
219.	69.	47.	26.7	593.	9.2	5.5	0.00
220.	68.	48.	27.7	593.	8.5	5.5	0.00
221.	70.	46.	26.4	593.	9.1	5.5	0.00
222.	67.	48.	24.4	593.	10.0	5.5	0.00
223.	68.	46.	19.3	593.	9.2	5.5	0.00
224.	69.	47.	23.8	593.	8.7	5.5	0.02
225.	69.	48.	26.4	593.	9.1	5.5	0.05
226.	72.	51.	24.6	593.	8.0	5.5	0.14
227.	71.	50.	28.8	593.	8.3	5.5	0.00
228.	76.	50.	26.2	593.	9.5	5.5	0.00
229.	69.	51.	26.8	593.	9.0	5.5	0.00
230.	76.	53.	29.1	593.	8.2	5.5	0.00
231.	77.	55.	31.6	593.	7.9	5.5	0.00
232.	79.	55.	31.1	593.	8.7	5.5	0.00
233.	73.	51.	27.1	593.	9.1	5.5	0.00
234.	68.	48.	29.2	593.	8.2	5.5	0.00
235.	69.	48.	30.4	593.	7.1	5.5	0.00
236.	71.	51.	30.4	593.	8.4	5.5	0.08
237.	74.	52.	30.2	593.	7.8	5.5	0.00
238.	76.	52.	27.7	593.	9.2	5.5	0.00
239.	76.	56.	28.5	593.	8.7	5.5	0.00
240.	78.	55.	27.2	593.	8.4	5.5	0.00
241.	78.	56.	26.8	593.	8.4	5.5	0.00
242.	80.	55.	25.7	593.	8.9	5.5	0.00
243.	81.	56.	24.9	593.	8.1	5.5	0.00

244.	84.	58.	24.7	636.	9.4	4.0	0.00
245.	81.	58.	24.6	636.	8.6	4.0	0.00
246.	81.	57.	26.1	636.	9.4	4.0	0.00
247.	73.	53.	28.1	636.	8.4	4.0	0.00
248.	75.	53.	29.6	636.	8.6	4.0	0.00
249.	76.	53.	29.6	636.	8.6	4.0	0.01
250.	68.	53.	29.1	636.	9.2	4.0	0.01
251.	70.	50.	29.3	636.	7.7	4.0	0.00
252.	73.	53.	28.0	636.	8.1	4.0	0.00
253.	76.	55.	27.1	636.	8.4	4.0	0.41
254.	79.	55.	23.7	636.	8.4	4.0	0.53
255.	77.	52.	25.2	636.	9.0	4.0	0.00
256.	76.	54.	27.1	636.	9.6	4.0	0.00
257.	81.	58.	27.0	636.	9.2	4.0	0.00
258.	81.	59.	25.3	636.	8.6	4.0	0.00
259.	82.	59.	27.6	636.	8.6	4.0	0.00
260.	84.	58.	26.1	636.	9.1	4.0	0.00
261.	84.	60.	28.6	636.	8.0	4.0	0.00
262.	84.	60.	26.6	636.	8.1	4.0	0.00
263.	86.	63.	26.2	636.	9.2	4.0	0.00
264.	87.	62.	28.2	636.	8.5	4.0	0.00
265.	87.	63.	25.9	636.	8.4	4.0	0.00
266.	86.	63.	27.1	636.	9.0	4.0	0.00
267.	86.	62.	27.1	636.	8.7	4.0	0.00
268.	85.	63.	29.2	636.	8.1	4.0	0.00
269.	82.	61.	29.1	636.	8.2	4.0	0.00
270.	84.	60.	30.5	636.	8.2	4.0	0.04
271.	86.	61.	31.4	636.	8.2	4.0	0.00
272.	87.	62.	34.9	636.	8.8	4.0	0.00
273.	81.	64.	33.7	636.	7.7	4.0	0.00
274.	89.	64.	27.1	645.	7.9	4.2	0.00
275.	87.	68.	28.7	645.	8.6	4.2	0.00
276.	91.	65.	33.7	645.	8.2	4.2	0.00
277.	88.	65.	33.9	645.	7.4	4.2	0.00
278.	87.	66.	35.0	645.	9.0	4.2	0.00
279.	86.	61.	37.2	645.	8.3	4.2	0.00
280.	86.	66.	37.2	645.	8.2	4.2	0.00
281.	88.	65.	39.7	645.	8.0	4.2	0.00
282.	85.	64.	41.0	645.	7.8	4.2	0.00
283.	85.	63.	41.1	645.	7.7	4.2	0.00
284.	89.	67.	39.5	645.	8.4	4.2	0.00
285.	89.	65.	37.9	645.	8.4	4.2	0.27
286.	90.	69.	39.5	645.	8.3	4.2	0.13
287.	87.	68.	42.1	645.	7.9	4.2	0.31
288.	89.	66.	43.6	645.	7.9	4.2	0.18
289.	90.	67.	43.1	645.	7.9	4.2	0.00
290.	88.	66.	42.8	645.	7.4	4.2	0.00
291.	88.	67.	40.3	645.	7.6	4.2	0.00
292.	86.	66.	40.7	645.	8.0	4.2	0.00
293.	89.	67.	43.6	645.	7.4	4.2	0.00
294.	90.	68.	44.0	645.	8.9	4.2	0.00
295.	86.	65.	43.7	645.	7.4	4.2	0.00

296.	82.	65.	46.8	645.	7.8	4.2	0.00
297.	85.	68.	46.6	645.	8.1	4.2	0.00
298.	86.	66.	48.2	645.	8.0	4.2	0.00
299.	87.	65.	48.5	645.	8.0	4.2	0.14
300.	85.	63.	48.3	645.	7.8	4.2	0.01
301.	84.	61.	46.2	645.	7.4	4.2	0.00
302.	88.	64.	43.3	645.	8.0	4.2	0.00
303.	82.	62.	42.3	645.	7.2	4.2	0.00
304.	85.	66.	44.0	645.	10.9	4.2	0.00
305.	84.	67.	46.2	585.	8.0	4.4	0.00
306.	82.	62.	50.2	585.	8.4	4.4	0.00
307.	81.	64.	49.3	585.	7.8	4.4	0.00
308.	83.	64.	49.3	585.	7.8	4.4	0.00
309.	80.	62.	50.9	585.	7.5	4.4	0.00
310.	82.	63.	49.2	585.	7.4	4.4	0.00
311.	83.	61.	47.4	585.	10.7	4.4	0.00
312.	85.	62.	45.6	585.	7.2	4.4	0.00
313.	85.	64.	45.1	585.	8.2	4.4	0.00
314.	84.	64.	45.7	585.	7.7	4.4	0.00
315.	85.	65.	43.2	585.	7.5	4.4	0.00
316.	83.	65.	41.7	585.	7.5	4.4	0.00
317.	83.	65.	41.8	585.	7.5	4.4	0.00
318.	83.	63.	42.0	585.	8.1	4.4	0.00
319.	81.	61.	43.6	585.	7.0	4.4	0.00
320.	83.	61.	44.2	585.	7.6	4.4	0.00
321.	85.	60.	44.4	585.	7.1	4.4	0.00
322.	84.	64.	42.3	585.	8.6	4.4	0.00
323.	84.	64.	42.0	585.	7.5	4.4	0.00
324.	84.	62.	44.6	585.	7.5	4.4	0.00
325.	82.	62.	43.9	585.	7.3	4.4	0.00
326.	83.	62.	42.0	585.	7.7	4.4	0.00
327.	84.	63.	40.9	585.	7.5	4.4	0.10
328.	85.	62.	41.8	585.	7.8	4.4	0.30
329.	83.	63.	41.4	585.	7.2	4.4	0.00
330.	82.	61.	44.0	585.	6.7	4.4	0.00
331.	80.	61.	41.5	585.	6.6	4.4	0.00
332.	85.	63.	37.4	585.	7.9	4.4	0.00
333.	85.	63.	40.7	585.	7.0	4.4	0.00
334.	85.	62.	42.2	585.	6.7	4.4	0.00
335.	80.	61.	43.6	585.	7.3	4.4	0.00
336.	77.	59.	44.0	464.	7.7	3.7	0.00
337.	81.	59.	41.4	464.	7.5	3.7	0.00
338.	82.	61.	41.2	464.	7.9	3.7	0.00
339.	80.	60.	40.3	464.	7.7	3.7	0.23
340.	82.	60.	40.2	464.	7.3	3.7	0.00
341.	77.	60.	41.0	464.	8.0	3.7	0.00
342.	79.	57.	39.3	464.	7.4	3.7	0.00
343.	77.	59.	39.5	464.	7.5	3.7	0.00
344.	74.	57.	41.7	464.	7.5	3.7	0.00
345.	75.	56.	42.2	464.	7.4	3.7	0.00
346.	75.	56.	41.9	464.	7.6	3.7	0.00
347.	78.	56.	39.7	464.	7.2	3.7	0.00

348.	78.	58.	37.2	464.	7.5	3.7	0.00
349.	76.	55.	36.3	464.	6.9	3.7	0.00
350.	77.	56.	36.1	464.	7.4	3.7	0.00
351.	76.	57.	39.4	464.	6.8	3.7	0.00
352.	74.	54.	35.8	464.	7.3	3.7	0.00
353.	70.	51.	36.0	464.	8.3	3.7	0.00
354.	71.	51.	34.9	464.	8.1	3.7	0.00
355.	74.	54.	36.7	464.	8.0	3.7	0.00
356.	69.	53.	35.4	464.	8.2	3.7	0.00
357.	72.	53.	33.3	464.	8.3	3.7	0.00
358.	74.	51.	33.9	464.	7.7	3.7	0.00
359.	71.	51.	32.5	464.	6.6	3.7	0.00
360.	75.	52.	29.9	464.	7.2	3.7	0.00
361.	76.	52.	30.2	464.	6.4	3.7	0.00
362.	75.	56.	32.7	464.	8.4	3.7	0.00
363.	71.	54.	32.5	464.	7.3	3.7	0.00
364.	72.	52.	35.7	464.	8.3	3.7	0.00
365.	74.	51.	31.5	464.	6.6	3.7	0.00

Potential Evaporation Values (no plants):

DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO
1	0.5270	2	0.4832	3	0.4842	4	0.4624	5	0.4253
6	0.5017	7	0.4211	8	0.4783	9	0.4413	10	0.4826
11	0.4790	12	0.4774	13	0.4760	14	0.4779	15	0.4474
16	0.4682	17	0.4267	18	0.4468	19	0.4719	20	0.4377
21	0.4516	22	0.3510	23	0.3422	24	0.3741	25	0.3726
26	0.3550	27	0.3560	28	0.3640	29	0.3173	30	0.3591
31	0.3470	32	0.3706	33	0.2802	34	0.3064	35	0.2760
36	0.2863	37	0.3040	38	0.3427	39	0.2710	40	0.2513
41	0.2308	42	0.1991	43	0.2031	44	0.2051	45	0.2259
46	0.2317	47	0.2220	48	0.2564	49	0.2296	50	0.2461
51	0.2961	52	0.2235	53	0.2153	54	0.2324	55	0.2286
56	0.1819	57	0.2499	58	0.2116	59	0.2053	60	0.2047
61	0.1647	62	0.1767	63	0.1766	64	0.1763	65	0.1583
66	0.0760	67	0.1295	68	0.1395	69	0.1403	70	0.1389
71	0.1424	72	0.1944	73	0.1366	74	0.1531	75	0.1807
76	0.1721	77	0.1758	78	0.1600	79	0.1949	80	0.1609
81	0.1869	82	0.1469	83	0.1493	84	0.1636	85	0.1263
86	0.1811	87	0.1873	88	0.1497	89	0.1623	90	0.1444
91	0.1283	92	0.1449	93	0.1815	94	0.2010	95	0.1948
96	0.1843	97	0.1788	98	0.1925	99	0.1778	100	0.1966
101	0.1817	102	0.1810	103	0.1842	104	0.1924	105	0.1807
106	0.1725	107	0.1845	108	0.1947	109	0.1929	110	0.2112
111	0.1884	112	0.1843	113	0.1929	114	0.1999	115	0.1966
116	0.2080	117	0.1978	118	0.2551	119	0.2002	120	0.2192
121	0.2023	122	0.2203	123	0.1773	124	0.2081	125	0.1853
126	0.2051	127	0.2396	128	0.2397	129	0.2231	130	0.2153
131	0.2241	132	0.2256	133	0.2553	134	0.2336	135	0.2506
136	0.2211	137	0.2218	138	0.2733	139	0.2433	140	0.2662

141	0.2441	142	0.2514	143	0.2427	144	0.3002	145	0.2692
146	0.2504	147	0.3018	148	0.2498	149	0.2260	150	0.1934
151	0.2446	152	0.3160	153	0.3171	154	0.3145	155	0.3548
156	0.3855	157	0.4140	158	0.4007	159	0.3456	160	0.3866
161	0.4031	162	0.3994	163	0.4254	164	0.4312	165	0.4609
166	0.4891	167	0.4504	168	0.4148	169	0.4238	170	0.4315
171	0.4295	172	0.4758	173	0.4659	174	0.5056	175	0.4561
176	0.4684	177	0.4575	178	0.5018	179	0.4844	180	0.4559
181	0.4726	182	0.5457	183	0.5399	184	0.5836	185	0.5432
186	0.5509	187	0.5672	188	0.4702	189	0.4811	190	0.5544
191	0.5404	192	0.5388	193	0.5017	194	0.4658	195	0.6027
196	0.6360	197	0.6072	198	0.5540	199	0.6623	200	0.6093
201	0.5973	202	0.6433	203	0.6815	204	0.6719	205	0.5801
206	0.5525	207	0.5599	208	0.6503	209	0.6406	210	0.6970
211	0.6397	212	0.6577	213	0.7590	214	0.5975	215	0.6847
216	0.6594	217	0.7128	218	0.7327	219	0.7645	220	0.7353
221	0.7643	222	0.8078	223	0.7889	224	0.7643	225	0.7704
226	0.7788	227	0.7529	228	0.8583	229	0.7933	230	0.8048
231	0.7968	232	0.8533	233	0.8212	234	0.7038	235	0.6598
236	0.7450	237	0.7544	238	0.8505	239	0.8570	240	0.8586
241	0.8712	242	0.9024	243	0.8843	244	0.9897	245	0.9245
246	0.9585	247	0.7983	248	0.8131	249	0.8219	250	0.7913
251	0.7144	252	0.7922	253	0.8427	254	0.8833	255	0.8724
256	0.9015	257	0.9465	258	0.9262	259	0.9254	260	0.9685
261	0.9089	262	0.9194	263	1.0207	264	0.9695	265	0.9800
266	1.0010	267	0.9791	268	0.9377	269	0.9047	270	0.9066
271	0.9239	272	0.9477	273	0.8687	274	0.9685	275	1.0191
276	0.9883	277	0.9149	278	1.0040	279	0.9099	280	0.9341
281	0.9132	282	0.8703	283	0.8540	284	0.9704	285	0.9614
286	0.9781	287	0.9105	288	0.8972	289	0.9235	290	0.8710
291	0.9073	292	0.9054	293	0.8799	294	0.9738	295	0.8405
296	0.8101	297	0.8694	298	0.8520	299	0.8398	300	0.8028
301	0.7836	302	0.8850	303	0.7938	304	1.0207	305	0.8062
306	0.7289	307	0.7214	308	0.7411	309	0.6697	310	0.7131
311	0.8649	312	0.7493	313	0.8155	314	0.7743	315	0.8014
316	0.7983	317	0.7997	318	0.8068	319	0.7163	320	0.7561
321	0.7423	322	0.8547	323	0.7984	324	0.7583	325	0.7420
326	0.7874	327	0.7961	328	0.8068	329	0.7731	330	0.7122
331	0.7096	332	0.8489	333	0.7841	334	0.7486	335	0.7290
336	0.5972	337	0.6403	338	0.6781	339	0.6557	340	0.6537
341	0.6449	342	0.6268	343	0.6267	344	0.5655	345	0.5600
346	0.5766	347	0.6033	348	0.6419	349	0.5884	350	0.6275
351	0.5712	352	0.5936	353	0.5752	354	0.5883	355	0.6085
356	0.5866	357	0.6293	358	0.5966	359	0.5449	360	0.6155
361	0.5817	362	0.6749	363	0.5915	364	0.5959	365	0.5631

Totals: PEVAPO = 190.4435

Precipitation/irrigation parameters:

IRAIN = 1: precipitation data provided

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
9	0.000	1.3000	1	1.000	3
	13.000	0.0007			
	14.000	0.0000			
10	0.000	0.8000	1	1.000	3
	8.000	0.0905			
	9.000	0.0000			
11	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
12	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
14	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
17	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
18	0.000	1.6000	1	1.000	3
	16.000	0.0308			
	17.000	0.0000			
19	0.000	1.4000	1	1.000	3
	14.000	0.0007			
	15.000	0.0000			
20	0.000	0.0300	1	1.000	2
	1.000	0.0000			
28	0.000	0.0800	1	1.000	2
	1.000	0.0000			
29	0.000	1.5000	1	1.000	3
	15.000	0.0708			
	16.000	0.0000			
38	0.000	0.0800	1	1.000	2
	1.000	0.0000			
44	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
45	0.000	2.0000	1	1.000	3
	20.000	0.0110			
	21.000	0.0000			
46	0.000	0.4000	1	1.000	3
	4.000	0.0102			
	5.000	0.0000			
48	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
49	0.000	0.4000	1	1.000	3
	4.000	0.0302			

	5.000	0.0000			
50	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
51	0.000	1.2000	1	1.000	3
	12.000	0.0206			
	13.000	0.0000			
52	0.000	1.6000	1	1.000	3
	16.000	0.0809			
	17.000	0.0000			
53	0.000	0.0500	1	1.000	2
	1.000	0.0000			
62	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
65	0.000	0.6000	1	1.000	3
	6.000	0.0103			
	7.000	0.0000			
66	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
70	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
71	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
81	0.000	0.0500	1	1.000	2
	1.000	0.0000			
82	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
83	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
84	0.000	0.9000	1	1.000	3
	9.000	0.0905			
	10.000	0.0000			
87	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
92	0.000	1.1000	1	1.000	3
	11.000	0.0906			
	12.000	0.0000			
111	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
112	0.000	0.0500	1	1.000	2
	1.000	0.0000			
113	0.000	0.0800	1	1.000	2
	1.000	0.0000			
114	0.000	0.2000	1	1.000	3

	2.000	0.0001			
	3.000	0.0000			
115	0.000	0.0300	1	1.000	2
	1.000	0.0000			
119	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
124	0.000	0.0800	1	1.000	2
	1.000	0.0000			
125	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
126	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
127	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
128	0.000	0.0500	1	1.000	2
	1.000	0.0000			
130	0.000	0.0300	1	1.000	2
	1.000	0.0000			
131	0.000	1.0000	1	1.000	3
	10.000	0.0705			
	11.000	0.0000			
134	0.000	0.0500	1	1.000	2
	1.000	0.0000			
135	0.000	0.0500	1	1.000	2
	1.000	0.0000			
136	0.000	0.0300	1	1.000	2
	1.000	0.0000			
137	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
181	0.000	0.0500	1	1.000	2
	1.000	0.0000			
182	0.000	0.0300	1	1.000	2
	1.000	0.0000			
188	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
193	0.000	0.0800	1	1.000	2
	1.000	0.0000			
206	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
207	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
211	0.000	0.0800	1	1.000	2
	1.000	0.0000			
213	0.000	0.0300	1	1.000	2

	1.000	0.0000			
214	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
217	0.000	0.0300	1	1.000	2
	1.000	0.0000			
224	0.000	0.0500	1	1.000	2
	1.000	0.0000			
225	0.000	0.1000	1	1.000	3
	1.000	0.0301			
	2.000	0.0000			
226	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
236	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
249	0.000	0.0300	1	1.000	2
	1.000	0.0000			
250	0.000	0.0300	1	1.000	2
	1.000	0.0000			
253	0.000	1.0000	1	1.000	3
	10.000	0.0405			
	11.000	0.0000			
254	0.000	1.3000	1	1.000	3
	13.000	0.0507			
	14.000	0.0000			
270	0.000	0.1000	1	1.000	3
	1.000	0.0001			
	2.000	0.0000			
285	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
286	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
287	0.000	0.7000	1	1.000	3
	7.000	0.0904			
	8.000	0.0000			
288	0.000	0.4000	1	1.000	3
	4.000	0.0602			
	5.000	0.0000			
299	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
300	0.000	0.0300	1	1.000	2
	1.000	0.0000			
327	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
328	0.000	0.7000	1	1.000	3
	7.000	0.0604			

```
        8.000   0.0000
   339  0.000   0.5000        1          1.000          3
        5.000   0.0803
        6.000   0.0000


   NWATER (number of days of rain/irrigation) = 77

   Total Water Applied (cm) =  3.323688E+01
-------------------------------------------------------------------------------
 Program DATAINH terminated normally.
```

UNSAT-H Version 3.01
INITIAL CONDITIONS

Input File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil_15CT
Results File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\9Soil_15CT
Date of Run: 28 Feb 2013
Time of Run: 08:16:29.59
Title:
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	2.000E-02	1.464E+06	0.0847	283.00	2	5.000E-02	1.462E+06	0.0847	283.00
3	1.000E-01	1.459E+06	0.0847	283.00	4	2.000E-01	1.453E+06	0.0847	283.00
5	3.000E-01	1.447E+06	0.0848	283.00	6	4.000E-01	1.440E+06	0.0848	283.00
7	5.000E-01	1.434E+06	0.0848	283.00	8	6.000E-01	1.428E+06	0.0849	283.00
9	7.000E-01	1.422E+06	0.0849	283.00	10	8.000E-01	1.416E+06	0.0850	283.00
11	9.000E-01	1.410E+06	0.0850	283.00	12	1.000E+00	1.404E+06	0.0850	283.00
13	2.000E+00	1.346E+06	0.0854	283.00	14	3.000E+00	1.292E+06	0.0858	283.00
15	4.000E+00	1.240E+06	0.0862	283.00	16	5.000E+00	1.193E+06	0.0865	283.00
17	6.000E+00	1.148E+06	0.0869	283.00	18	7.000E+00	1.107E+06	0.0872	283.00
19	8.000E+00	1.068E+06	0.0875	283.00	20	9.000E+00	1.032E+06	0.0878	283.00
21	1.000E+01	9.980E+05	0.0882	283.00	22	1.100E+01	9.661E+05	0.0885	283.00
23	1.200E+01	9.362E+05	0.0888	283.00	24	1.300E+01	9.079E+05	0.0890	283.00
25	1.400E+01	8.811E+05	0.0893	283.00	26	1.500E+01	8.556E+05	0.0896	283.00
27	1.600E+01	8.314E+05	0.0899	283.00	28	1.700E+01	8.082E+05	0.0901	283.00
29	1.800E+01	7.860E+05	0.0904	283.00	30	1.900E+01	7.648E+05	0.0907	283.00
31	2.000E+01	7.444E+05	0.0909	283.00	32	2.200E+01	7.057E+05	0.0914	283.00
33	2.400E+01	6.678E+05	0.0404	283.00	34	2.600E+01	6.274E+05	0.0409	283.00
35	2.800E+01	5.910E+05	0.0413	283.00	36	3.000E+01	5.583E+05	0.0418	283.00
37	3.200E+01	5.287E+05	0.0422	283.00	38	3.400E+01	5.020E+05	0.0426	283.00
39	3.600E+01	4.778E+05	0.0430	283.00	40	3.800E+01	4.558E+05	0.0434	283.00
41	4.000E+01	4.358E+05	0.0437	283.00	42	4.200E+01	4.176E+05	0.0441	283.00
43	4.400E+01	4.009E+05	0.0444	283.00	44	4.600E+01	3.856E+05	0.0447	283.00
45	4.800E+01	3.715E+05	0.0450	283.00	46	5.000E+01	3.585E+05	0.0453	283.00
47	5.200E+01	3.466E+05	0.0456	283.00	48	5.400E+01	3.355E+05	0.0459	283.00
49	5.600E+01	3.252E+05	0.0461	283.00	50	5.800E+01	3.156E+05	0.0464	283.00
51	6.000E+01	3.067E+05	0.0466	283.00	52	6.200E+01	2.969E+05	0.0772	283.00
53	6.400E+01	2.815E+05	0.0776	283.00	54	6.600E+01	2.675E+05	0.0780	283.00
55	6.800E+01	2.546E+05	0.0783	283.00	56	7.000E+01	2.427E+05	0.0787	283.00
57	7.200E+01	2.317E+05	0.0791	283.00	58	7.400E+01	2.216E+05	0.0794	283.00
59	7.600E+01	2.122E+05	0.0797	283.00	60	7.800E+01	2.035E+05	0.0801	283.00
61	8.000E+01	1.954E+05	0.0804	283.00	62	8.200E+01	1.878E+05	0.0807	283.00
63	8.400E+01	1.807E+05	0.0810	283.00	64	8.600E+01	1.741E+05	0.0813	283.00
65	8.800E+01	1.679E+05	0.0816	283.00	66	9.000E+01	1.621E+05	0.0818	283.00
67	9.200E+01	1.567E+05	0.0821	283.00	68	9.400E+01	1.515E+05	0.0824	283.00
69	9.600E+01	1.467E+05	0.0826	283.00	70	9.800E+01	1.421E+05	0.0829	283.00
71	1.000E+02	1.378E+05	0.0831	283.00	72	1.050E+02	1.279E+05	0.0837	283.00
73	1.100E+02	1.192E+05	0.0843	283.00	74	1.150E+02	1.116E+05	0.0848	283.00
75	1.200E+02	1.048E+05	0.0854	283.00	76	1.250E+02	9.887E+04	0.0858	283.00
77	1.300E+02	9.354E+04	0.0863	283.00	78	1.350E+02	8.878E+04	0.0867	283.00
79	1.400E+02	8.452E+04	0.0871	283.00	80	1.450E+02	8.069E+04	0.0875	283.00
81	1.500E+02	7.725E+04	0.0879	283.00	82	1.550E+02	7.414E+04	0.0883	283.00
83	1.600E+02	7.133E+04	0.0886	283.00	84	1.650E+02	6.879E+04	0.0889	283.00
85	1.700E+02	6.649E+04	0.0892	283.00	86	1.750E+02	6.440E+04	0.0895	283.00
87	1.800E+02	6.251E+04	0.0897	283.00	88	1.850E+02	6.078E+04	0.0900	283.00
89	1.900E+02	5.921E+04	0.0902	283.00	90	1.950E+02	5.779E+04	0.0904	283.00
91	2.000E+02	5.649E+04	0.0906	283.00	92	2.050E+02	5.530E+04	0.0908	283.00
93	2.100E+02	5.423E+04	0.0910	283.00	94	2.150E+02	5.325E+04	0.0911	283.00

```
   95 2.200E+02 5.236E+04 0.0913 283.00    96 2.250E+02 5.156E+04 0.0914 283.00
   97 2.300E+02 5.083E+04 0.0915 283.00    98 2.350E+02 5.017E+04 0.0916 283.00
   99 2.400E+02 4.958E+04 0.0918 283.00   100 2.450E+02 4.905E+04 0.0918 283.00
  101 2.500E+02 4.857E+04 0.0919 283.00   102 2.550E+02 4.816E+04 0.0920 283.00
  103 2.600E+02 4.779E+04 0.0921 283.00   104 2.650E+02 4.747E+04 0.0921 283.00
  105 2.700E+02 4.720E+04 0.0922 283.00   106 2.750E+02 4.697E+04 0.0922 283.00
  107 2.800E+02 4.679E+04 0.0923 283.00   108 2.850E+02 4.665E+04 0.0923 283.00
  109 2.900E+02 4.655E+04 0.0923 283.00   110 2.950E+02 4.649E+04 0.0923 283.00
  111 3.000E+02 4.647E+04 0.0923 283.00

 Initial Water Storage =  24.7664 cm

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day =   1, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08496     0.09059     0.08001     0.09039     0.09232
 Head (cm)         = 1.41507E+06 7.71224E+05 2.04711E+05 5.79164E+04 4.65328E+04
 LiqWater Flow (cm)=-8.92079E-03-8.73600E-03-4.65047E-03-1.49371E-03 7.55940E-06
 IsoVapor Flow (cm)=-4.66524E-04-3.22575E-04-8.78344E-05-5.97325E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  24.7664+ 0.0000+ 0.0000 - 0.0094- 0.0000-  0.0000 =   24.7570 vs.   24.7570

 Mass Balance =  3.6064E-07 cm;  Time step attempts =   42 and successes =   36
   Evaporation:  Potential =  0.5270 cm, Actual =  0.0094 cm
 RHMEAN = 34.6 %;  TMEAN = 290.4 K;  HDRY =  1.4151E+06 cm;  DAYUBC =    29

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08625     0.09067     0.08005     0.09034     0.09226
 Head (cm)         = 1.22671E+06 7.65390E+05 2.03670E+05 5.82384E+04 4.68337E+04
 LiqWater Flow (cm)=-1.94197E-03-9.32574E-03-4.57959E-03-1.48475E-03 7.49677E-06
 IsoVapor Flow (cm)=-9.64572E-05-3.42379E-04-8.60109E-05-5.98017E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  24.7642+ 0.0000+ 0.0000 - 0.0020- 0.0000-  0.0000 =   24.7622 vs.   24.7622

 Mass Balance = -2.8088E-07 cm;  Time step attempts =   63 and successes =   44
   Evaporation:  Potential =  0.5959 cm, Actual =  0.0020 cm
 RHMEAN = 39.8 %;  TMEAN = 289.6 K;  HDRY =  1.2267E+06 cm;  DAYUBC =    12
1

--------------------------------------------------------------------------------
                              UNSAT-H Version 3.01
                               SIMULATION SUMMARY

 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1985 avg precipitatio
--------------------------------------------------------------------------------

 Transpiration Scheme is:           =    0
 Potential Evapotranspiration       =  1.9005E+02     [cm]
```

```
Potential Transpiration            =  0.0000E+00     [cm]
Actual Transpiration               =  0.0000E+00     [cm]
Potential Evaporation              =  1.9005E+02     [cm]
Actual Evaporation                 =  3.3238E+01     [cm]
Evaporation during Growth          =  0.0000E+00     [cm]
Total Runoff                       =  0.0000E+00     [cm]
Total Infiltration                 =  3.3237E+01     [cm]
Total Basal Liquid Flux (drainage) =  2.6628E-03     [cm]
Total Basal Vapor Flux (temp-grad) =  0.0000E+00     [cm]
Total Applied Water                =  3.3237E+01     [cm]
Actual Rainfall                    =  3.3237E+01     [cm]
Actual Irrigation                  =  0.0000E+00     [cm]
Total Final Moisture Storage       =  2.4762E+01     [cm]
Mass Balance Error                 =  1.2987E-04     [cm]
Total Successful Time Steps        =    170592
Total Attempted Time Steps         =    188153
Total Time Step Reductions (DHMAX) =         0
Total Changes in Surface Boundary  =     20097
Total Time Actually Simulated      =  3.6500E+02     [days]
```

Total liquid water flow (cm) across different depths at the end of 3.6500E+02 days:

DEPTH	FLOW	DEPTH	FLOW	DEPTH	FLOW
0.020	-1.3928E-03	0.035	7.1718E-01	0.075	7.0443E-01
0.150	6.7923E-01	0.250	6.4428E-01	0.350	6.1220E-01
0.450	5.8347E-01	0.550	5.5781E-01	0.650	5.3475E-01
0.750	5.1386E-01	0.850	4.9478E-01	0.950	4.7723E-01
1.500	4.1761E-01	2.500	3.2949E-01	3.500	2.7264E-01
4.500	2.3218E-01	5.500	2.0144E-01	6.500	1.7709E-01
7.500	1.5726E-01	8.500	1.4076E-01	9.500	1.2680E-01
10.500	1.1483E-01	11.500	1.0447E-01	12.500	9.5416E-02
13.500	8.7450E-02	14.500	8.0396E-02	15.500	7.4115E-02
16.500	6.8493E-02	17.500	6.3440E-02	18.500	5.8880E-02
19.500	5.4749E-02	21.000	4.9769E-02	23.000	4.9558E-02
25.000	5.9590E-02	27.000	5.2084E-02	29.000	4.5633E-02
31.000	4.0046E-02	33.000	3.5180E-02	35.000	3.0926E-02
37.000	2.7194E-02	39.000	2.3911E-02	41.000	2.1015E-02
43.000	1.8456E-02	45.000	1.6191E-02	47.000	1.4185E-02
49.000	1.2408E-02	51.000	1.0836E-02	53.000	9.4478E-03
55.000	8.2264E-03	57.000	7.1554E-03	59.000	6.2193E-03
61.000	6.6494E-03	63.000	1.2829E-02	65.000	1.0847E-02
67.000	9.0759E-03	69.000	7.4884E-03	71.000	6.0612E-03
73.000	4.7753E-03	75.000	3.6146E-03	77.000	2.5657E-03
79.000	1.6171E-03	81.000	7.5877E-04	83.000	-1.8111E-05
85.000	-7.2128E-04	87.000	-1.3577E-03	89.000	-1.9335E-03
91.000	-2.4542E-03	93.000	-2.9250E-03	95.000	-3.3502E-03
97.000	-3.7339E-03	99.000	-4.0797E-03	102.500	-4.5495E-03
107.500	-5.1657E-03	112.500	-5.6289E-03	117.500	-5.9678E-03
122.500	-6.2045E-03	127.500	-6.3563E-03	132.500	-6.4368E-03
137.500	-6.4570E-03	142.500	-6.4257E-03	147.500	-6.3503E-03
152.500	-6.2369E-03	157.500	-6.0908E-03	162.500	-5.9163E-03
167.500	-5.7174E-03	172.500	-5.4973E-03	177.500	-5.2589E-03
182.500	-5.0047E-03	187.500	-4.7369E-03	192.500	-4.4574E-03
197.500	-4.1677E-03	202.500	-3.8695E-03	207.500	-3.5637E-03
212.500	-3.2516E-03	217.500	-2.9340E-03	222.500	-2.6118E-03
227.500	-2.2855E-03	232.500	-1.9557E-03	237.500	-1.6231E-03
242.500	-1.2879E-03	247.500	-9.5052E-04	252.500	-6.1129E-04
257.500	-2.7048E-04	262.500	7.1687E-05	267.500	4.1500E-04
272.500	7.5927E-04	277.500	1.1043E-03	282.500	1.4500E-03
287.500	1.7962E-03	292.500	2.1427E-03	297.500	2.4894E-03

300.000 2.6628E-03

```
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitation 12
Soil 24 CT
0,1, IPLANT,NGRAV
365,1,366, IFDEND,IDTBEG,IDTEND
2009, 100, 0, 2, 100, IYS,NYEARS,ISTEAD,IFLIST,NFLIST
0,24.0, NPRINT,STOPHR
0,10,0,0.001, ISMETH,INMAX,ISWDIF,DMAXBA
1.0,1.0E-20,0, DELMAX,DELMIN,OUTTIM
2.0,1.0E2,0.0,0.0,0.0, RFACT,RAINIF,DHTOL,DHMAX,DHFACT
4,1,0.3, KOPT,KEST,WTF
0,1,2,1, ITOPBC,IEVOPT,NFHOUR,LOWER
1.0,1.0E7,0.0,0.48, HIRRI,HDRY,HTOP,RHA
1,0,1, IETOPT,ICLOUD,ISHOPT
1,0.1, IRAIN,HPR
0,0.0,0.0,0.0,0, IHYS,AIRTOL,HYSTOL,HYSMXH,HYFILE
0,0,0.0, IHEAT,ICONVH,DMAXHE
0,0.0,0.0,0.0, UPPERH,TSMEAN,TSAMP,QHCTOP
0,0.0,0.0, LOWERH QHLEAK, TGRAD
1,0.66,283.0,0.27, IVAPOR,TORT,TSOIL,VAPDIF
3,111, MATN,NPT
1,0.02, 1,0.05, 1,0.1, 1,0.2
1,0.3, 1,0.4, 1,0.5, 1,0.6
1,0.7, 1,0.8, 1,0.9, 1,1.0
1,2.0, 1,3.0, 1,4.0, 1,5.0
1,6.0, 1,7.0, 1,8.0, 1,9.0
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2,40.0, 2,42.0, 2,44.0, 2,46.0
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3,96.0, 3,98.0, 3,100.0, 3, 105.0
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3,130.0, 3,135.0, 3,140.0, 3,145.0
3,150.0, 3,155.0, 3,160.0, 3,165.0
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3,230.0, 3,235.0, 3,240.0, 3,245.0
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3,270.0, 3,275.0, 3,280.0, 3,285.0
3,290.0, 3,295.0, 3,300.0
Daneros Soil van Genuchten parameters
0.34842, 3.5692E-07, 0.43868, 1.1058, THET,THTR,VGA,VGN
Daneros Soil van Genuchten hydraulic conductivity
1.0, 3.492, 0.43868, 1.1058, 2.0, RKMOD,SK,VGA,VGN,EPIT
```

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Daneros Vent Cuttings van Genuchten parameters
0.37476, 3.7291E-07, 0.27231, 1.1839, THET,THTR,VGA,VGN
Daneros Vent Cuttings van Genuchten hydraulic conductivity
1.0, 15.48, 0.27231, 1.1839, 2.0, RKMOD,SK,VGA,VGN,EPIT
Daneros Development Rock van Genuchten parameters
0.31313, 2.1323E-06, 6.6591, 1.0966, THET,THTR,VGA,VGN
Daneros Devlopment Rock van Genuchten hydraulic conductivity
1.0, 43.2, 6.6591, 1.0966, 2.0, RKMOD,SK,VGA,VGN,EPIT
0, NDAY
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2010_BL_85R.CSV
2011_BL_85R.CSV
2012_BL_85L.CSV
2013_BL_85R.CSV
2014_BL_85R.CSV
2015_BL_85R.CSV
2016_BL_85L.CSV
2017_BL_85R.CSV
2018_BL_85R.CSV
2019_BL_85R.CSV
2020_BL_85L.CSV
2021_BL_85R.CSV
2022_BL_85R.CSV
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2024_BL_85L.CSV
2025_BL_85R.CSV
2026_BL_85R.CSV
2027_BL_85R.CSV
2028_BL_85L.CSV
2029_BL_85R.CSV
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2031_BL_85R.CSV
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2073_BL_85R.CSV
2074_BL_85R.CSV

2075_BL_85R.CSV
2076_BL_85L.CSV
2077_BL_85R.CSV
2078_BL_85R.CSV
2079_BL_85R.CSV
2080_BL_85L.CSV
2081_BL_85R.CSV
2082_BL_85R.CSV
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2088_BL_85L.CSV
2089_BL_85R.CSV
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2098_BL_85R.CSV
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2100_BL_85L.CSV
2101_BL_85R.CSV
2102_BL_85R.CSV
2103_BL_85R.CSV
2104_BL_85L.CSV
2105_BL_85R.CSV
2106_BL_85R.CSV
2107_BL_85R.CSV
2108_BL_85L.CSV

```
-------------------------------------------------------------------------------
!                              Program DATAINH                                !
!                                Version 3.01                                 !
-------------------------------------------------------------------------------
 Input Filename: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\12Soi
 Date Processed: 28 Feb 2013
 Time Processed: 14:32:48.92
 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

 General options:

 IPLANT =    0        NGRAV =    1
 IFDEND =  365       IDTBEG =    1       IDTEND =  366
    IYS = 2009       NYEARS =  100       ISTEAD =    0
 IFLIST =    2       NFLIST =  100
 NPRINT =    0       STOPHR = 2.400E+01
 ISMETH =    0       INMAX  =   10       ISWDIF =    0       DMAXBA = 0.100E-02
 DELMAX = 1.000E+00  DELMIN = 1.000E-20  OUTTIM = 1.000E+00
  RFACT = 2.000E+00  RAINIF = 1.000E+02   DHTOL = 0.000E+00
  DHMAX = 0.000E+00  DHFACT = 0.000E+00
   KOPT =    4         KEST =    1          WTF = 3.000E-01
 ITOPBC =    0       IEVOPT =    1       NFHOUR =    2        LOWER =    1
  HIRRI = 1.000E+00    HDRY = 1.000E+07    HTOP = 0.000E+00     RHA = 4.800E-01
 IETOPT =    1       ICLOUD =    0       ISHOPT =    1
  IRAIN =    1          HPR = 1.000E-01

 Hysteresis options:

   IHYS =    0       AIRTOL = 0.000E+00  HYSTOL = 0.000E+00  HYSMXH = 0.000E+00

 Heat flow options:

  IHEAT =    0       ICONVH =    0       DMAXHE = 0.000E+00
 UPPERH =    0       TSMEAN = 0.000E+00   TSAMP = 0.000E+00  QHCTOP = 0.000E+00
 LOWERH =    0       QHLEAK = 0.000E+00   TGRAD = 0.000E+00

 Vapor flow options:

 IVAPOR =    1         TORT = 6.600E-01   TSOIL = 2.830E+02  VAPDIF = 2.700E-01

 Grid options:

   MATN =    3          NPT =  111

 Soil hydraulic properties:

   KOPT = 4: van Genuchten hydraulic functions

   Material No.    1
   THETA = f(H), Daneros Soil van Genuchten parameters
               THET = 0.34842        THTR = 3.56920E-07   ALPHA = 0.43868
```

```
                N =  1.1058           M = 9.56773E-02
  K =f(H), Daneros Soil van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  3.4920           A = 0.43868
                N =  1.1058           M = 9.56773E-02    EPIT =  2.0000

  Material No.    2
  THETA = f(H), Daneros Vent Cuttings van Genuchten parameters
             THET = 0.37476        THTR = 3.72910E-07   ALPHA = 0.27231
                N =  1.1839           M = 0.15533
  K =f(H), Daneros Vent Cuttings van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  15.480           A = 0.27231
                N =  1.1839           M = 0.15533        EPIT =  2.0000

  Material No.    3
  THETA = f(H), Daneros Development Rock van Genuchten parameters
             THET = 0.31313        THTR = 2.13230E-06   ALPHA =  6.6591
                N =  1.0966           M = 8.80905E-02
  K =f(H), Daneros Devlopment Rock van Genuchten hydraulic conductivity
            RKMOD =  1.0000          SK =  43.200           A =  6.6591
                N =  1.0966           M = 8.80905E-02    EPIT =  2.0000
-------------------------------------------------------------------------------
 Surface node bounding values:

  HIRRI = 1.000E+00   THETA = 3.373E-01   K = 3.687E-01   C =-1.023E-02
   HDRY = 1.000E+07   THETA = 6.908E-02   K = 5.936E-10   C =-7.309E-10
-------------------------------------------------------------------------------
 Initial Conditions:

  NDAY =   0
```

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.02	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
2	0.05	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
3	0.10	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
4	0.20	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
5	0.30	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
6	0.40	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
7	0.50	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
8	0.60	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
9	0.70	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
10	0.80	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
11	0.90	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
12	1.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
13	2.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
14	3.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
15	4.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
16	5.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
17	6.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
18	7.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
19	8.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
20	9.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0

21	10.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
22	11.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
23	12.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
24	13.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
25	14.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
26	15.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
27	16.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
28	17.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
29	18.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
30	19.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
31	20.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
32	22.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
33	24.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
34	26.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
35	28.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
36	30.00	1	1.0000E+07	5.9363E-10	-7.3088E-10	0.0691	283.0
37	32.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
38	34.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
39	36.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
40	38.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
41	40.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
42	42.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
43	44.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
44	46.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
45	48.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
46	50.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
47	52.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
48	54.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
49	56.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
50	58.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
51	60.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
52	62.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
53	64.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
54	66.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
55	68.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
56	70.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
57	72.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
58	74.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
59	76.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
60	78.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
61	80.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
62	82.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
63	84.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
64	86.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
65	88.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
66	90.00	2	1.0000E+07	2.4874E-10	-4.5178E-10	0.0246	283.0
67	92.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
68	94.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
69	96.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
70	98.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
71	100.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
72	105.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0

73	110.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
74	115.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
75	120.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
76	125.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
77	130.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
78	135.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
79	140.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
80	145.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
81	150.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
82	155.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
83	160.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
84	165.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
85	170.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
86	175.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
87	180.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
88	185.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
89	190.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
90	195.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
91	200.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
92	205.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
93	210.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
94	215.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
95	220.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
96	225.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
97	230.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
98	235.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
99	240.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
100	245.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
101	250.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
102	255.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
103	260.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
104	265.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
105	270.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
106	275.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
107	280.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
108	285.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
109	290.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
110	295.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0
111	300.00	3	1.0000E+07	3.0887E-10	-5.3083E-10	0.0550	283.0

Total Initial Storage (cm) = 1.509950E+01

ET parameters:

NFHOUR = 2: User subroutine for hourly PET provided

0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0150	0.0440
0.0699	0.0911	0.1061	0.1139	0.1139	0.1061	0.0911	0.0699
0.0440	0.0150	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100

IETOPT = 1 and IHEAT = 0:
PET calculated from meteorological data
using subroutine CALPET

```
 ALBEDO =  4.000E-01
    ALT =  2.172E+03 (m)
     ZU =  2.000E+00 (m)
    PMB =  8.520E+02 (mb)

-------------------------------------------------------------------------------
 Lower Boundary Option:

   LOWER = 1:  unit gradient
-------------------------------------------------------------------------------

 Multiyear Option
 Sim Year    PET input file name
        1    2009_BL_85R.CSV
        2    2010_BL_85R.CSV
        3    2011_BL_85R.CSV
        4    2012_BL_85L.CSV
        5    2013_BL_85R.CSV
        6    2014_BL_85R.CSV
        7    2015_BL_85R.CSV
        8    2016_BL_85L.CSV
        9    2017_BL_85R.CSV
       10    2018_BL_85R.CSV
       11    2019_BL_85R.CSV
       12    2020_BL_85L.CSV
       13    2021_BL_85R.CSV
       14    2022_BL_85R.CSV
       15    2023_BL_85R.CSV
       16    2024_BL_85L.CSV
       17    2025_BL_85R.CSV
       18    2026_BL_85R.CSV
       19    2027_BL_85R.CSV
       20    2028_BL_85L.CSV
       21    2029_BL_85R.CSV
       22    2030_BL_85R.CSV
       23    2031_BL_85R.CSV
       24    2032_BL_85L.CSV
       25    2033_BL_85R.CSV
       26    2034_BL_85R.CSV
       27    2035_BL_85R.CSV
       28    2036_BL_85L.CSV
       29    2037_BL_85R.CSV
       30    2038_BL_85R.CSV
       31    2039_BL_85R.CSV
       32    2040_BL_85L.CSV
       33    2041_BL_85R.CSV
       34    2042_BL_85R.CSV
       35    2043_BL_85R.CSV
       36    2044_BL_85L.CSV
       37    2045_BL_85R.CSV
       38    2046_BL_85R.CSV
```

39 2047_BL_85R.CSV
40 2048_BL_85L.CSV
41 2049_BL_85R.CSV
42 2050_BL_85R.CSV
43 2051_BL_85R.CSV
44 2052_BL_85L.CSV
45 2053_BL_85R.CSV
46 2054_BL_85R.CSV
47 2055_BL_85R.CSV
48 2056_BL_85L.CSV
49 2057_BL_85R.CSV
50 2058_BL_85R.CSV
51 2059_BL_85R.CSV
52 2060_BL_85L.CSV
53 2061_BL_85R.CSV
54 2062_BL_85R.CSV
55 2063_BL_85R.CSV
56 2064_BL_85L.CSV
57 2065_BL_85R.CSV
58 2066_BL_85R.CSV
59 2067_BL_85R.CSV
60 2068_BL_85L.CSV
61 2069_BL_85R.CSV
62 2070_BL_85R.CSV
63 2071_BL_85R.CSV
64 2072_BL_85L.CSV
65 2073_BL_85R.CSV
66 2074_BL_85R.CSV
67 2075_BL_85R.CSV
68 2076_BL_85L.CSV
69 2077_BL_85R.CSV
70 2078_BL_85R.CSV
71 2079_BL_85R.CSV
72 2080_BL_85L.CSV
73 2081_BL_85R.CSV
74 2082_BL_85R.CSV
75 2083_BL_85R.CSV
76 2084_BL_85L.CSV
77 2085_BL_85R.CSV
78 2086_BL_85R.CSV
79 2087_BL_85R.CSV
80 2088_BL_85L.CSV
81 2089_BL_85R.CSV
82 2090_BL_85R.CSV
83 2091_BL_85R.CSV
84 2092_BL_85L.CSV
85 2093_BL_85R.CSV
86 2094_BL_85R.CSV
87 2095_BL_85R.CSV
88 2096_BL_85L.CSV
89 2097_BL_85R.CSV
90 2098_BL_85R.CSV

```
      91    2099_BL_85R.CSV
      92    2100_BL_85L.CSV
      93    2101_BL_85R.CSV
      94    2102_BL_85R.CSV
      95    2103_BL_85R.CSV
      96    2104_BL_85L.CSV
      97    2105_BL_85R.CSV
      98    2106_BL_85R.CSV
      99    2107_BL_85R.CSV
     100    2108_BL_85L.CSV
```

IETOPT = 1: Meteorological Data

IDAY	Temperature Max F	Temperature Min F	Temperature Dew F	Solar Rad ly/d	Wind Speed mph	Cloud Cover tenth	Prec. in
1.	74.	52.	33.2	361.	7.2	4.3	0.00
2.	71.	52.	36.0	361.	7.2	4.3	0.00
3.	70.	52.	37.6	361.	7.6	4.3	0.00
4.	67.	52.	37.2	361.	7.6	4.3	0.00
5.	66.	50.	36.0	361.	6.8	4.3	0.00
6.	69.	52.	34.7	361.	7.8	4.3	0.00
7.	66.	49.	36.6	361.	7.3	4.3	0.00
8.	66.	50.	34.4	361.	7.9	4.3	0.00
9.	67.	48.	33.0	361.	6.9	4.3	0.51
10.	66.	48.	34.0	361.	8.4	4.3	0.35
11.	65.	46.	30.0	361.	7.9	4.3	0.23
12.	63.	45.	26.5	361.	7.7	4.3	0.15
13.	64.	46.	24.4	361.	7.0	4.3	0.00
14.	68.	45.	25.4	361.	6.8	4.3	0.20
15.	64.	46.	26.7	361.	6.7	4.3	0.00
16.	64.	43.	27.2	361.	7.8	4.3	0.00
17.	62.	43.	26.2	361.	6.9	4.3	0.20
18.	63.	43.	26.3	361.	7.4	4.3	0.64
19.	60.	44.	27.7	361.	8.6	4.3	0.55
20.	63.	46.	27.7	361.	6.9	4.3	0.01
21.	59.	43.	26.5	361.	8.4	4.3	0.00
22.	57.	41.	28.7	361.	6.5	4.3	0.00
23.	60.	40.	29.9	361.	6.0	4.3	0.00
24.	55.	41.	25.6	361.	6.9	4.3	0.00
25.	54.	38.	26.3	361.	7.9	4.3	0.00
26.	56.	38.	26.4	361.	6.9	4.3	0.00
27.	55.	43.	31.4	361.	7.4	4.3	0.00
28.	55.	41.	33.2	361.	9.5	4.3	0.03
29.	54.	39.	30.4	361.	7.0	4.3	0.62
30.	57.	39.	29.9	361.	7.5	4.3	0.00
31.	53.	39.	28.5	361.	7.9	4.3	0.00
32.	53.	38.	26.9	241.	10.7	5.4	0.00
33.	55.	38.	25.8	241.	6.4	5.4	0.00
34.	53.	38.	24.0	241.	7.1	5.4	0.00
35.	54.	38.	26.1	241.	6.2	5.4	0.00

36.	53.	39.	23.8	241.	6.1	5.4	0.00
37.	55.	37.	22.3	241.	6.5	5.4	0.00
38.	57.	39.	24.2	241.	7.3	5.4	0.03
39.	53.	40.	27.2	241.	6.3	5.4	0.00
40.	53.	37.	28.7	241.	6.6	5.4	0.00
41.	50.	36.	27.8	241.	6.5	5.4	0.00
42.	49.	36.	28.5	241.	5.6	5.4	0.00
43.	48.	34.	27.7	241.	6.3	5.4	0.00
44.	48.	35.	27.7	241.	6.0	5.4	0.08
45.	49.	35.	25.9	241.	6.2	5.4	0.79
46.	49.	31.	22.6	241.	6.4	5.4	0.16
47.	47.	33.	22.9	241.	6.1	5.4	0.00
48.	50.	33.	23.0	241.	6.8	5.4	0.20
49.	48.	33.	22.4	241.	6.0	5.4	0.17
50.	48.	33.	21.1	241.	6.2	5.4	0.27
51.	52.	36.	22.1	241.	6.9	5.4	0.48
52.	46.	34.	23.2	241.	6.2	5.4	0.66
53.	47.	34.	26.0	241.	6.5	5.4	0.02
54.	46.	31.	21.2	241.	6.6	5.4	0.00
55.	45.	29.	20.9	241.	7.3	5.4	0.00
56.	43.	31.	23.4	241.	5.8	5.4	0.00
57.	46.	31.	19.8	241.	6.9	5.4	0.00
58.	38.	29.	19.2	241.	7.8	5.4	0.00
59.	41.	25.	19.0	241.	7.9	5.4	0.00
60.	40.	27.	15.3	241.	6.2	5.4	0.00
61.	44.	23.	22.1	241.	6.4	5.4	0.00
62.	42.	29.	21.8	198.	6.6	5.8	0.09
63.	43.	30.	22.9	198.	6.5	5.8	0.00
64.	42.	27.	20.9	198.	6.8	5.8	0.00
65.	41.	25.	19.8	198.	6.3	5.8	0.24
66.	38.	16.	20.8	198.	5.3	5.8	0.07
67.	40.	26.	22.4	198.	5.5	5.8	0.00
68.	38.	27.	21.7	198.	6.5	5.8	0.00
69.	38.	24.	20.6	198.	7.1	5.8	0.00
70.	39.	24.	18.9	198.	5.7	5.8	0.20
71.	40.	27.	22.7	198.	6.8	5.8	0.13
72.	38.	25.	19.2	198.	9.7	5.8	0.00
73.	38.	25.	19.7	198.	6.1	5.8	0.00
74.	42.	25.	22.2	198.	6.9	5.8	0.00
75.	38.	24.	16.5	198.	7.8	5.8	0.00
76.	38.	23.	16.0	198.	7.0	5.8	0.00
77.	39.	24.	15.4	198.	6.5	5.8	0.00
78.	39.	24.	17.9	198.	6.5	5.8	0.00
79.	41.	25.	17.8	198.	7.6	5.8	0.00
80.	39.	25.	17.5	198.	6.2	5.8	0.00
81.	41.	26.	18.4	198.	7.0	5.8	0.02
82.	37.	26.	19.2	198.	6.3	5.8	0.10
83.	36.	23.	17.1	198.	6.7	5.8	0.06
84.	36.	23.	15.9	198.	7.2	5.8	0.39
85.	34.	24.	17.9	198.	5.9	5.8	0.00
86.	38.	26.	17.2	198.	7.2	5.8	0.00
87.	40.	29.	18.4	198.	6.4	5.8	0.13

88.	40.	27.	19.3	198.	5.4	5.8	0.00
89.	40.	27.	19.6	198.	6.3	5.8	0.00
90.	40.	28.	22.6	198.	6.0	5.8	0.00
91.	40.	26.	22.6	198.	5.7	5.8	0.00
92.	39.	28.	21.6	198.	6.0	5.8	0.47
93.	41.	26.	22.3	284.	6.2	6.1	0.00
94.	41.	28.	22.3	284.	6.5	6.1	0.00
95.	38.	27.	21.5	284.	7.2	6.1	0.00
96.	38.	25.	20.1	284.	6.6	6.1	0.00
97.	36.	25.	19.8	284.	6.6	6.1	0.00
98.	39.	23.	18.7	284.	6.4	6.1	0.00
99.	37.	23.	18.7	284.	6.6	6.1	0.00
100.	41.	24.	20.3	284.	6.8	6.1	0.00
101.	40.	27.	22.2	284.	6.2	6.1	0.00
102.	41.	28.	24.0	284.	6.2	6.1	0.00
103.	42.	27.	23.6	284.	6.3	6.1	0.00
104.	39.	28.	21.9	284.	6.8	6.1	0.00
105.	38.	25.	21.2	284.	7.1	6.1	0.00
106.	37.	23.	18.8	284.	6.1	6.1	0.00
107.	38.	24.	18.2	284.	6.0	6.1	0.00
108.	39.	24.	17.3	284.	6.0	6.1	0.00
109.	38.	25.	18.3	284.	6.2	6.1	0.00
110.	42.	26.	19.6	284.	6.3	6.1	0.00
111.	39.	25.	19.6	284.	5.9	6.1	0.23
112.	41.	25.	21.4	284.	6.1	6.1	0.02
113.	39.	26.	20.2	284.	6.7	6.1	0.03
114.	40.	24.	18.0	284.	6.2	6.1	0.08
115.	40.	25.	18.7	284.	5.8	6.1	0.01
116.	42.	27.	21.1	284.	6.4	6.1	0.00
117.	40.	29.	23.7	284.	7.4	6.1	0.00
118.	49.	29.	23.9	284.	7.0	6.1	0.00
119.	41.	28.	22.9	284.	7.0	6.1	0.13
120.	41.	27.	21.2	284.	7.5	6.1	0.00
121.	40.	25.	19.2	284.	6.4	6.1	0.00
122.	41.	25.	19.1	284.	7.1	6.1	0.00
123.	38.	24.	20.0	284.	6.4	6.1	0.00
124.	38.	22.	16.6	310.	6.9	6.2	0.03
125.	37.	24.	20.0	310.	6.4	6.2	0.07
126.	38.	27.	20.4	310.	6.5	6.2	0.10
127.	42.	28.	21.2	310.	7.1	6.2	0.09
128.	41.	27.	20.5	310.	7.8	6.2	0.02
129.	42.	23.	18.1	310.	6.5	6.2	0.00
130.	40.	25.	20.1	310.	6.7	6.2	0.01
131.	39.	27.	19.7	310.	7.0	6.2	0.42
132.	42.	26.	19.9	310.	6.3	6.2	0.00
133.	43.	25.	18.1	310.	7.2	6.2	0.00
134.	42.	26.	19.5	310.	6.7	6.2	0.02
135.	45.	27.	20.1	310.	6.4	6.2	0.02
136.	40.	28.	21.4	310.	6.9	6.2	0.01
137.	41.	30.	23.4	310.	6.7	6.2	0.06
138.	47.	28.	22.6	310.	7.7	6.2	0.00
139.	43.	29.	21.4	310.	6.5	6.2	0.00

140.	46.	31.	22.3	310.	6.7	6.2	0.00
141.	44.	30.	23.3	310.	6.5	6.2	0.00
142.	46.	29.	22.4	310.	6.7	6.2	0.00
143.	44.	32.	23.4	310.	6.5	6.2	0.00
144.	47.	32.	22.4	310.	7.5	6.2	0.00
145.	44.	31.	21.7	310.	7.3	6.2	0.00
146.	44.	30.	22.4	310.	7.0	6.2	0.00
147.	44.	30.	20.9	310.	8.6	6.2	0.00
148.	41.	30.	21.7	310.	7.4	6.2	0.00
149.	41.	31.	23.8	310.	7.0	6.2	0.00
150.	40.	28.	26.0	310.	7.9	6.2	0.00
151.	40.	31.	22.7	310.	7.9	6.2	0.00
152.	44.	29.	20.2	413.	7.2	6.2	0.00
153.	42.	27.	18.2	413.	7.8	6.2	0.00
154.	45.	27.	17.6	413.	6.4	6.2	0.00
155.	47.	29.	18.1	413.	7.2	6.2	0.00
156.	48.	29.	15.1	413.	7.4	6.2	0.00
157.	52.	32.	17.8	413.	7.5	6.2	0.00
158.	50.	33.	22.4	413.	8.1	6.2	0.00
159.	49.	32.	24.7	413.	7.8	6.2	0.00
160.	51.	31.	18.7	413.	7.0	6.2	0.00
161.	51.	34.	20.9	413.	7.3	6.2	0.00
162.	51.	35.	23.0	413.	7.5	6.2	0.00
163.	55.	36.	24.5	413.	7.8	6.2	0.00
164.	54.	36.	21.7	413.	7.5	6.2	0.00
165.	53.	36.	20.2	413.	8.4	6.2	0.00
166.	53.	35.	16.3	413.	8.4	6.2	0.00
167.	54.	35.	20.4	413.	7.7	6.2	0.00
168.	53.	36.	23.2	413.	7.6	6.2	0.00
169.	52.	34.	22.1	413.	8.4	6.2	0.00
170.	53.	35.	22.4	413.	8.0	6.2	0.00
171.	57.	38.	24.8	413.	7.0	6.2	0.00
172.	56.	41.	23.0	413.	7.5	6.2	0.00
173.	58.	41.	23.7	413.	7.0	6.2	0.00
174.	58.	40.	22.3	413.	8.1	6.2	0.00
175.	57.	38.	25.5	413.	8.0	6.2	0.00
176.	58.	39.	23.9	413.	7.5	6.2	0.00
177.	56.	38.	24.4	413.	7.9	6.2	0.00
178.	56.	36.	20.6	413.	9.0	6.2	0.00
179.	55.	36.	20.2	413.	8.6	6.2	0.00
180.	51.	35.	20.6	413.	9.0	6.2	0.00
181.	56.	35.	19.6	413.	8.1	6.2	0.02
182.	57.	39.	20.3	413.	9.2	6.2	0.01
183.	58.	36.	21.3	516.	8.0	6.0	0.00
184.	58.	39.	23.6	516.	9.4	6.0	0.00
185.	57.	39.	24.3	516.	8.6	6.0	0.00
186.	59.	39.	23.7	516.	7.9	6.0	0.00
187.	57.	38.	23.3	516.	9.2	6.0	0.00
188.	53.	36.	25.5	516.	8.0	6.0	0.08
189.	54.	37.	25.7	516.	7.9	6.0	0.00
190.	56.	38.	24.8	516.	9.6	6.0	0.00
191.	57.	37.	24.3	516.	8.8	6.0	0.00

192.	54.	35.	21.1	516.	9.3	6.0	0.00
193.	52.	35.	18.7	516.	7.8	6.0	0.03
194.	53.	37.	25.3	516.	7.6	6.0	0.00
195.	59.	39.	21.0	516.	8.8	6.0	0.00
196.	60.	41.	21.2	516.	9.0	6.0	0.00
197.	59.	41.	22.3	516.	8.9	6.0	0.00
198.	60.	39.	23.4	516.	7.6	6.0	0.00
199.	64.	41.	22.5	516.	9.3	6.0	0.00
200.	60.	39.	21.8	516.	9.1	6.0	0.00
201.	61.	38.	17.6	516.	7.9	6.0	0.00
202.	60.	40.	18.5	516.	9.1	6.0	0.00
203.	61.	40.	20.7	516.	10.3	6.0	0.00
204.	60.	41.	22.4	516.	10.4	6.0	0.00
205.	61.	40.	24.0	516.	8.2	6.0	0.00
206.	59.	40.	27.4	516.	8.6	6.0	0.15
207.	61.	41.	27.0	516.	8.1	6.0	0.08
208.	65.	43.	24.9	516.	8.8	6.0	0.00
209.	64.	44.	24.9	516.	8.4	6.0	0.00
210.	69.	45.	20.1	516.	8.0	6.0	0.00
211.	66.	46.	24.0	516.	7.4	6.0	0.03
212.	65.	45.	23.8	516.	8.3	6.0	0.00
213.	65.	45.	22.5	593.	9.5	5.5	0.01
214.	60.	40.	26.9	593.	8.3	5.5	0.07
215.	65.	44.	24.6	593.	8.2	5.5	0.00
216.	63.	45.	25.6	593.	7.9	5.5	0.00
217.	65.	48.	24.1	593.	8.2	5.5	0.01
218.	67.	45.	25.0	593.	8.9	5.5	0.00
219.	69.	47.	26.7	593.	9.2	5.5	0.00
220.	68.	48.	27.7	593.	8.5	5.5	0.00
221.	70.	46.	26.4	593.	9.1	5.5	0.00
222.	67.	48.	24.4	593.	10.0	5.5	0.00
223.	68.	46.	19.3	593.	9.2	5.5	0.00
224.	69.	47.	23.8	593.	8.7	5.5	0.02
225.	69.	48.	26.4	593.	9.1	5.5	0.05
226.	72.	51.	24.6	593.	8.0	5.5	0.14
227.	71.	50.	28.8	593.	8.3	5.5	0.00
228.	76.	50.	26.2	593.	9.5	5.5	0.00
229.	69.	51.	26.8	593.	9.0	5.5	0.00
230.	76.	53.	29.1	593.	8.2	5.5	0.00
231.	77.	55.	31.6	593.	7.9	5.5	0.00
232.	79.	55.	31.1	593.	8.7	5.5	0.00
233.	73.	51.	27.1	593.	9.1	5.5	0.00
234.	68.	48.	29.2	593.	8.2	5.5	0.00
235.	69.	48.	30.4	593.	7.1	5.5	0.00
236.	71.	51.	30.4	593.	8.4	5.5	0.08
237.	74.	52.	30.2	593.	7.8	5.5	0.00
238.	76.	52.	27.7	593.	9.2	5.5	0.00
239.	76.	56.	28.5	593.	8.7	5.5	0.00
240.	78.	55.	27.2	593.	8.4	5.5	0.00
241.	78.	56.	26.8	593.	8.4	5.5	0.00
242.	80.	55.	25.7	593.	8.9	5.5	0.00
243.	81.	56.	24.9	593.	8.1	5.5	0.00

244.	84.	58.	24.7	636.	9.4	4.0	0.00
245.	81.	58.	24.6	636.	8.6	4.0	0.00
246.	81.	57.	26.1	636.	9.4	4.0	0.00
247.	73.	53.	28.1	636.	8.4	4.0	0.00
248.	75.	53.	29.6	636.	8.6	4.0	0.00
249.	76.	53.	29.6	636.	8.6	4.0	0.01
250.	68.	53.	29.1	636.	9.2	4.0	0.01
251.	70.	50.	29.3	636.	7.7	4.0	0.00
252.	73.	53.	28.0	636.	8.1	4.0	0.00
253.	76.	55.	27.1	636.	8.4	4.0	0.41
254.	79.	55.	23.7	636.	8.4	4.0	0.53
255.	77.	52.	25.2	636.	9.0	4.0	0.00
256.	76.	54.	27.1	636.	9.6	4.0	0.00
257.	81.	58.	27.0	636.	9.2	4.0	0.00
258.	81.	59.	25.3	636.	8.6	4.0	0.00
259.	82.	59.	27.6	636.	8.6	4.0	0.00
260.	84.	58.	26.1	636.	9.1	4.0	0.00
261.	84.	60.	28.6	636.	8.0	4.0	0.00
262.	84.	60.	26.6	636.	8.1	4.0	0.00
263.	86.	63.	26.2	636.	9.2	4.0	0.00
264.	87.	62.	28.2	636.	8.5	4.0	0.00
265.	87.	63.	25.9	636.	8.4	4.0	0.00
266.	86.	63.	27.1	636.	9.0	4.0	0.00
267.	86.	62.	27.1	636.	8.7	4.0	0.00
268.	85.	63.	29.2	636.	8.1	4.0	0.00
269.	82.	61.	29.1	636.	8.2	4.0	0.00
270.	84.	60.	30.5	636.	8.2	4.0	0.04
271.	86.	61.	31.4	636.	8.2	4.0	0.00
272.	87.	62.	34.9	636.	8.8	4.0	0.00
273.	81.	64.	33.7	636.	7.7	4.0	0.00
274.	89.	64.	27.1	645.	7.9	4.2	0.00
275.	87.	68.	28.7	645.	8.6	4.2	0.00
276.	91.	65.	33.7	645.	8.2	4.2	0.00
277.	88.	65.	33.9	645.	7.4	4.2	0.00
278.	87.	66.	35.0	645.	9.0	4.2	0.00
279.	86.	61.	37.2	645.	8.3	4.2	0.00
280.	86.	66.	37.2	645.	8.2	4.2	0.00
281.	88.	65.	39.7	645.	8.0	4.2	0.00
282.	85.	64.	41.0	645.	7.8	4.2	0.00
283.	85.	63.	41.1	645.	7.7	4.2	0.00
284.	89.	67.	39.5	645.	8.4	4.2	0.00
285.	89.	65.	37.9	645.	8.4	4.2	0.27
286.	90.	69.	39.5	645.	8.3	4.2	0.13
287.	87.	68.	42.1	645.	7.9	4.2	0.31
288.	89.	66.	43.6	645.	7.9	4.2	0.18
289.	90.	67.	43.1	645.	7.9	4.2	0.00
290.	88.	66.	42.8	645.	7.4	4.2	0.00
291.	88.	67.	40.3	645.	7.6	4.2	0.00
292.	86.	66.	40.7	645.	8.0	4.2	0.00
293.	89.	67.	43.6	645.	7.4	4.2	0.00
294.	90.	68.	44.0	645.	8.9	4.2	0.00
295.	86.	65.	43.7	645.	7.4	4.2	0.00

296.	82.	65.	46.8	645.	7.8	4.2	0.00
297.	85.	68.	46.6	645.	8.1	4.2	0.00
298.	86.	66.	48.2	645.	8.0	4.2	0.00
299.	87.	65.	48.5	645.	8.0	4.2	0.14
300.	85.	63.	48.3	645.	7.8	4.2	0.01
301.	84.	61.	46.2	645.	7.4	4.2	0.00
302.	88.	64.	43.3	645.	8.0	4.2	0.00
303.	82.	62.	42.3	645.	7.2	4.2	0.00
304.	85.	66.	44.0	645.	10.9	4.2	0.00
305.	84.	67.	46.2	585.	8.0	4.4	0.00
306.	82.	62.	50.2	585.	8.4	4.4	0.00
307.	81.	64.	49.3	585.	7.8	4.4	0.00
308.	83.	64.	49.3	585.	7.8	4.4	0.00
309.	80.	62.	50.9	585.	7.5	4.4	0.00
310.	82.	63.	49.2	585.	7.4	4.4	0.00
311.	83.	61.	47.4	585.	10.7	4.4	0.00
312.	85.	62.	45.6	585.	7.2	4.4	0.00
313.	85.	64.	45.1	585.	8.2	4.4	0.00
314.	84.	64.	45.7	585.	7.7	4.4	0.00
315.	85.	65.	43.2	585.	7.5	4.4	0.00
316.	83.	65.	41.7	585.	7.5	4.4	0.00
317.	83.	65.	41.8	585.	7.5	4.4	0.00
318.	83.	63.	42.0	585.	8.1	4.4	0.00
319.	81.	61.	43.6	585.	7.0	4.4	0.00
320.	83.	61.	44.2	585.	7.6	4.4	0.00
321.	85.	60.	44.4	585.	7.1	4.4	0.00
322.	84.	64.	42.3	585.	8.6	4.4	0.00
323.	84.	64.	42.0	585.	7.5	4.4	0.00
324.	84.	62.	44.6	585.	7.5	4.4	0.00
325.	82.	62.	43.9	585.	7.3	4.4	0.00
326.	83.	62.	42.0	585.	7.7	4.4	0.00
327.	84.	63.	40.9	585.	7.5	4.4	0.10
328.	85.	62.	41.8	585.	7.8	4.4	0.30
329.	83.	63.	41.4	585.	7.2	4.4	0.00
330.	82.	61.	44.0	585.	6.7	4.4	0.00
331.	80.	61.	41.5	585.	6.6	4.4	0.00
332.	85.	63.	37.4	585.	7.9	4.4	0.00
333.	85.	63.	40.7	585.	7.0	4.4	0.00
334.	85.	62.	42.2	585.	6.7	4.4	0.00
335.	80.	61.	43.6	585.	7.3	4.4	0.00
336.	77.	59.	44.0	464.	7.7	3.7	0.00
337.	81.	59.	41.4	464.	7.5	3.7	0.00
338.	82.	61.	41.2	464.	7.9	3.7	0.00
339.	80.	60.	40.3	464.	7.7	3.7	0.23
340.	82.	60.	40.2	464.	7.3	3.7	0.00
341.	77.	60.	41.0	464.	8.0	3.7	0.00
342.	79.	57.	39.3	464.	7.4	3.7	0.00
343.	77.	59.	39.5	464.	7.5	3.7	0.00
344.	74.	57.	41.7	464.	7.5	3.7	0.00
345.	75.	56.	42.2	464.	7.4	3.7	0.00
346.	75.	56.	41.9	464.	7.6	3.7	0.00
347.	78.	56.	39.7	464.	7.2	3.7	0.00

348.	78.	58.	37.2	464.	7.5	3.7	0.00
349.	76.	55.	36.3	464.	6.9	3.7	0.00
350.	77.	56.	36.1	464.	7.4	3.7	0.00
351.	76.	57.	39.4	464.	6.8	3.7	0.00
352.	74.	54.	35.8	464.	7.3	3.7	0.00
353.	70.	51.	36.0	464.	8.3	3.7	0.00
354.	71.	51.	34.9	464.	8.1	3.7	0.00
355.	74.	54.	36.7	464.	8.0	3.7	0.00
356.	69.	53.	35.4	464.	8.2	3.7	0.00
357.	72.	53.	33.3	464.	8.3	3.7	0.00
358.	74.	51.	33.9	464.	7.7	3.7	0.00
359.	71.	51.	32.5	464.	6.6	3.7	0.00
360.	75.	52.	29.9	464.	7.2	3.7	0.00
361.	76.	52.	30.2	464.	6.4	3.7	0.00
362.	75.	56.	32.7	464.	8.4	3.7	0.00
363.	71.	54.	32.5	464.	7.3	3.7	0.00
364.	72.	52.	35.7	464.	8.3	3.7	0.00
365.	74.	51.	31.5	464.	6.6	3.7	0.00

Potential Evaporation Values (no plants):

DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO	DAY	PEVAPO
1	0.5270	2	0.4832	3	0.4842	4	0.4624	5	0.4253
6	0.5017	7	0.4211	8	0.4783	9	0.4413	10	0.4826
11	0.4790	12	0.4774	13	0.4760	14	0.4779	15	0.4474
16	0.4682	17	0.4267	18	0.4468	19	0.4719	20	0.4377
21	0.4516	22	0.3510	23	0.3422	24	0.3741	25	0.3726
26	0.3550	27	0.3560	28	0.3640	29	0.3173	30	0.3591
31	0.3470	32	0.3706	33	0.2802	34	0.3064	35	0.2760
36	0.2863	37	0.3040	38	0.3427	39	0.2710	40	0.2513
41	0.2308	42	0.1991	43	0.2031	44	0.2051	45	0.2259
46	0.2317	47	0.2220	48	0.2564	49	0.2296	50	0.2461
51	0.2961	52	0.2235	53	0.2153	54	0.2324	55	0.2286
56	0.1819	57	0.2499	58	0.2116	59	0.2053	60	0.2047
61	0.1647	62	0.1767	63	0.1766	64	0.1763	65	0.1583
66	0.0760	67	0.1295	68	0.1395	69	0.1403	70	0.1389
71	0.1424	72	0.1944	73	0.1366	74	0.1531	75	0.1807
76	0.1721	77	0.1758	78	0.1600	79	0.1949	80	0.1609
81	0.1869	82	0.1469	83	0.1493	84	0.1636	85	0.1263
86	0.1811	87	0.1873	88	0.1497	89	0.1623	90	0.1444
91	0.1283	92	0.1449	93	0.1815	94	0.2010	95	0.1948
96	0.1843	97	0.1788	98	0.1925	99	0.1778	100	0.1966
101	0.1817	102	0.1810	103	0.1842	104	0.1924	105	0.1807
106	0.1725	107	0.1845	108	0.1947	109	0.1929	110	0.2112
111	0.1884	112	0.1843	113	0.1929	114	0.1999	115	0.1966
116	0.2080	117	0.1978	118	0.2551	119	0.2002	120	0.2192
121	0.2023	122	0.2203	123	0.1773	124	0.2081	125	0.1853
126	0.2051	127	0.2396	128	0.2397	129	0.2231	130	0.2153
131	0.2241	132	0.2256	133	0.2553	134	0.2336	135	0.2506
136	0.2211	137	0.2218	138	0.2733	139	0.2433	140	0.2662

141	0.2441	142	0.2514	143	0.2427	144	0.3002	145	0.2692
146	0.2504	147	0.3018	148	0.2498	149	0.2260	150	0.1934
151	0.2446	152	0.3160	153	0.3171	154	0.3145	155	0.3548
156	0.3855	157	0.4140	158	0.4007	159	0.3456	160	0.3866
161	0.4031	162	0.3994	163	0.4254	164	0.4312	165	0.4609
166	0.4891	167	0.4504	168	0.4148	169	0.4238	170	0.4315
171	0.4295	172	0.4758	173	0.4659	174	0.5056	175	0.4561
176	0.4684	177	0.4575	178	0.5018	179	0.4844	180	0.4559
181	0.4726	182	0.5457	183	0.5399	184	0.5836	185	0.5432
186	0.5509	187	0.5672	188	0.4702	189	0.4811	190	0.5544
191	0.5404	192	0.5388	193	0.5017	194	0.4658	195	0.6027
196	0.6360	197	0.6072	198	0.5540	199	0.6623	200	0.6093
201	0.5973	202	0.6433	203	0.6815	204	0.6719	205	0.5801
206	0.5525	207	0.5599	208	0.6503	209	0.6406	210	0.6970
211	0.6397	212	0.6577	213	0.7590	214	0.5975	215	0.6847
216	0.6594	217	0.7128	218	0.7327	219	0.7645	220	0.7353
221	0.7643	222	0.8078	223	0.7889	224	0.7643	225	0.7704
226	0.7788	227	0.7529	228	0.8583	229	0.7933	230	0.8048
231	0.7968	232	0.8533	233	0.8212	234	0.7038	235	0.6598
236	0.7450	237	0.7544	238	0.8505	239	0.8570	240	0.8586
241	0.8712	242	0.9024	243	0.8843	244	0.9897	245	0.9245
246	0.9585	247	0.7983	248	0.8131	249	0.8219	250	0.7913
251	0.7144	252	0.7922	253	0.8427	254	0.8833	255	0.8724
256	0.9015	257	0.9465	258	0.9262	259	0.9254	260	0.9685
261	0.9089	262	0.9194	263	1.0207	264	0.9695	265	0.9800
266	1.0010	267	0.9791	268	0.9377	269	0.9047	270	0.9066
271	0.9239	272	0.9477	273	0.8687	274	0.9685	275	1.0191
276	0.9883	277	0.9149	278	1.0040	279	0.9099	280	0.9341
281	0.9132	282	0.8703	283	0.8540	284	0.9704	285	0.9614
286	0.9781	287	0.9105	288	0.8972	289	0.9235	290	0.8710
291	0.9073	292	0.9054	293	0.8799	294	0.9738	295	0.8405
296	0.8101	297	0.8694	298	0.8520	299	0.8398	300	0.8028
301	0.7836	302	0.8850	303	0.7938	304	1.0207	305	0.8062
306	0.7289	307	0.7214	308	0.7411	309	0.6697	310	0.7131
311	0.8649	312	0.7493	313	0.8155	314	0.7743	315	0.8014
316	0.7983	317	0.7997	318	0.8068	319	0.7163	320	0.7561
321	0.7423	322	0.8547	323	0.7984	324	0.7583	325	0.7420
326	0.7874	327	0.7961	328	0.8068	329	0.7731	330	0.7122
331	0.7096	332	0.8489	333	0.7841	334	0.7486	335	0.7290
336	0.5972	337	0.6403	338	0.6781	339	0.6557	340	0.6537
341	0.6449	342	0.6268	343	0.6267	344	0.5655	345	0.5600
346	0.5766	347	0.6033	348	0.6419	349	0.5884	350	0.6275
351	0.5712	352	0.5936	353	0.5752	354	0.5883	355	0.6085
356	0.5866	357	0.6293	358	0.5966	359	0.5449	360	0.6155
361	0.5817	362	0.6749	363	0.5915	364	0.5959	365	0.5631

Totals: PEVAPO = 190.4435

Precipitation/irrigation parameters:

IRAIN = 1: precipitation data provided

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
9	0.000	1.3000	1	1.000	3
	13.000	0.0007			
	14.000	0.0000			
10	0.000	0.8000	1	1.000	3
	8.000	0.0905			
	9.000	0.0000			
11	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
12	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
14	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
17	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
18	0.000	1.6000	1	1.000	3
	16.000	0.0308			
	17.000	0.0000			
19	0.000	1.4000	1	1.000	3
	14.000	0.0007			
	15.000	0.0000			
20	0.000	0.0300	1	1.000	2
	1.000	0.0000			
28	0.000	0.0800	1	1.000	2
	1.000	0.0000			
29	0.000	1.5000	1	1.000	3
	15.000	0.0708			
	16.000	0.0000			
38	0.000	0.0800	1	1.000	2
	1.000	0.0000			
44	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
45	0.000	2.0000	1	1.000	3
	20.000	0.0110			
	21.000	0.0000			
46	0.000	0.4000	1	1.000	3
	4.000	0.0102			
	5.000	0.0000			
48	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
49	0.000	0.4000	1	1.000	3
	4.000	0.0302			

	5.000	0.0000			
50	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
51	0.000	1.2000	1	1.000	3
	12.000	0.0206			
	13.000	0.0000			
52	0.000	1.6000	1	1.000	3
	16.000	0.0809			
	17.000	0.0000			
53	0.000	0.0500	1	1.000	2
	1.000	0.0000			
62	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
65	0.000	0.6000	1	1.000	3
	6.000	0.0103			
	7.000	0.0000			
66	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
70	0.000	0.5000	1	1.000	3
	5.000	0.0103			
	6.000	0.0000			
71	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
81	0.000	0.0500	1	1.000	2
	1.000	0.0000			
82	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
83	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
84	0.000	0.9000	1	1.000	3
	9.000	0.0905			
	10.000	0.0000			
87	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
92	0.000	1.1000	1	1.000	3
	11.000	0.0906			
	12.000	0.0000			
111	0.000	0.5000	1	1.000	3
	5.000	0.0803			
	6.000	0.0000			
112	0.000	0.0500	1	1.000	2
	1.000	0.0000			
113	0.000	0.0800	1	1.000	2
	1.000	0.0000			
114	0.000	0.2000	1	1.000	3

	2.000	0.0001			
	3.000	0.0000			
115	0.000	0.0300	1	1.000	2
	1.000	0.0000			
119	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
124	0.000	0.0800	1	1.000	2
	1.000	0.0000			
125	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
126	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
127	0.000	0.2000	1	1.000	3
	2.000	0.0301			
	3.000	0.0000			
128	0.000	0.0500	1	1.000	2
	1.000	0.0000			
130	0.000	0.0300	1	1.000	2
	1.000	0.0000			
131	0.000	1.0000	1	1.000	3
	10.000	0.0705			
	11.000	0.0000			
134	0.000	0.0500	1	1.000	2
	1.000	0.0000			
135	0.000	0.0500	1	1.000	2
	1.000	0.0000			
136	0.000	0.0300	1	1.000	2
	1.000	0.0000			
137	0.000	0.1000	1	1.000	3
	1.000	0.0501			
	2.000	0.0000			
181	0.000	0.0500	1	1.000	2
	1.000	0.0000			
182	0.000	0.0300	1	1.000	2
	1.000	0.0000			
188	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
193	0.000	0.0800	1	1.000	2
	1.000	0.0000			
206	0.000	0.3000	1	1.000	3
	3.000	0.0802			
	4.000	0.0000			
207	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
211	0.000	0.0800	1	1.000	2
	1.000	0.0000			
213	0.000	0.0300	1	1.000	2

	1.000	0.0000			
214	0.000	0.1000	1	1.000	3
	1.000	0.0801			
	2.000	0.0000			
217	0.000	0.0300	1	1.000	2
	1.000	0.0000			
224	0.000	0.0500	1	1.000	2
	1.000	0.0000			
225	0.000	0.1000	1	1.000	3
	1.000	0.0301			
	2.000	0.0000			
226	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
236	0.000	0.2000	1	1.000	3
	2.000	0.0001			
	3.000	0.0000			
249	0.000	0.0300	1	1.000	2
	1.000	0.0000			
250	0.000	0.0300	1	1.000	2
	1.000	0.0000			
253	0.000	1.0000	1	1.000	3
	10.000	0.0405			
	11.000	0.0000			
254	0.000	1.3000	1	1.000	3
	13.000	0.0507			
	14.000	0.0000			
270	0.000	0.1000	1	1.000	3
	1.000	0.0001			
	2.000	0.0000			
285	0.000	0.6000	1	1.000	3
	6.000	0.0904			
	7.000	0.0000			
286	0.000	0.3000	1	1.000	3
	3.000	0.0302			
	4.000	0.0000			
287	0.000	0.7000	1	1.000	3
	7.000	0.0904			
	8.000	0.0000			
288	0.000	0.4000	1	1.000	3
	4.000	0.0602			
	5.000	0.0000			
299	0.000	0.3000	1	1.000	3
	3.000	0.0602			
	4.000	0.0000			
300	0.000	0.0300	1	1.000	2
	1.000	0.0000			
327	0.000	0.2000	1	1.000	3
	2.000	0.0501			
	3.000	0.0000			
328	0.000	0.7000	1	1.000	3
	7.000	0.0604			

```
        8.000   0.0000
   339  0.000   0.5000        1          1.000          3
        5.000   0.0803
        6.000   0.0000


   NWATER (number of days of rain/irrigation) = 77

   Total Water Applied (cm) =  3.323688E+01
-------------------------------------------------------------------------------
 Program DATAINH terminated normally.
```

UNSAT-H Version 3.01
INITIAL CONDITIONS

Input File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\12Soil_24C
Results File: F:\nelson work\Daneros\UNSAT_H\Final w blanding precip\12Soil_24C
Date of Run: 28 Feb 2013
Time of Run: 08:16:57.51
Title:
Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1980 avg precipitatio

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	2.000E-02	1.464E+06	0.0847	283.00	2	5.000E-02	1.462E+06	0.0847	283.00
3	1.000E-01	1.459E+06	0.0847	283.00	4	2.000E-01	1.452E+06	0.0847	283.00
5	3.000E-01	1.445E+06	0.0848	283.00	6	4.000E-01	1.439E+06	0.0848	283.00
7	5.000E-01	1.432E+06	0.0849	283.00	8	6.000E-01	1.426E+06	0.0849	283.00
9	7.000E-01	1.419E+06	0.0849	283.00	10	8.000E-01	1.413E+06	0.0850	283.00
11	9.000E-01	1.406E+06	0.0850	283.00	12	1.000E+00	1.400E+06	0.0851	283.00
13	2.000E+00	1.338E+06	0.0855	283.00	14	3.000E+00	1.279E+06	0.0859	283.00
15	4.000E+00	1.225E+06	0.0863	283.00	16	5.000E+00	1.175E+06	0.0866	283.00
17	6.000E+00	1.128E+06	0.0870	283.00	18	7.000E+00	1.084E+06	0.0874	283.00
19	8.000E+00	1.043E+06	0.0877	283.00	20	9.000E+00	1.005E+06	0.0881	283.00
21	1.000E+01	9.695E+05	0.0884	283.00	22	1.100E+01	9.362E+05	0.0888	283.00
23	1.200E+01	9.049E+05	0.0891	283.00	24	1.300E+01	8.754E+05	0.0894	283.00
25	1.400E+01	8.476E+05	0.0897	283.00	26	1.500E+01	8.211E+05	0.0900	283.00
27	1.600E+01	7.960E+05	0.0903	283.00	28	1.700E+01	7.721E+05	0.0906	283.00
29	1.800E+01	7.492E+05	0.0909	283.00	30	1.900E+01	7.274E+05	0.0912	283.00
31	2.000E+01	7.064E+05	0.0914	283.00	32	2.200E+01	6.670E+05	0.0920	283.00
33	2.400E+01	6.307E+05	0.0925	283.00	34	2.600E+01	5.975E+05	0.0931	283.00
35	2.800E+01	5.670E+05	0.0936	283.00	36	3.000E+01	5.390E+05	0.0941	283.00
37	3.200E+01	5.121E+05	0.0424	283.00	38	3.400E+01	4.847E+05	0.0429	283.00
39	3.600E+01	4.599E+05	0.0433	283.00	40	3.800E+01	4.375E+05	0.0437	283.00
41	4.000E+01	4.172E+05	0.0441	283.00	42	4.200E+01	3.986E+05	0.0444	283.00
43	4.400E+01	3.817E+05	0.0448	283.00	44	4.600E+01	3.663E+05	0.0451	283.00
45	4.800E+01	3.520E+05	0.0455	283.00	46	5.000E+01	3.390E+05	0.0458	283.00
47	5.200E+01	3.269E+05	0.0461	283.00	48	5.400E+01	3.157E+05	0.0464	283.00
49	5.600E+01	3.054E+05	0.0467	283.00	50	5.800E+01	2.957E+05	0.0469	283.00
51	6.000E+01	2.868E+05	0.0472	283.00	52	6.200E+01	2.784E+05	0.0475	283.00
53	6.400E+01	2.706E+05	0.0477	283.00	54	6.600E+01	2.632E+05	0.0480	283.00
55	6.800E+01	2.564E+05	0.0482	283.00	56	7.000E+01	2.499E+05	0.0484	283.00
57	7.200E+01	2.438E+05	0.0486	283.00	58	7.400E+01	2.381E+05	0.0488	283.00
59	7.600E+01	2.327E+05	0.0491	283.00	60	7.800E+01	2.276E+05	0.0493	283.00
61	8.000E+01	2.227E+05	0.0495	283.00	62	8.200E+01	2.182E+05	0.0496	283.00
63	8.400E+01	2.138E+05	0.0498	283.00	64	8.600E+01	2.097E+05	0.0500	283.00
65	8.800E+01	2.058E+05	0.0502	283.00	66	9.000E+01	2.020E+05	0.0503	283.00
67	9.200E+01	1.978E+05	0.0803	283.00	68	9.400E+01	1.903E+05	0.0806	283.00
69	9.600E+01	1.833E+05	0.0809	283.00	70	9.800E+01	1.767E+05	0.0812	283.00
71	1.000E+02	1.705E+05	0.0814	283.00	72	1.050E+02	1.565E+05	0.0821	283.00
73	1.100E+02	1.444E+05	0.0827	283.00	74	1.150E+02	1.339E+05	0.0834	283.00
75	1.200E+02	1.247E+05	0.0839	283.00	76	1.250E+02	1.167E+05	0.0845	283.00
77	1.300E+02	1.095E+05	0.0850	283.00	78	1.350E+02	1.032E+05	0.0855	283.00
79	1.400E+02	9.760E+04	0.0859	283.00	80	1.450E+02	9.259E+04	0.0864	283.00
81	1.500E+02	8.810E+04	0.0868	283.00	82	1.550E+02	8.407E+04	0.0872	283.00
83	1.600E+02	8.045E+04	0.0876	283.00	84	1.650E+02	7.719E+04	0.0879	283.00
85	1.700E+02	7.425E+04	0.0882	283.00	86	1.750E+02	7.159E+04	0.0886	283.00
87	1.800E+02	6.918E+04	0.0888	283.00	88	1.850E+02	6.700E+04	0.0891	283.00
89	1.900E+02	6.503E+04	0.0894	283.00	90	1.950E+02	6.323E+04	0.0896	283.00
91	2.000E+02	6.160E+04	0.0898	283.00	92	2.050E+02	6.012E+04	0.0901	283.00
93	2.100E+02	5.878E+04	0.0903	283.00	94	2.150E+02	5.756E+04	0.0904	283.00

```
   95 2.200E+02 5.646E+04 0.0906 283.00    96 2.250E+02 5.546E+04 0.0908 283.00
   97 2.300E+02 5.455E+04 0.0909 283.00    98 2.350E+02 5.374E+04 0.0910 283.00
   99 2.400E+02 5.301E+04 0.0912 283.00   100 2.450E+02 5.235E+04 0.0913 283.00
  101 2.500E+02 5.176E+04 0.0914 283.00   102 2.550E+02 5.125E+04 0.0915 283.00
  103 2.600E+02 5.080E+04 0.0915 283.00   104 2.650E+02 5.040E+04 0.0916 283.00
  105 2.700E+02 5.007E+04 0.0917 283.00   106 2.750E+02 4.979E+04 0.0917 283.00
  107 2.800E+02 4.956E+04 0.0918 283.00   108 2.850E+02 4.939E+04 0.0918 283.00
  109 2.900E+02 4.927E+04 0.0918 283.00   110 2.950E+02 4.919E+04 0.0918 283.00
  111 3.000E+02 4.917E+04 0.0918 283.00

 Initial Water Storage =  24.0953 cm

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day =   1, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08496     0.09107     0.04920     0.08960     0.09181
 Head (cm)         = 1.41507E+06 7.33736E+05 2.29028E+05 6.33878E+04 4.92446E+04
 LiqWater Flow (cm)=-9.76324E-03-9.56539E-03-5.17619E-03-1.67015E-03 7.02775E-06
 IsoVapor Flow (cm)=-5.10576E-04-3.39217E-04-7.18895E-05-7.48267E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  24.0953+ 0.0000+ 0.0000 - 0.0103- 0.0000-  0.0000 =   24.0850 vs.   24.0850

 Mass Balance =  3.7631E-07 cm;  Time step attempts =   43 and successes =   37
   Evaporation:  Potential =  0.5270 cm, Actual =  0.0103 cm
 RHMEAN = 34.6 %;  TMEAN = 290.4 K;  HDRY =  1.4151E+06 cm;  DAYUBC =    30

--------------------------------------------------------------------------------


 DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
 -------------
 Node Number       =       1          30          60          90         111
 Depth (cm)        =     0.02000    19.00000    78.00000   195.00000   300.00000
 Water (cm3/cm3)   =     0.08625     0.09115     0.04925     0.08955     0.09175
 Head (cm)         = 1.22671E+06 7.28293E+05 2.27691E+05 6.37396E+04 4.95769E+04
 LiqWater Flow (cm)=-2.64927E-03-1.01929E-02-5.09185E-03-1.65941E-03 6.96701E-06
 IsoVapor Flow (cm)=-1.31570E-04-3.59469E-04-7.01589E-05-7.48788E-06 0.00000E+00

                                                LIQUID
  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN     NEWSTOR       STORAGE
  24.0937+ 0.0000+ 0.0000 - 0.0028- 0.0000-  0.0000 =   24.0910 vs.   24.0910

 Mass Balance = -2.9106E-07 cm;  Time step attempts =   64 and successes =   44
   Evaporation:  Potential =  0.5959 cm, Actual =  0.0028 cm
 RHMEAN = 39.8 %;  TMEAN = 289.6 K;  HDRY =  1.2267E+06 cm;  DAYUBC =    15
1

--------------------------------------------------------------------------------
                              UNSAT-H Version 3.01
                               SIMULATION SUMMARY

 Title:
 Daneros 3 layer soil_Vent Cuttings_DR 100 year simulation 1985 avg precipitatio
--------------------------------------------------------------------------------

 Transpiration Scheme is:           =    0
 Potential Evapotranspiration       =  1.9005E+02     [cm]
```

```
Potential Transpiration            =  0.0000E+00     [cm]
Actual Transpiration               =  0.0000E+00     [cm]
Potential Evaporation              =  1.9005E+02     [cm]
Actual Evaporation                 =  3.3239E+01     [cm]
Evaporation during Growth          =  0.0000E+00     [cm]
Total Runoff                       =  0.0000E+00     [cm]
Total Infiltration                 =  3.3237E+01     [cm]
Total Basal Liquid Flux (drainage) =  2.4978E-03     [cm]
Total Basal Vapor Flux (temp-grad) =  0.0000E+00     [cm]
Total Applied Water                =  3.3237E+01     [cm]
Actual Rainfall                    =  3.3237E+01     [cm]
Actual Irrigation                  =  0.0000E+00     [cm]
Total Final Moisture Storage       =  2.4091E+01     [cm]
Mass Balance Error                 =  1.3095E-04     [cm]
Total Successful Time Steps        =    171307
Total Attempted Time Steps         =    188766
Total Time Step Reductions (DHMAX) =         0
Total Changes in Surface Boundary  =     20249
Total Time Actually Simulated      =  3.6500E+02     [days]
```

Total liquid water flow (cm) across different depths at the end of 3.6500E+02 days:

DEPTH	FLOW	DEPTH	FLOW	DEPTH	FLOW
0.020	-1.6609E-03	0.035	7.4289E-01	0.075	7.3005E-01
0.150	7.0469E-01	0.250	6.6945E-01	0.350	6.3704E-01
0.450	6.0798E-01	0.550	5.8196E-01	0.650	5.5853E-01
0.750	5.3728E-01	0.850	5.1784E-01	0.950	4.9994E-01
1.500	4.3899E-01	2.500	3.4824E-01	3.500	2.8923E-01
4.500	2.4692E-01	5.500	2.1455E-01	6.500	1.8878E-01
7.500	1.6768E-01	8.500	1.5005E-01	9.500	1.3509E-01
10.500	1.2224E-01	11.500	1.1108E-01	12.500	1.0132E-01
13.500	9.2714E-02	14.500	8.5088E-02	15.500	7.8288E-02
16.500	7.2194E-02	17.500	6.6705E-02	18.500	6.1739E-02
19.500	5.7228E-02	21.000	5.1777E-02	23.000	4.4717E-02
25.000	3.8704E-02	27.000	3.3526E-02	29.000	2.9027E-02
31.000	2.8715E-02	33.000	3.3921E-02	35.000	2.9668E-02
37.000	2.5953E-02	39.000	2.2692E-02	41.000	1.9820E-02
43.000	1.7281E-02	45.000	1.5028E-02	47.000	1.3022E-02
49.000	1.1230E-02	51.000	9.6238E-03	53.000	8.1798E-03
55.000	6.8776E-03	57.000	5.7001E-03	59.000	4.6323E-03
61.000	3.6618E-03	63.000	2.7780E-03	65.000	1.9718E-03
67.000	1.2356E-03	69.000	5.6328E-04	71.000	-5.0601E-05
73.000	-6.1037E-04	75.000	-1.1196E-03	77.000	-1.5815E-03
79.000	-1.9984E-03	81.000	-2.3728E-03	83.000	-2.7066E-03
85.000	-3.0021E-03	87.000	-3.2616E-03	89.000	-3.4876E-03
91.000	-3.2070E-03	93.000	5.1515E-04	95.000	-2.1302E-04
97.000	-8.7244E-04	99.000	-1.4694E-03	102.500	-2.2859E-03
107.500	-3.3739E-03	112.500	-4.2168E-03	117.500	-4.8647E-03
122.500	-5.3556E-03	127.500	-5.7184E-03	132.500	-5.9754E-03
137.500	-6.1439E-03	142.500	-6.2378E-03	147.500	-6.2682E-03
152.500	-6.2442E-03	157.500	-6.1735E-03	162.500	-6.0626E-03
167.500	-5.9170E-03	172.500	-5.7412E-03	177.500	-5.5394E-03
182.500	-5.3151E-03	187.500	-5.0713E-03	192.500	-4.8105E-03
197.500	-4.5351E-03	202.500	-4.2469E-03	207.500	-3.9477E-03
212.500	-3.6389E-03	217.500	-3.3218E-03	222.500	-2.9974E-03
227.500	-2.6667E-03	232.500	-2.3304E-03	237.500	-1.9894E-03
242.500	-1.6441E-03	247.500	-1.2950E-03	252.500	-9.4280E-04
257.500	-5.8772E-04	262.500	-2.3020E-04	267.500	1.2944E-04
272.500	4.9086E-04	277.500	8.5377E-04	282.500	1.2179E-03
287.500	1.5829E-03	292.500	1.9486E-03	297.500	2.3147E-03

300.000 2.4978E-03

Attachment 2: Estimation of Van Genuchten parameters for soil, inert material and development rock

CDM	**Job#:** 68838-64986.17	**Calc by:** M. Nelson
Client: Energy Fuels (USA) Inc.	**Checked by:**	**Date:** Feb. 14, 2013
Project: Daneros Mine EA .	**Date:**	**Calc No.**
Detail: Estimate of Van Genuchten parameters of soil, inert material and development rock	**Reviewed:**	**Revision:**
	Date:	**Date:**

Calculation Brief Title:

Estimation of Van Genuchten Parameters from Site Specific Water Retention Data

1.0 Purpose/Objective

Unsaturated flow modeling was used to estimate the volume of percolation that occurs from the base of a development rock pile. This process used UNSAT-H (Fayer 2000), which is a fortran-based model that simulates one-dimensional flow of water, vapor and heat in soils. A critical input into the UNSAT-H model is the water retention characteristics of the soil, which are a function of the soil pressure head.

Van Genuchten (1980) developed an equation for the soil water-pressure head curve, which is widely used in computer models of unsaturated flow (Guymon 1994). This equation uses four parameters to describe the soil water-pressure head curve: the residual water content (Θr); the saturated water content (Θs); the parameter α, which is the inverse of the air entry pore water pressure; and n, which is a best fit parameter. These are referred to as the Van Genuchten parameters. The purpose of this calculation sheet is to describe estimation of the Van Genuchten parameters based on evaluation of laboratory derived water retention data.

2.0 Procedure

- Collect representative samples of soil, inert material and development rock;
- Complete Capillary Moisture Retention Test (ATSM D 3152) on remolded samples at Advanced Terra Testing in Lakewood, Colorado; and
- Estimate Van Genuchten parameters using laboratory retention data and the SWRC Fit computer program (Seki 2007).

3.0 References/Data Sources

Advanced Terra Testing (ATT), 2009, Laboratory data for soil water characteristic curve, saturated hydraulic conductivity, grain size analyses, and moisture content. These data were developed from samples collected at the Daneros Mine in May, 2012.

Seki, K., SWRC Fit – A Non-linear Fitting Program with a Water Retention Curve for Soils Having Unimodal and Bimodal Pore Structure, Hydrology and Earth System Sciences Discussions, 4, 407-437.

Guymon, 1994, Unsaturated Zone Hydrogeology, PTR Prentice Hall, Englewood Cliffs, New Jersey, p. 51-54, 71-73.

Fayer, M.J., 2000, UNSAT-H Version 3.0: Unsaturated Soil Water and Heat Flow Model Theory, User Manual, and Examples.

Swanson, D.A., Savci, G., Danziger, G., Williamson, A., Barnes, C., 2000, Unsaturated Hydrologic Assessment of Waste Rock Stockpiles in Semi-Arid Climates, in Semi-Arid Soil, inert material and development rock Issues, ICARD 2000-Proceedings from the 5th International Conference on Acid Mine Drainage.

Van Genuchten, M., Th., 1980, a Closed Form Equation for Predicting the Hydraulic Conductivity of Unsaturated Soils, Soil Science of America Journal, Vol. 44, p. 892-898.

4.0 Assumptions

- This estimate assumes that the samples and associated laboratory data are representative of the materials. An inherent uncertainty in this assumption relates to the presence of cobbles and boulders in the piles, which will not fit in the laboratory capillary moisture test apparatus. However, infiltration and percolation under unsaturated conditions occurs preferentially through the fine-grained materials (Swanson et al. 2000). Therefore, this assumption is considered adequate to support unsaturated flow modeling of the soil, inert material and development rock.

- This estimate also assumes that the soil water-pressure head relationship is not hysteretic. It is unlikely that this assumption is strictly true, but it is a necessary assumption for this estimate.

5.0 Calculations

The process of calculating the Van Genuchten parameters for the soil, inert material and development rock included collection of a representative samples, and fitting of the Van Genuchten curve to the laboratory capillary retention data using a non-linear least curve fitting algorithm implemented in the SWRC Fit software program. The samples were collected by Energy Fuels (USA) Inc. in five gallon buckets that were sealed in the field and shipped to the laboratory for analysis.

Laboratory tests included particle size analyses, specific gravity, standard Procter, saturated hydraulic conductivity, and capillary moisture. Standard Procter analyses were required to facilitate remolding of the samples prior to the capillary moisture test. Remolding at 80 percent of standard Procter was targeted to represent field conditions resulting from natural settling of the development rock pile. Laboratory test results are presented in Attachment 1.

Data from the laboratory capillary moisture retention test were used as input in the computer program SWRC Fit to estimate Van Genuchten parameters for the soil, inert material and development rock. This program uses the laboratory moisture retention data and fits the data to the Van Genuchten curve using a non-linear curve fitting algorithm (Seki 2007). Input data for the SWRC Fit program consisted of the pressure head (in centimeters water) and volumetric moisture content from the laboratory capillary moisture retention test, and the volumetric moisture content at saturation (assumed to represent a pressure head of 0 centimeters water). Output data from the SWRC Fit program are included as Attachment 2.

6.0 Conclusions

Estimation of the Van Genuchten parameters was completed by collecting a representative sample from the soil, inert material and development rock; completing physical and hydrological analyses of the samples at Advanced Terra Testing in Lakewood, Colorado; and fitting the laboratory capillary moisture retention data to the Van Genuchten equation using the computer program SWRC Fit. The Van Genuchten parameters developed through this method were used to describe the water retention characteristics of the materials in subsequent unsaturated flow modeling using UNSAT-H.

Attachment 1

Advanced Terra Testing Laboratory Data

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 422

CLIENT	CDM	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/25/12 SKL/JS
SAMPLE NO.	Delevopment Rock	WASH SIEVE	Yes
SOIL DESCR.	64986.14	DRY SIEVE	No
LOCATION	Daneros Mine		

MOISTURE DATA

HYGROSCOPIC	Yes	
NATURAL	No	
Wt. Wet Soil & Pan (g)		29.51
Wt. Dry Soil & Pan (g)		29.25
Wt. Lost Moisture (g)		0.26
Wt. of Pan Only (g)		1.78
Wt. of Dry Soil (g)		27.47
Moisture Content %		0.9
Wt. Hydrom. Sample Wet (g)		97.49
Wt. Hydrom. Sample Dry (g)		96.58

WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	3385.60
Weight of + #10 Before Washing (g)	983.00
Weight of + #10 After Washing (g)	383.87
Weight of - #10 Wet (g)	2402.60
Weight of - #10 Dry (g)	2973.59
Wt. Total Sample Dry (g)	3357.46
Calc. Wt. "W" (g)	109.04
Calc. Mass + #10	12.47

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	5.88	5.88	5.88	0.2	99.8
3/4"	0.00	11.63	11.63	17.51	0.5	99.5
3/8"	0.00	13.81	13.81	31.32	0.9	99.1
#4	0.00	144.80	144.80	176.12	5.2	94.8
#10	0.00	207.75	207.75	383.87	11.4	88.6

*majority of wash out due to the +10 sandstone, claystone & siltstone particles that dissolved during the soaking & washing process.

#20	3.06	12.61	9.55	9.55	20.2	79.8
#40	3.01	23.12	20.11	29.66	38.6	61.4
#60	2.98	19.92	16.95	46.60	54.2	45.8
#100	3.10	11.20	8.10	54.71	61.6	38.4
#200	2.99	8.91	5.91	60.62	67.0	33.0

Data entered by: SKL Date: 12/03/2012
Data checked by: DPM Date: 12/05/12
FileName: CDH0ROCK

ADVANCED TERRA TESTING, Inc. ATT

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	CDM	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/25/12 SKL/JS
SAMPLE NO.	Delevopment Rock	WASH SIEVE	Yes
SOIL DESCR.	64986.14	DRY SIEVE	No
LOCATION	Daneros Mine		

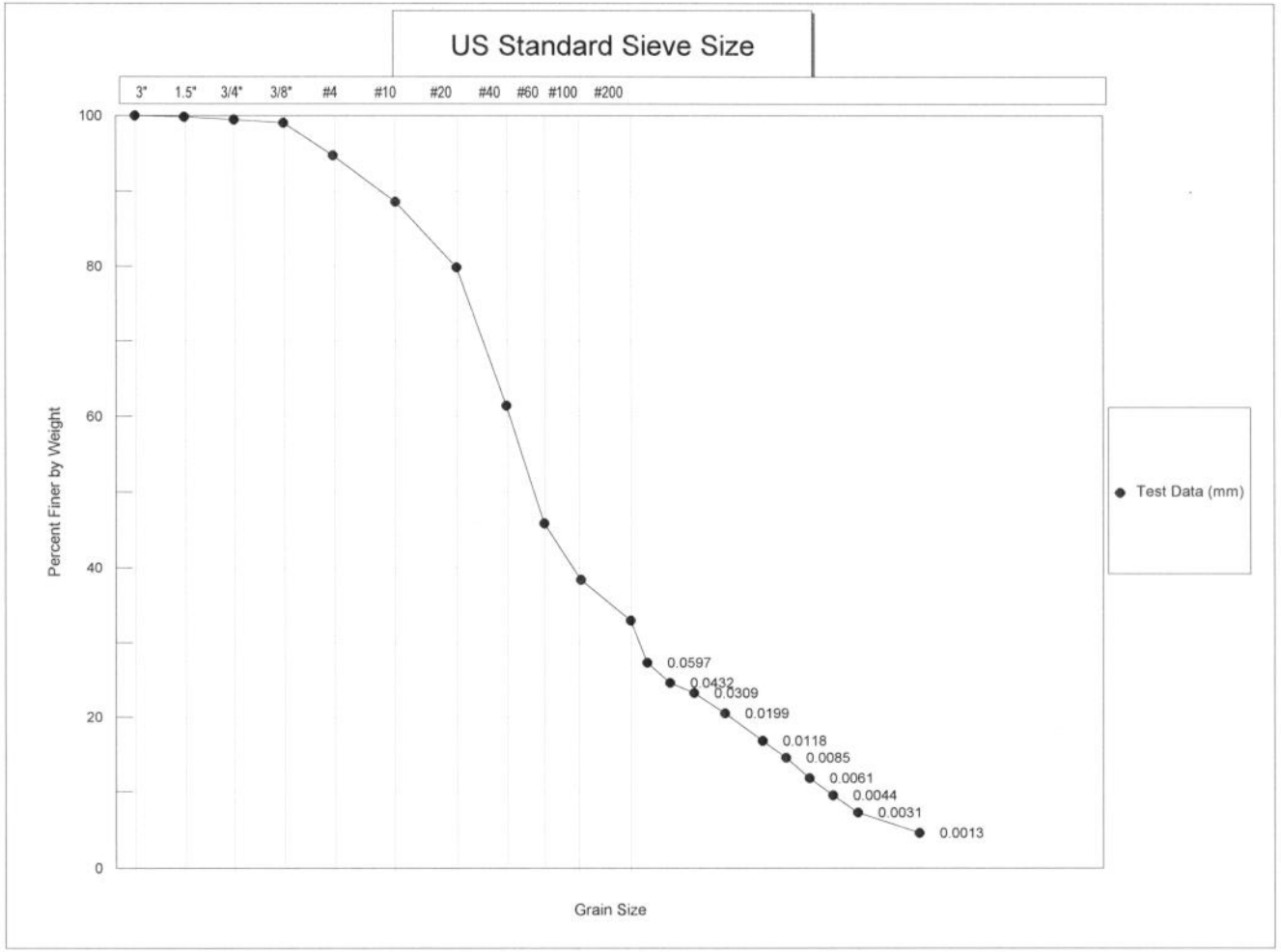
Hydrometer #	ASTM 152 H	Temp., Deg. C	23.1
Sp. Gr. of Soil	2.69	Temp. Coef. K	0.01299
Value of "alpha"	0.99	Wt. Dry Sample "W"	109.043
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	5.0		
Meniscus Corr'n	0.0		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	35.00	30.00	27.3	27.3	10.55	0.0597
1.0	32.00	27.00	24.6	24.6	11.04	0.0432
2.0	30.50	25.50	23.2	23.2	11.29	0.0309
5.0	27.50	22.50	20.5	20.5	11.78	0.0199
15.0	23.50	18.50	16.8	16.8	12.44	0.0118
30.0	21.00	16.00	14.6	14.6	12.85	0.0085
60.0	18.00	13.00	11.8	11.8	13.34	0.0061
120.0	15.50	10.50	9.6	9.6	13.75	0.0044
250.0	13.00	8.00	7.3	7.3	14.16	0.0031
1440.0	10.00	5.00	4.5	4.5	14.65	0.0013

Grain Diameter = K*(SQRT(L/T))

Data entered by: SKL Date: 12/03/2012
Data checked by: DPM Date: 12/05/12
FileName: CDH0ROCK

ADVANCED TERRA TESTING, Inc. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY (mm)
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES	PEBBLE GRAVEL				SAND			SILT	CLAY
TO BOULDERS	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: CDM
Job Number: 2125-21
Classification: **Classification Not Performed**

Boring No.:
Depth: Bulk

Sample No.: Delevopment Rock

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 422

CLIENT	CDM	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/25/12 SKL
SAMPLE NO.	Borehole Cutting	WASH SIEVE	Yes
SOIL DESCR.	64986.14	DRY SIEVE	No
LOCATION	Daneros Mine		

MOISTURE DATA

HYGROSCOPIC	Yes
NATURAL	No
Wt. Wet Soil & Pan (g)	33.49
Wt. Dry Soil & Pan (g)	32.88
Wt. Lost Moisture (g)	0.61
Wt. of Pan Only (g)	1.78
Wt. of Dry Soil (g)	31.10
Moisture Content %	2.0
Wt. Hydrom. Sample Wet (g)	70.22
Wt. Hydrom. Sample Dry (g)	68.87

WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	3509.13
Weight of + #10 Before Washing (g)	268.23
Weight of + #10 After Washing (g)	248.98
Weight of - #10 Wet (g)	3240.90
Weight of - #10 Dry (g)	3197.44
Wt. Total Sample Dry (g)	3446.42
Calc. Wt. "W" (g)	74.23
Calc. Mass + #10	5.36

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	94.59	94.59	94.59	2.7	97.3
3/4"	0.00	11.38	11.38	105.97	3.1	96.9
3/8"	0.00	61.11	61.11	167.08	4.8	95.2
#4	0.00	15.00	15.00	182.08	5.3	94.7
#10	0.00	66.90	66.90	248.98	7.2	92.8
#20	3.05	5.06	2.01	2.01	9.9	90.1
#40	3.00	6.47	3.47	5.48	14.6	85.4
#60	2.97	9.55	6.58	12.05	23.5	76.5
#100	3.20	15.11	11.91	23.96	39.5	60.5
#200	3.01	24.17	21.17	45.13	68.0	32.0

Data entered by: SKL Date: 11/06/2012
Data checked by: DAW Date: 11/06/12
FileName: CDH0BORE

ADVANCED TERRA TESTING, INC. ATT

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	CDM	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/25/12 SKL
SAMPLE NO.	Borehole Cutting	WASH SIEVE	Yes
SOIL DESCR.	64986.14	DRY SIEVE	No
LOCATION	Daneros Mine		

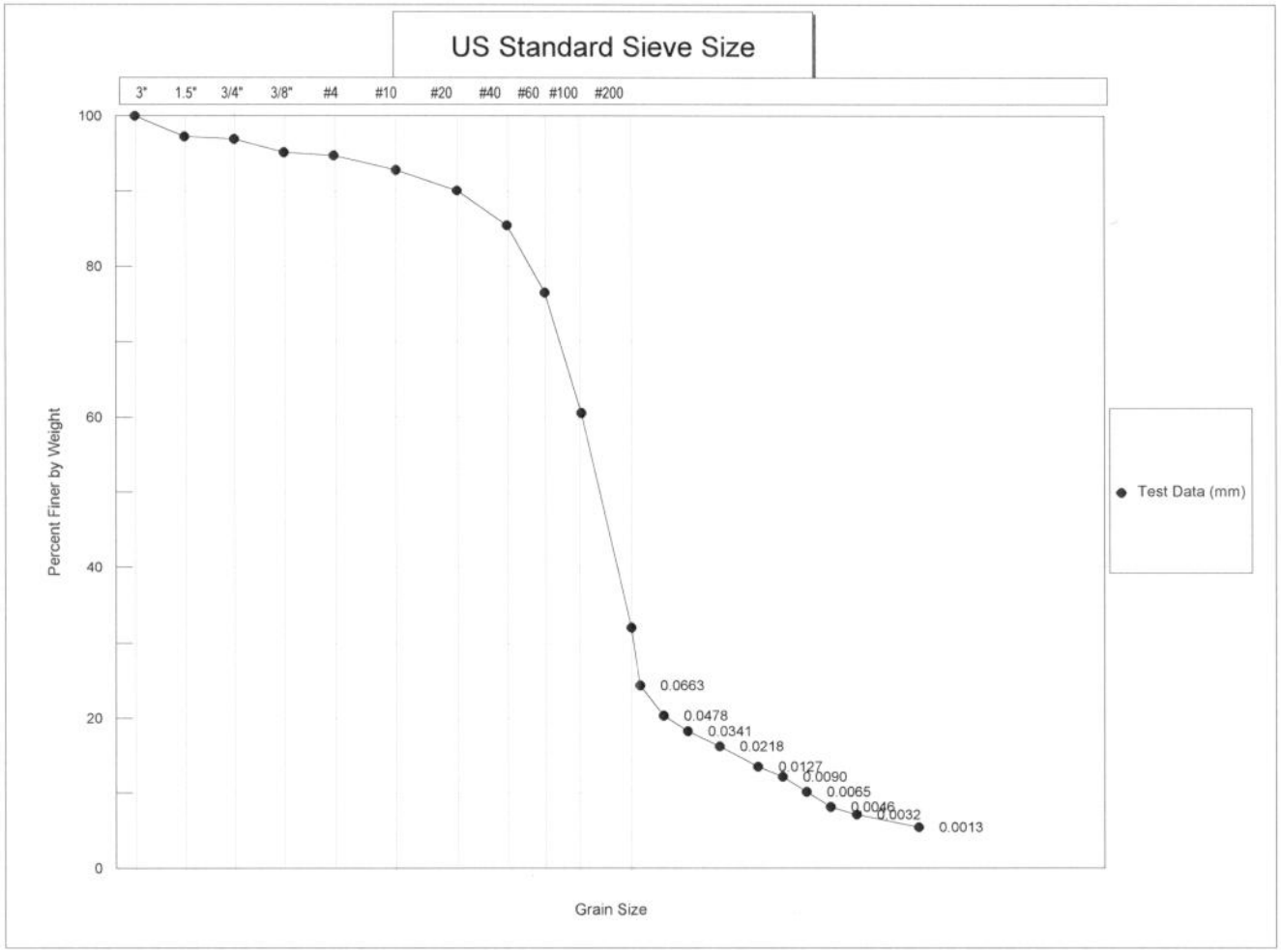
Hydrometer #	ASTM 152 H	Temp., Deg. C	23.0
Sp. Gr. of Soil	2.63	Temp. Coef. K	0.01325
Value of "alpha"	1.00	Wt. Dry Sample "W"	74.229
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	5.0		
Meniscus Corr'n	0.0		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	23.00	18.00	24.3	24.3	12.52	0.0663
1.0	20.00	15.00	20.3	20.3	13.01	0.0478
2.0	18.50	13.50	18.3	18.3	13.26	0.0341
5.0	17.00	12.00	16.2	16.2	13.50	0.0218
15.0	15.00	10.00	13.5	13.5	13.83	0.0127
30.0	14.00	9.00	12.2	12.2	13.99	0.0090
60.0	12.50	7.50	10.1	10.1	14.24	0.0065
120.0	11.00	6.00	8.1	8.1	14.49	0.0046
250.0	10.25	5.25	7.1	7.1	14.61	0.0032
1440.0	9.00	4.00	5.4	5.4	14.81	0.0013

Grain Diameter = K*(SQRT(L/T))

Data entered by: SKL Date: 11/06/2012
Data checked by: DW Date: 11/06/12
FileName: CDH0BORE

ADVANCED TERRA TESTING, Inc. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY (mm)
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: CDM
Job Number: 2125-21
Classification: **Classification Not Performed**

Boring No.:
Depth: Bulk

Sample No.: Borehole Cutting

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 422

CLIENT	Camp Dresser McKee (CDM)	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/16/12 SKL
SAMPLE NO.	Soil	WASH SIEVE	Yes
SOIL DESCR.	Daneros Mine	DRY SIEVE	No
LOCATION	64986.14		

MOISTURE DATA

HYGROSCOPIC	Yes	
NATURAL	No	
Wt. Wet Soil & Pan (g)		30.39
Wt. Dry Soil & Pan (g)		29.78
Wt. Lost Moisture (g)		0.61
Wt. of Pan Only (g)		1.77
Wt. of Dry Soil (g)		28.01
Moisture Content %		2.2
Wt. Hydrom. Sample Wet (g)		88.37
Wt. Hydrom. Sample Dry (g)		86.49

WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	5373.02
Weight of + #10 Before Washing (g)	338.62
Weight of + #10 After Washing (g)	236.40
Weight of - #10 Wet (g)	5034.40
Weight of - #10 Dry (g)	5027.14
Wt. Total Sample Dry (g)	5263.54
Calc. Wt. "W" (g)	90.56
Calc. Mass + #10	4.07

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	68.72	68.72	68.72	1.3	98.7
3/8"	0.00	16.36	16.36	85.08	1.6	98.4
#4	0.00	27.34	27.34	112.42	2.1	97.9
#10	0.00	123.98	123.98	236.40	4.5	95.5
#20	1.80	3.50	1.70	1.70	6.4	93.6
#40	1.77	5.22	3.45	5.16	10.2	89.8
#60	1.78	6.14	4.37	9.52	15.0	85.0
#100	1.74	9.68	7.94	17.46	23.8	76.2
#200	1.76	26.31	24.55	42.01	50.9	49.1

Data entered by: MLM Date: 10/22/2012
Data checked by: Date: 10/23/12
FileName: CSHYBULK

ADVANCED TERRA TESTING, INC. ATT

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	Camp Dresser McKee (CDM)	JOB NO.	2125-21
BORING NO.		SAMPLED	9/21/12 DF
DEPTH	Bulk	DATE TESTED	10/16/12 SKL
SAMPLE NO.	Soil	WASH SIEVE	Yes
SOIL DESCR.	Daneros Mine	DRY SIEVE	No
LOCATION	64986.14		

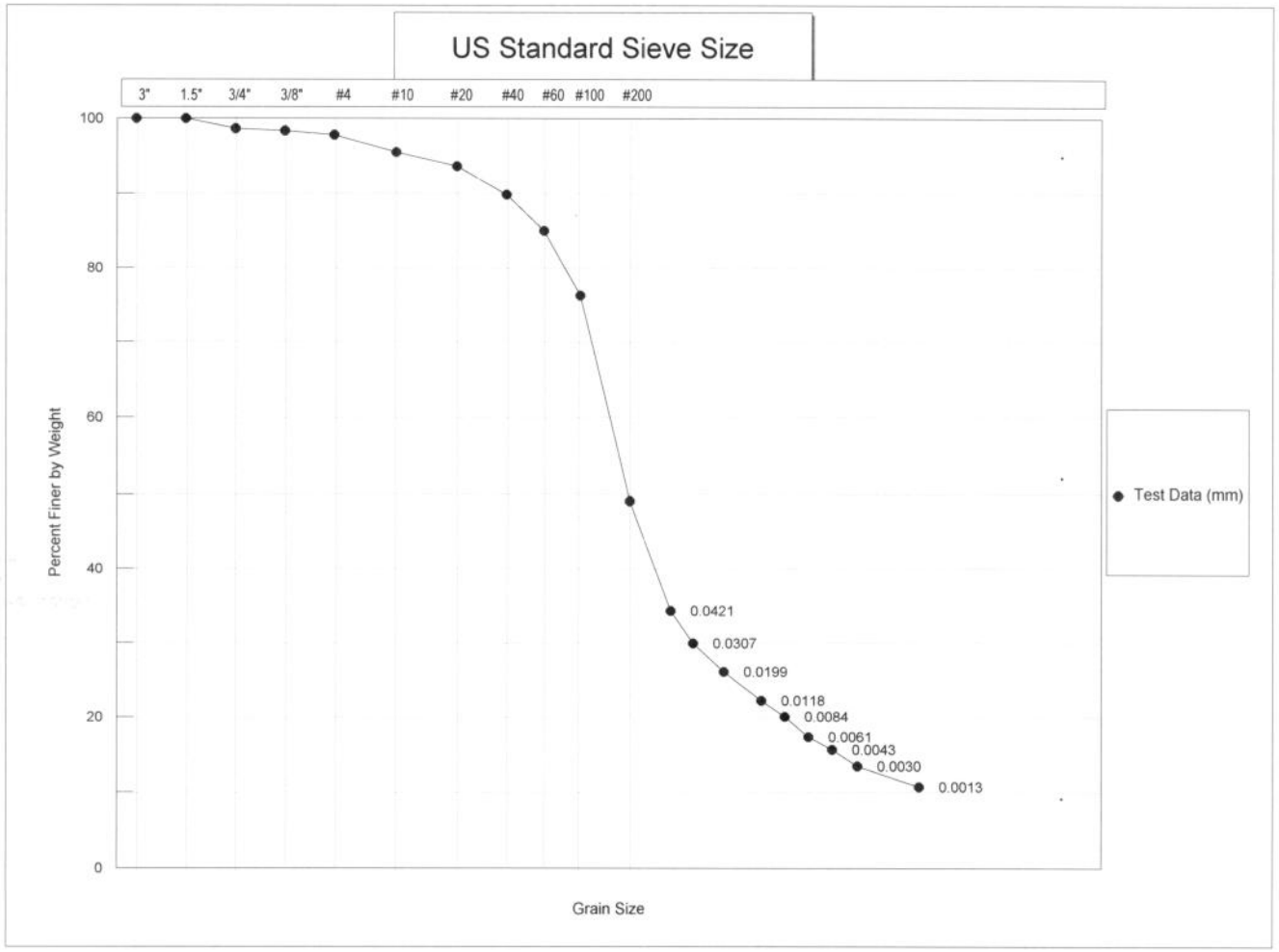
Hydrometer #	ASTM 152 H	Temp., Deg. C	23.6
Sp. Gr. of Soil	2.68	Temp. Coef. K	0.01307
Value of "alpha"	0.99	Wt. Dry Sample "W"	90.557
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	4.8		
Meniscus Corr'n	0.0		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	--	--	--	--	--	--
1.0	36.00	31.25	34.3	34.3	10.39	0.0421
2.0	32.00	27.25	29.9	29.9	11.04	0.0307
5.0	28.50	23.75	26.1	26.1	11.62	0.0199
15.0	25.00	20.25	22.2	22.2	12.19	0.0118
30.0	23.00	18.25	20.0	20.0	12.52	0.0084
60.0	20.50	15.75	17.3	17.3	12.93	0.0061
120.0	19.00	14.25	15.6	15.6	13.17	0.0043
250.0	17.00	12.25	13.4	13.4	13.50	0.0030
1440.0	14.50	9.75	10.7	10.7	13.91	0.0013

Grain Diameter = K*(SQRT(L/T))

Data entered by: MLM Date: 10/22/2012
Data checked by: SL Date: 10/23/12
FileName: CSHYBULK

ADVANCED TERRA TESTING, INC. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY (mm)
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES	PEBBLE GRAVEL				SAND			SILT	CLAY
TO BOULDERS	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: Camp Dresser McKee ((Boring No.: Sample No.: Soil
Job Number: 2125-21 Depth: Bulk
Classification: **Classification Not Performed**

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	CDM	JOB NO.	2125-21
SOIL DESCR.	64986.14	LOCATION	Daneros Mine

BORING NO.			
DEPTH	Bulk	Bulk	Bulk
SAMPLE NO.	Soil	Borehole Cutting	Development Rock
DATE SAMPLED	9/21/12 DF	9/21/12 DF	9/21/12 DF
DATE TESTED	10/19/12 SKL	10/19/12 SKL	10/25/12 SKL
Pycnometer #	Big 1	Big 7	Big 10
Weight of oven dry soil (g) (Wo)	167.970	187.970	157.750
Weight of flask, soil, and water. (g) (Wb)	776.950	790.870	771.100
Temperature (deg. C) (Tx)	24.3	24.4	24.1
Weight of water & flask at Tx (from cal. curve)(Wa)	671.749	674.336	671.974
Specific Gravity*	2.68	2.63	2.69

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*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DAW Date: 10/25/2012
Data checked by: Date: 10/25/12
FileName: CDE0BULK

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY & ABSORPTION OF ROCK
ASTM C 127

CLIENT	Camp Dresser McKee	JOB NO.	2125-21
LOCATION	Daneros Mine		

BORING NO.	+3/8	+4 -3/8
DEPTH	Bulk	Bulk
SAMPLE NO.	Development Rock	Development Rock
DATE SAMPLED		
DATE TESTED	10/30/12 TMR	10/30/12 TMR
SOIL DESCR.		

TEST DATA

Temperature Water & Agg. (C)	20.2	20.1
Wt. Saturated Surface-Dry Agg. (gms)	748.5	65.1
Wt. Saturated Agg. in Water (gms)	459.4	39.0
Wt. Dry Agg. & Pan (gms)	2024.4	875.9
Wt. of Pan (gms)	1296.6	813.6
Wt. of Dry Aggregate (gms)	727.8	62.4
Correction Factor (to 23 degrees C)	0.99996	0.99998

SPECIFIC GRAVITY & ABSORPTION DETERMINATIONS

Apparent Specific Gravity	2.712	2.667
Bulk Specific Gravity	2.517	2.390
Bulk Specific Gravity (Sat. Surface-Dry Agg.)	2.589	2.494
Percent Absorption (%)	2.84	4.34

Data entry by: DAW Date: 11/16/2012
Data checked by: TMR Date: 11/16/12
FileName: CDSADBSD

ADVANCED TERRA TESTING, Inc. ATT

SPECIFIC GRAVITY & ABSORPTION OF ROCK
ASTM C 127

CLIENT	Camp Dresser McKee	JOB NO.	2125-21
LOCATION	Daneros Mine		

BORING NO.	
DEPTH	Bulk
SAMPLE NO.	Bore Hole Cutting
DATE SAMPLED	
DATE TESTED	10/19/12 TMR
SOIL DESCR.	64986.14

TEST DATA

Temperature Water & Agg. (C)	20.7
Wt. Saturated Surface-Dry Agg. (gms)	537.5
Wt. Saturated Agg. in Water (gms)	331.6
Wt. Dry Agg. & Pan (gms)	1313.0
Wt. of Pan (gms)	791.0
Wt. of Dry Aggregate (gms)	522.0
Correction Factor (to 23 degrees C)	0.99985

SPECIFIC GRAVITY & ABSORPTION DETERMINATIONS

Apparent Specific Gravity	2.742
Bulk Specific Gravity	2.534
Bulk Specific Gravity (Sat. Surface-Dry Agg.)	2.610
Percent Absorption (%)	2.99

Data entry by: MLM Date: 10/29/2012
Data checked by: JLP Date: 10/30/12
FileName: CDSACUTG

ADVANCED TERRA TESTING, Inc. ATT

SPECIFIC GRAVITY & ABSORPTION OF ROCK
ASTM C 127

CLIENT	Camp Dresser McKee	JOB NO.	2125-21
LOCATION	Daneros Mine		

BORING NO.	
DEPTH	Bulk
SAMPLE NO.	Soil
DATE SAMPLED	
DATE TESTED	10/18/12 TMR
SOIL DESCR.	64986.14

TEST DATA

Temperature Water & Agg. (C)	20.6
Wt. Saturated Surface-Dry Agg. (gms)	390.1
Wt. Saturated Agg. in Water (gms)	237.6
Wt. Dry Agg. & Pan (gms)	1157.5
Wt. of Pan (gms)	779.9
Wt. of Dry Aggregate (gms)	377.6
Correction Factor (to 23 degrees C)	0.99987

SPECIFIC GRAVITY & ABSORPTION DETERMINATIONS

Apparent Specific Gravity	2.696
Bulk Specific Gravity	2.476
Bulk Specific Gravity (Sat. Surface-Dry Agg.)	2.558
Percent Absorption (%)	3.30

Data entry by: MLM Date: 10/29/2012
Data checked by: TMR Date: 10/30/12
FileName: CDSABULK

ADVANCED TERRA TESTING, Inc. ATT

COMPACTION TEST
ASTM D 698 B

CLIENT:	Camp Dresser Mckee	JOB NO.	2125-21
BORING NO.		DATE SAMPLED	09/21/2012 DF
DEPTH	Bulk	DATE TESTED	10/23/2012 TMR
SAMPLE NO.	Development Rock	LOCATION	Daneros Mine
SOIL DESCR.	64986.14		

Moisture Determination

	1	2	3	4	5
Wt of Moisture added (ml)	240.00	200.00	160.00	280.00	120.00
Wt. of soil & dish (g)	689.36	661.67	546.72	662.86	762.35
Dry wt. soil & dish (g)	623.81	606.46	507.17	591.31	717.75
Net loss of moisture (g)	65.55	55.21	39.55	71.55	44.60
Wt. of dish (g)	6.58	6.63	6.50	6.57	8.50
Net wt. of dry soil (g)	617.23	599.83	500.67	584.74	709.25
Moisture Content (%)	10.62	9.20	7.90	12.24	6.29
Corrected Moisture Content					

Density determination

Wt of soil & mold (lb)	15.01	15.03	14.88	14.96	14.69
Wt. of mold (lb)	10.27	10.27	10.27	10.27	10.27
Net wt. of wet soil (lb)	4.74	4.76	4.61	4.69	4.42
Net wt of dry soil (lb)	4.28	4.36	4.27	4.18	4.16
Dry Density, (pcf)	128.55	130.76	128.17	125.36	124.75
Corrected Dry Density (pcf)					
Volume Factor	30	30	30	30	30

Note: Preliminary results for remolding purposes only.

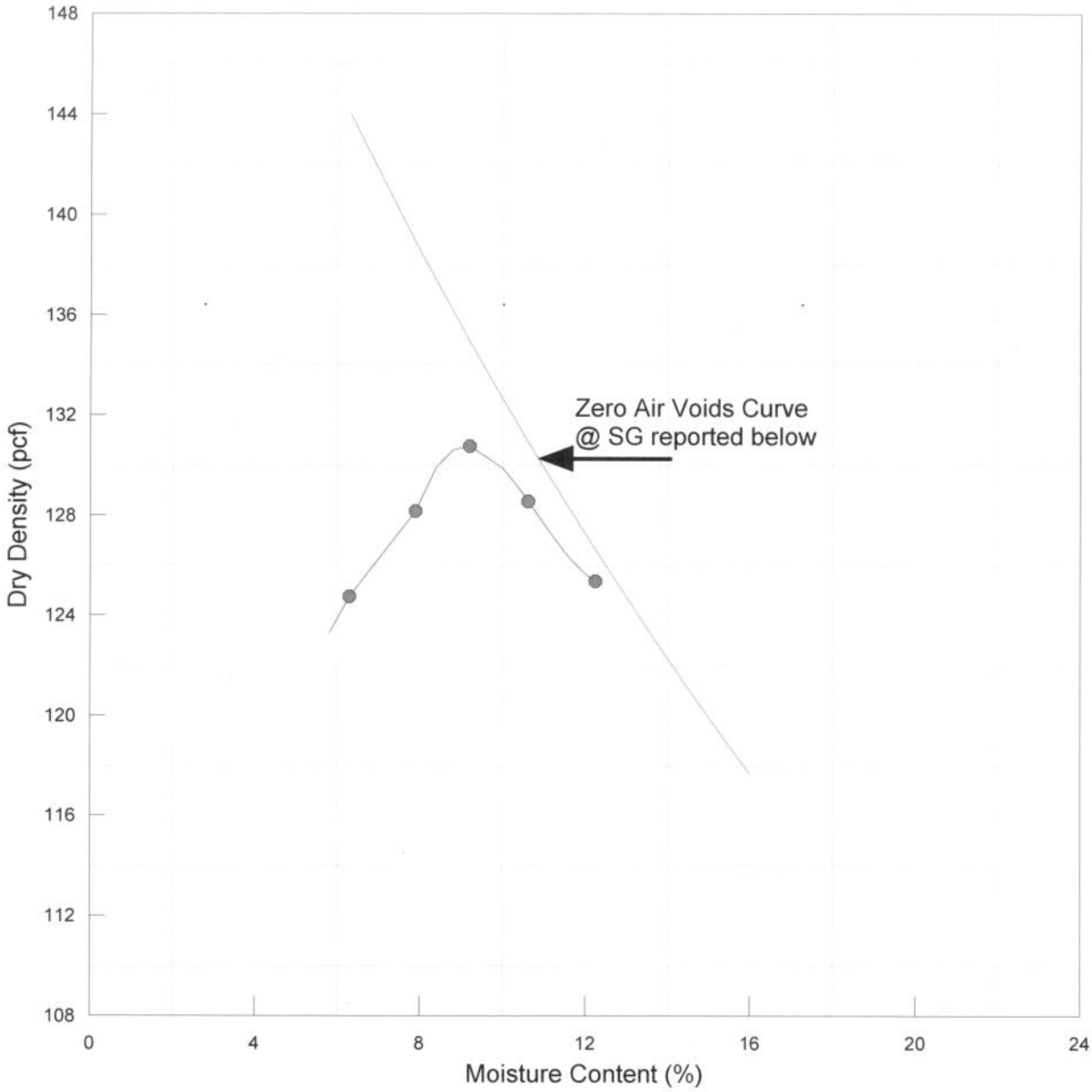
Note: If a rock correction is used the dry density has been calculated using the corrected moisture content.

Data entered by: TMR Date: 10/24/2012
Data checked by: DPM Date: 10/24/12
FileName: CDPR21DR

ADVANCED TERRA TESTING, INC. ATT

Proctor Compaction Test

, Bulk, Development Rock



Best Fit Curve ● Actual Data Zero Air VoidsCurve @ SG = 2.70

OPTIMUM MOISTURE CONTENT = 9.1 MAXIMUM DRY DENSITY = 130.8
ASTM D 698 B, Rock correction applied? N

COMPACTION TEST
ASTM D 698 A

CLIENT:	Camp Dresser Mckee		JOB NO. 2125-21
BORING NO.		DATE SAMPLED	09/21/2012 DF
DEPTH	Buk	DATE TESTED	10/18/2012 TMR
SAMPLE NO.	Borehole Cutting	LOCATION	Daneros Mine
SOIL DESCR.	64986.14		

Moisture Determination	1	2	3	4
Wt of Moisture added (ml)	240.00	200.00	280.00	160.00
Wt. of soil & dish (g)	567.46	564.29	665.29	591.41
Dry wt. soil & dish (g)	503.39	509.66	581.17	541.49
Net loss of moisture (g)	64.07	54.63	84.12	49.92
Wt. of dish (g)	6.74	8.14	6.71	8.22
Net wt. of dry soil (g)	496.65	501.52	574.46	533.27
Moisture Content (%)	12.90	10.89	14.64	9.36
Corrected Moisture Content				
Density determination				
Wt of soil & mold (lb)	14.79	14.67	14.69	14.53
Wt. of mold (lb)	10.27	10.27	10.27	10.27
Net wt. of wet soil (lb)	4.52	4.40	4.42	4.26
Net wt of dry soil (lb)	4.00	3.97	3.86	3.90
Dry Density, (pcf)	120.11	119.03	115.66	116.86
Corrected Dry Density (pcf)				
Volume Factor	30	30	30	30

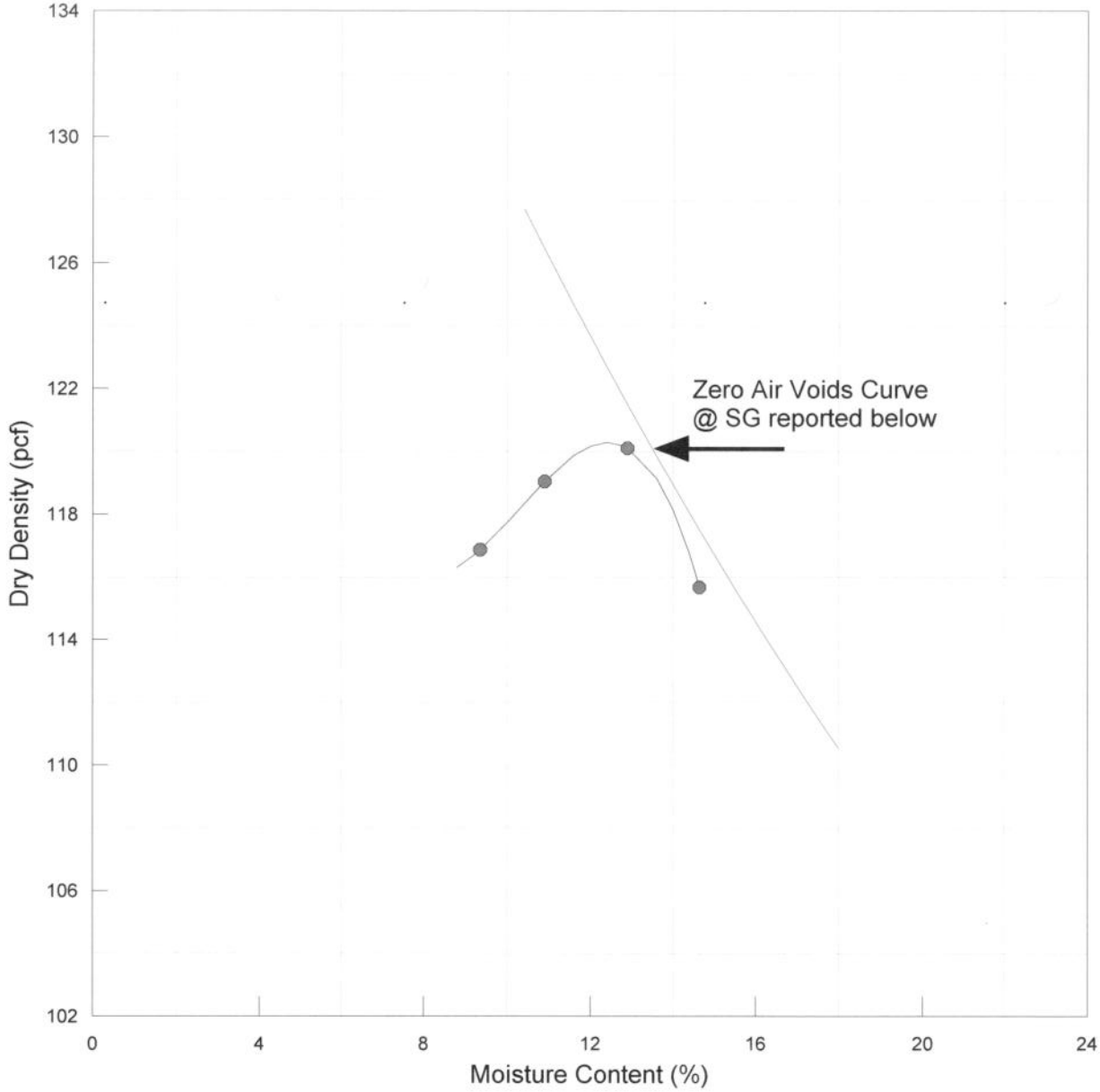
Note: If a rock correction is used the dry density has been calculated using the corrected moisture content.

Data entered by: TMR Date: 10/19/2012
Data checked by: AL Date: 10/19/12
FileName: CDPR21BC

ADVANCED TERRA TESTING, INC. ATT

Proctor Compaction Test

, Buk, Borehole Cutting



Best Fit Curve | Actual Data | Zero Air VoidsCurve @ SG = 2.60

OPTIMUM MOISTURE CONTENT = 12.4 MAXIMUM DRY DENSITY = 120.3
ASTM D 698 A, Rock correction applied? N

COMPACTION TEST
ASTM D 698 A

CLIENT:	Camp Dresser Mckee	JOB NO.	2125-21
BORING NO.		DATE SAMPLED	09/21/2012 DF
DEPTH	Bulk	DATE TESTED	10/16/2012 TMR
SAMPLE NO.	Soil	LOCATION	Daneros Mine
SOIL DESCR.	64986.14		

Moisture Determination

	1	2	3	4
Wt of Moisture added (ml)	240.00	200.00	280.00	160.00
Wt. of soil & dish (g)	677.98	584.70	606.87	562.43
Dry wt. soil & dish (g)	603.69	527.84	530.90	515.96
Net loss of moisture (g)	74.29	56.86	75.97	46.47
Wt. of dish (g)	6.62	6.65	6.62	6.73
Net wt. of dry soil (g)	597.07	521.19	524.28	509.23
Moisture Content (%)	12.44	10.91	14.49	9.13
Corrected Moisture Content				

Density determination

Wt of soil & mold (lb)	14.76	14.64	14.66	14.42
Wt. of mold (lb)	10.27	10.27	10.27	10.27
Net wt. of wet soil (lb)	4.49	4.37	4.39	4.15
Net wt of dry soil (lb)	3.99	3.94	3.83	3.80
Dry Density, (pcf)	119.79	118.20	115.03	114.09
Corrected Dry Density (pcf)				
Volume Factor	30	30	30	30

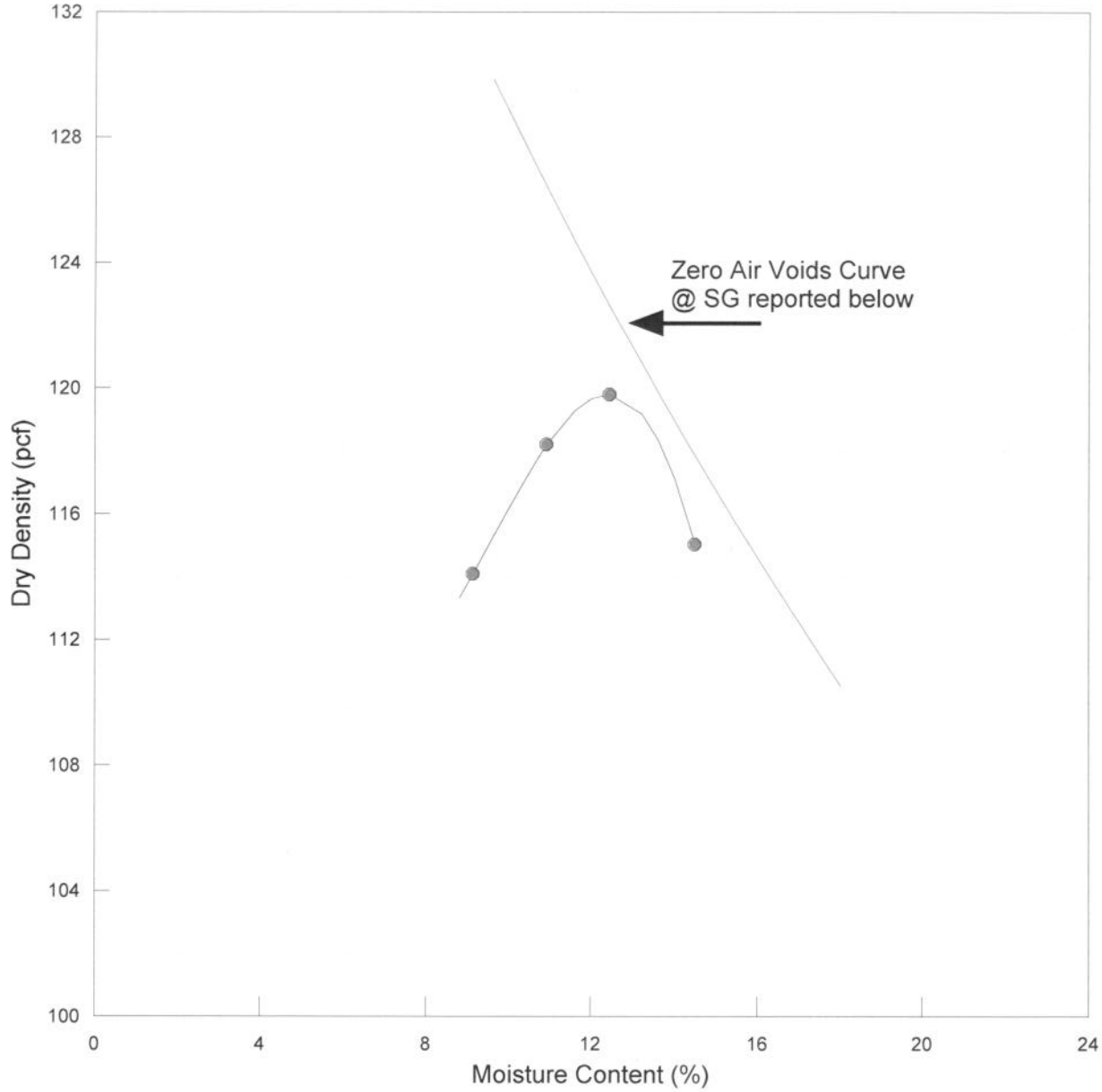
Note: If a rock correction is used the dry density has been calculated using the corrected moisture content.

Data entered by: TMR Date: 10/17/2012
Data checked by: OAL Date: 10/17/12
FileName: CK21BUSO

ADVANCED TERRA TESTING, Inc. ATT

Proctor Compaction Test

, Bulk, Soil



Best Fit Curve ● Actual Data – Zero Air VoidsCurve @ SG = 2.60

OPTIMUM MOISTURE CONTENT = 12.4 MAXIMUM DRY DENSITY = 119.8
ASTM D 698 A, Rock correction applied? N

CAPILLARY MOISTURE RETENTION TEST
ASTM D 3152

CLIENT	CDM	JOB NO.	2125-21
SAMPLE DATE	-	TEST STARTED	10/29/12 DPM
SOIL DESCR.	64986.14	TEST FINISHED	12/10/12 DPM
LOCATION	Daneros Mine		

MASS DATA

Sample Description	Ring Mass g	As Rec. Mass g	Sat. Mass g	0.3 Bar Mass g	0.7 Bar Mass g	2 Bar Mass g	5 Bar Mass g	15 Bar Mass g		Dry Mass Filter, Ring, & Dish (g)	Dish Wt. g
Filter Mass g		0.485	1.365	1.240	0.690	0.670	0.660	0.660			
Bulk, Soil	45.210	174.680	187.060	176.420	174.970	173.570	172.270	170.510		164.880	4.31
Bulk, Soil - R	44.170	173.620	186.790	175.580	173.990	172.640	171.480	169.680		163.810	4.40
Bulk, Borehole Cuttings	43.410	173.370	188.390	172.270	169.950	168.280	166.680	165.220		163.660	4.42
Bulk, Borehole Cuttings - R	43.220	173.180	187.890	172.140	169.970	168.370	166.790	165.130		163.620	4.46
Bulk, Development Rock	42.900	180.340	194.150	180.630	179.860	179.240	177.850	176.910		173.970	4.54
Bulk, Development Rock - R	42.320	179.780	192.800	180.310	179.270	178.650	177.640	176.320		173.040	4.34

Data Entered By: DAW Date: 12/11/2012
Data Checked By: DPM Date: 12/19/12
Filename: CDK0DMBC

ADVANCED TERRA TESTING, INC. ATT

CAPILLARY MOISTURE RETENTION TEST
ASTM D 3152

CLIENT	CDM	JOB NO.	2125-21
SAMPLE DATE	-	TEST STARTED	10/29/12 DPM
SOIL DESCR.	64986.14	TEST FINISHED	12/10/12 DPM
LOCATION	Daneros Mine		

Moisture Content Data: % D.M. = Moisture Content By Dry Mass; % Vol. = Moisture Content By Volume

Sample Description	Sample Conditions						0.3 Bar			0.7 Bar		
	Dry Mass (g)	Unit Wt. (g/cc)	Sat. Mass (g)	Total H2O (g)	Sat. M.C. % D.M.	Sat. M.C. % Vol.	Retained H2O	% DM	% Vol.	Retained H2O	% DM	% Vol.
Bulk, Soil	114.875	1.537	140.485	25.610	22.29	34.26	15.095	13.14	20.19	14.195	12.36	18.99
Bulk, Soil - R	114.755	1.535	141.255	26.500	23.09	35.45	15.415	13.43	20.62	14.375	12.53	19.23
Bulk, Borehole Cuttings	115.345	1.543	143.615	28.270	24.51	37.82	12.275	10.64	16.42	10.505	9.11	14.05
Bulk, Borehole Cuttings - R	115.455	1.544	143.305	27.850	24.12	37.26	12.225	10.59	16.35	10.605	9.19	14.19
Bulk, Development Rock	126.045	1.686	149.885	23.840	18.91	31.89	10.445	8.29	13.97	10.225	8.11	13.68
Bulk, Development Rock - R	125.895	1.684	149.115	23.220	18.44	31.06	10.855	8.62	14.52	10.365	8.23	13.87

Data Entered By: DAW Date: 12/11/2012
Data Checked By: JPM Date: 12/19/12
Filename: CDK0DMBC

ADVANCED TERRA TESTING, Inc. ATT

CAPILLARY MOISTURE RETENTION TEST
ASTM D 3152

CLIENT	CDM	JOB NO.	2125-21
SAMPLE DATE	-	TEST STARTED	10/29/12 DPM
SOIL DESCR.	64986.14	TEST FINISHED	12/10/12 DPM
LOCATION	Daneros Mine		

Moisture Content Data: % D.M. = Moisture Content By Dry Mass; % Vol. = Moisture Content By Volume

Sample Description	2 Bar			5 Bar			15 Bar		
	Retained H2O	% DM	% Vol.	Retained H2O	% DM	% Vol.	Retained H2O	% DM	% Vol.
Bulk, Soil	12.815	11.16	17.14	11.525	10.03	15.42	9.765	8.50	13.06
Bulk, Soil - R	13.045	11.37	17.45	11.895	10.37	15.91	10.095	8.80	13.50
Bulk, Borehole Cuttings	8.855	7.68	11.85	7.265	6.30	9.72	5.805	5.03	7.77
Bulk, Borehole Cuttings - R	9.025	7.82	12.07	7.455	6.46	9.97	5.795	5.02	7.75
Bulk, Development Rock	9.625	7.64	12.88	8.245	6.54	11.03	7.305	5.80	9.77
Bulk, Development Rock - R	9.765	7.76	13.06	8.765	6.96	11.73	7.445	5.91	9.96

Data Entered By: DAW Date: 12/11/2012
Data Checked By: DPM Date: 12/19/12
Filename: CDK0DMBC

ADVANCED TERRA TESTING, INC. ATT

CAPILLARY MOISTURE RETENTION TEST
ASTM D 3152

CLIENT CDM

JOB NO. 2125-21

SAMPLE DATE -
SOIL DESCR. 64986.14
LOCATION Daneros Mine

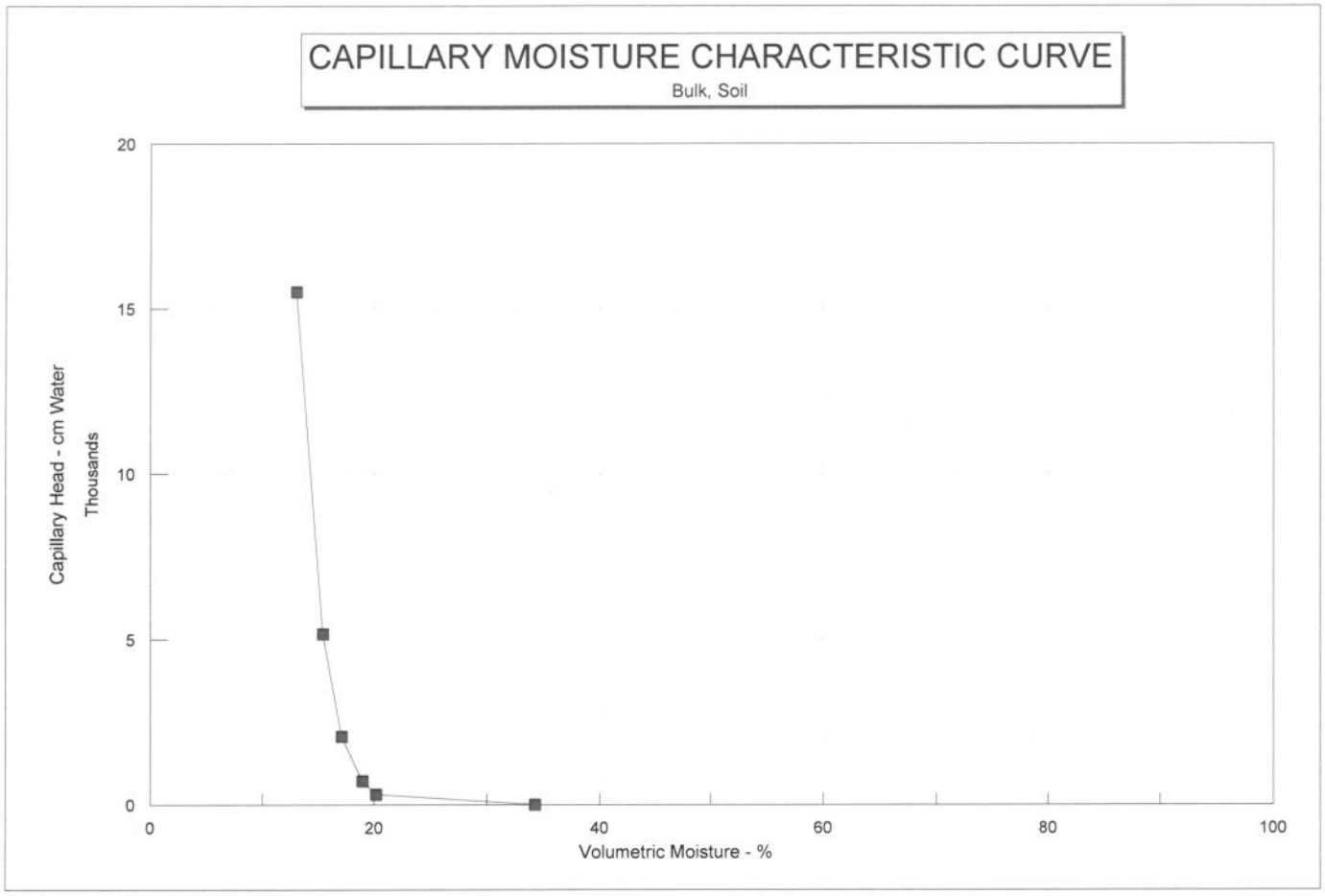
TEST STARTED 10/29/12 DPM
TEST FINISHED 12/10/12 DPM

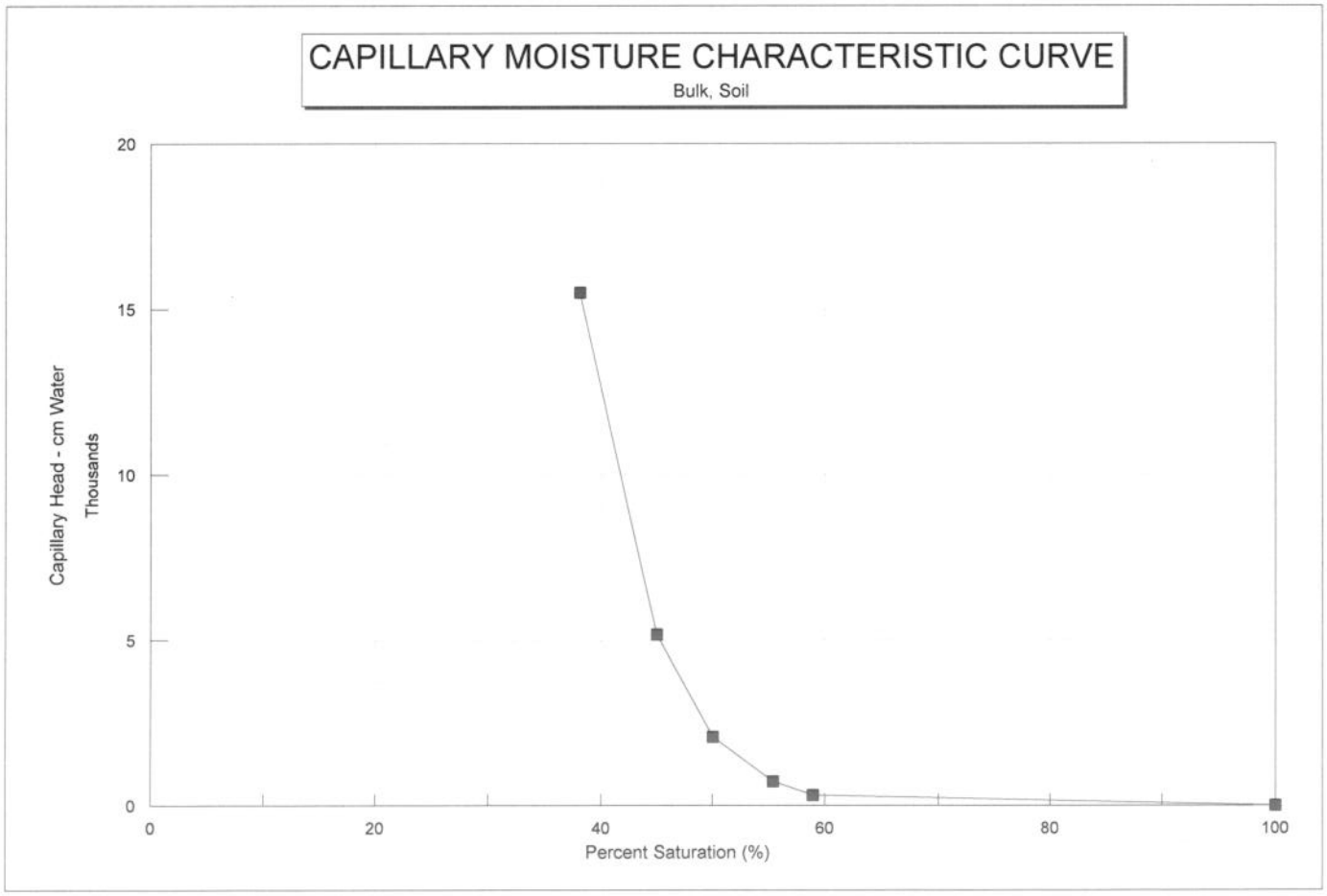
	Vol. MC % Sat.	Vol. MC % 0.3 Bar	Vol. MC % 0.7 Bar	Vol. MC % 2 Bar	Vol. MC % 5 Bar	Vol. MC % 15 Bar
Bulk, Soil	34.26	20.19	18.99	17.14	15.42	13.06
Bulk, Soil - R	35.45	20.62	19.23	17.45	15.91	13.50
Bulk, Borehole Cuttings	37.82	16.42	14.05	11.85	9.72	7.77
Bulk, Borehole Cuttings - R	37.26	16.35	14.19	12.07	9.97	7.75
Bulk, Development Rock	31.89	13.97	13.68	12.88	11.03	9.77
Bulk, Development Rock - R	31.06	14.52	13.87	13.06	11.73	9.96

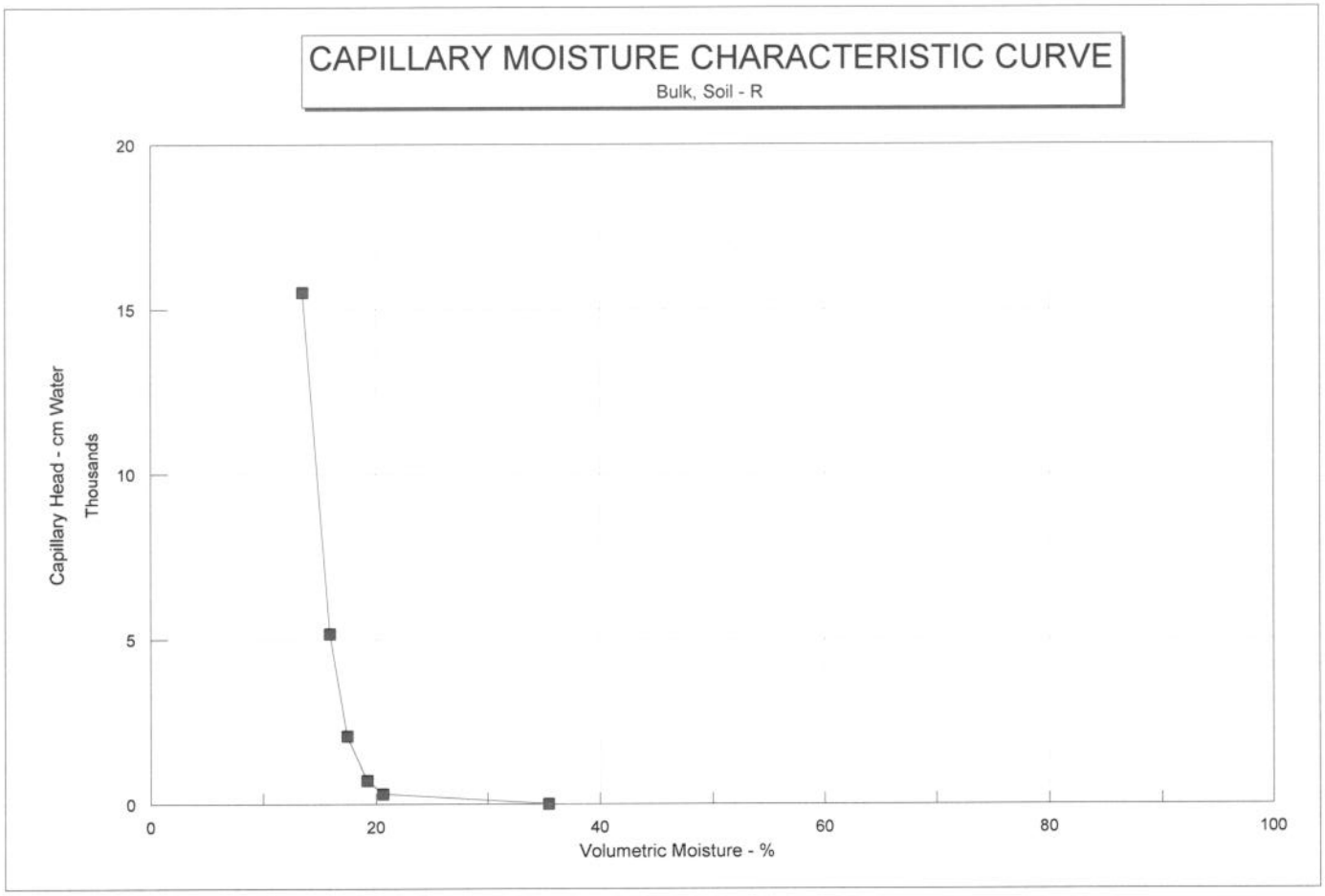
	% Saturation					
	Sat.	0.3 Bar	0.7 Bar	2 Bar	5 Bar	15 Bar
Bulk, Soil	100.00	58.94	55.43	50.04	45.00	38.13
Bulk, Soil - R	100.00	58.17	54.25	49.23	44.89	38.09
Bulk, Borehole Cuttings	100.00	43.42	37.16	31.32	25.70	20.53
Bulk, Borehole Cuttings - R	100.00	43.90	38.08	32.41	26.77	20.81
Bulk, Development Rock	100.00	43.81	42.89	40.37	34.58	30.64
Bulk, Development Rock - R	100.00	46.75	44.64	42.05	37.75	32.06

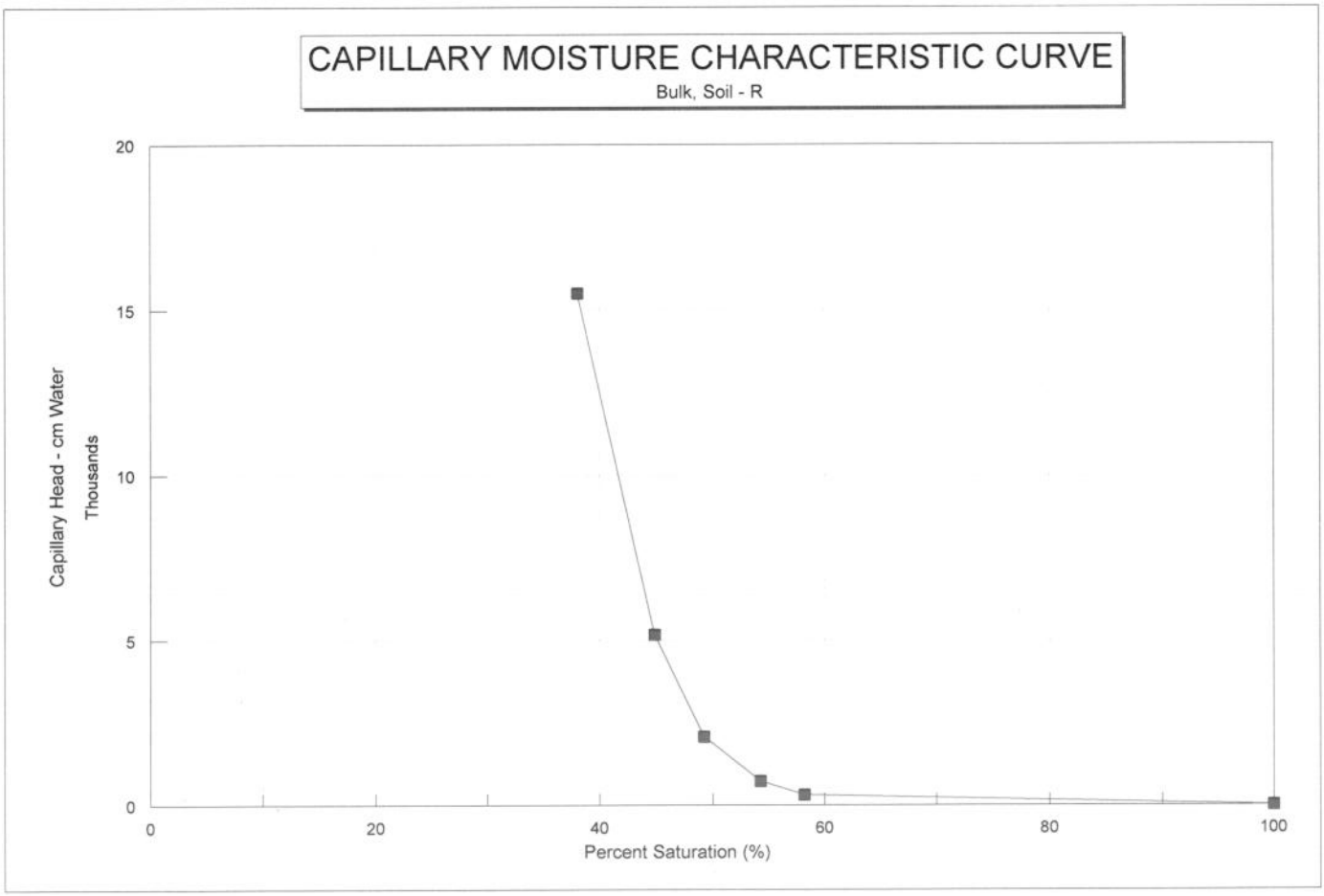
Data Entered By: DAW Date: 12/11/2012
Data Checked By: DPM Date: 12/19/12
Filename: CDK0DMBC

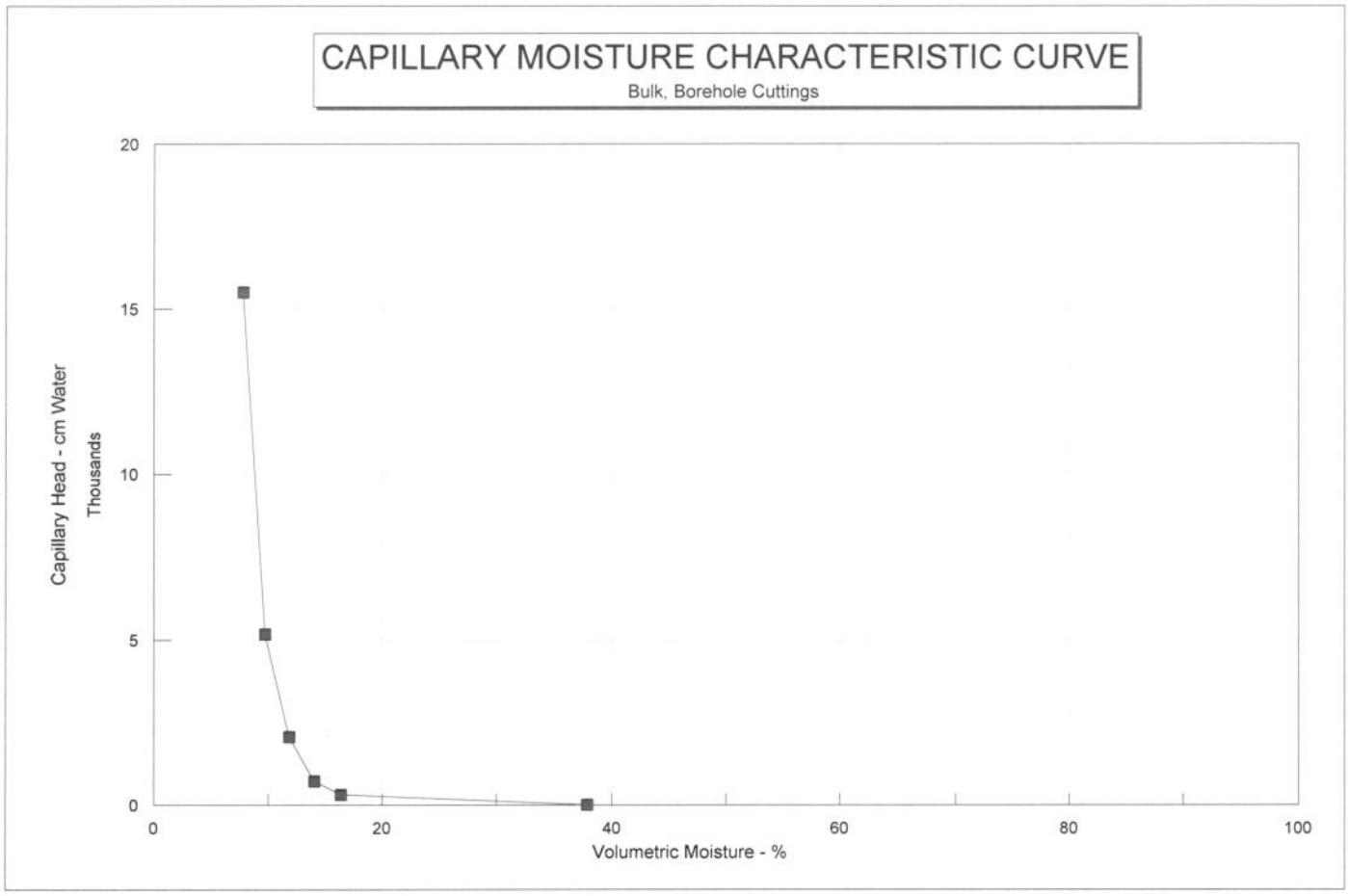
ADVANCED TERRA TESTING, Inc. ATT

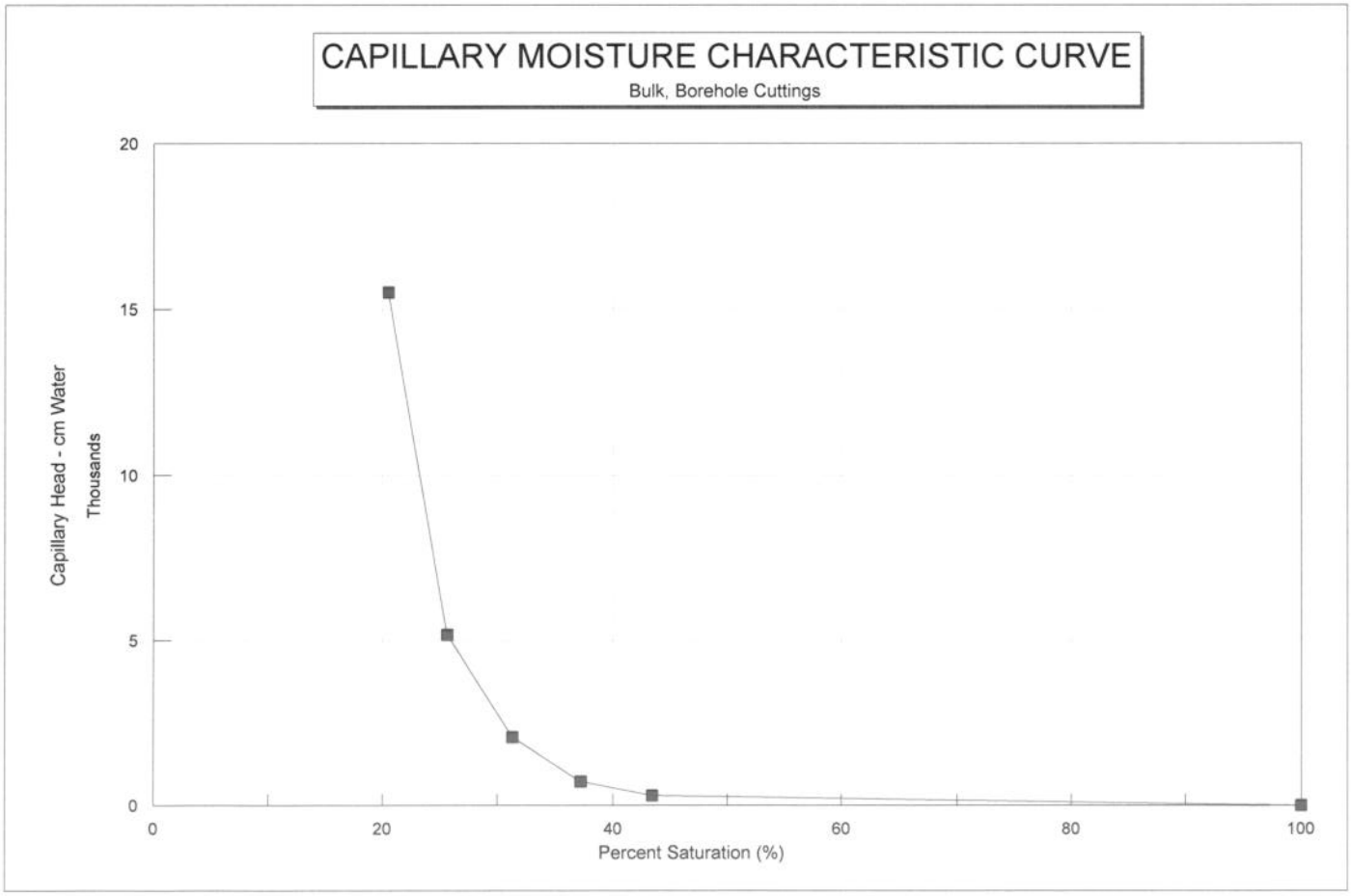

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Soil
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %

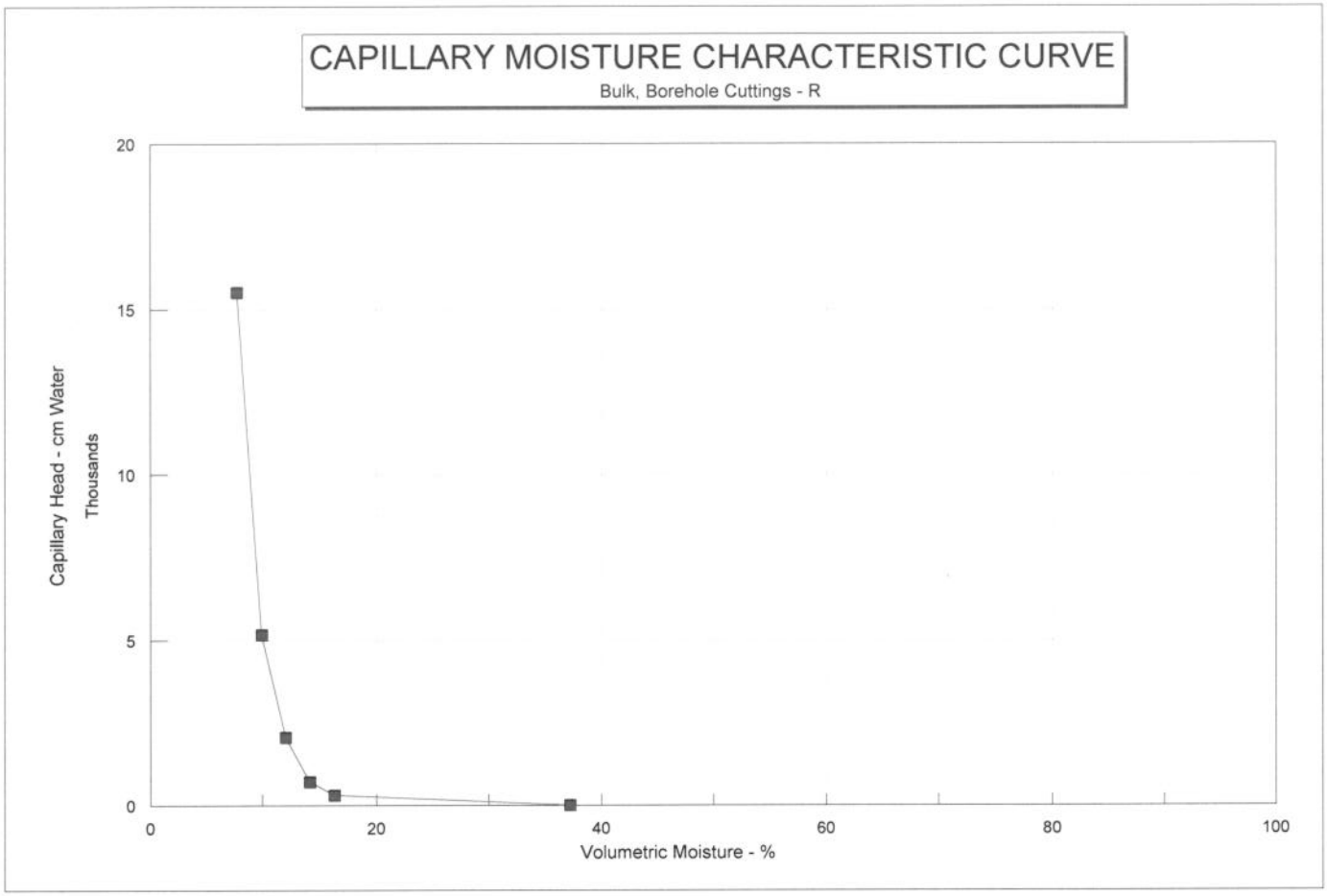

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Soil
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)

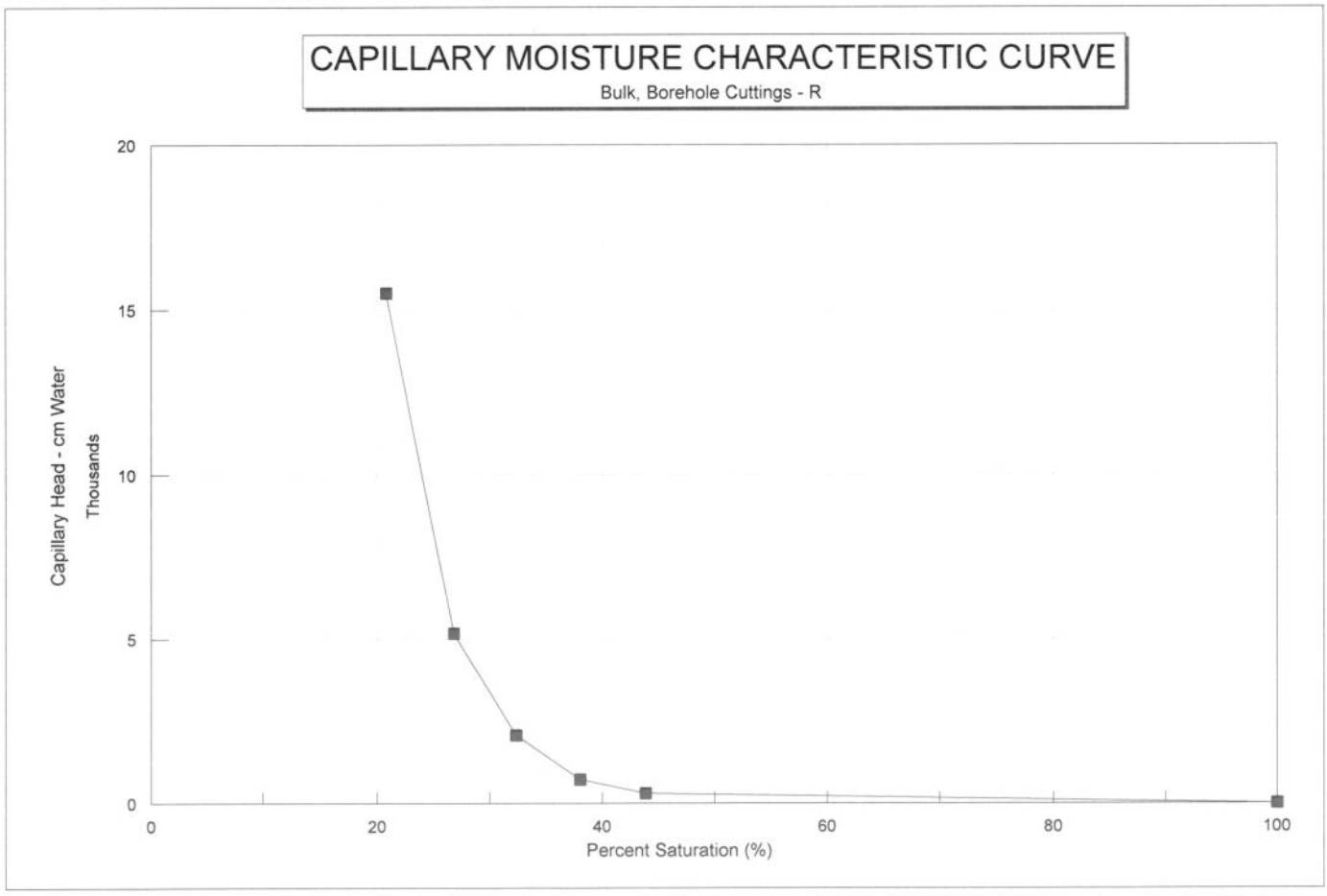

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Soil - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %

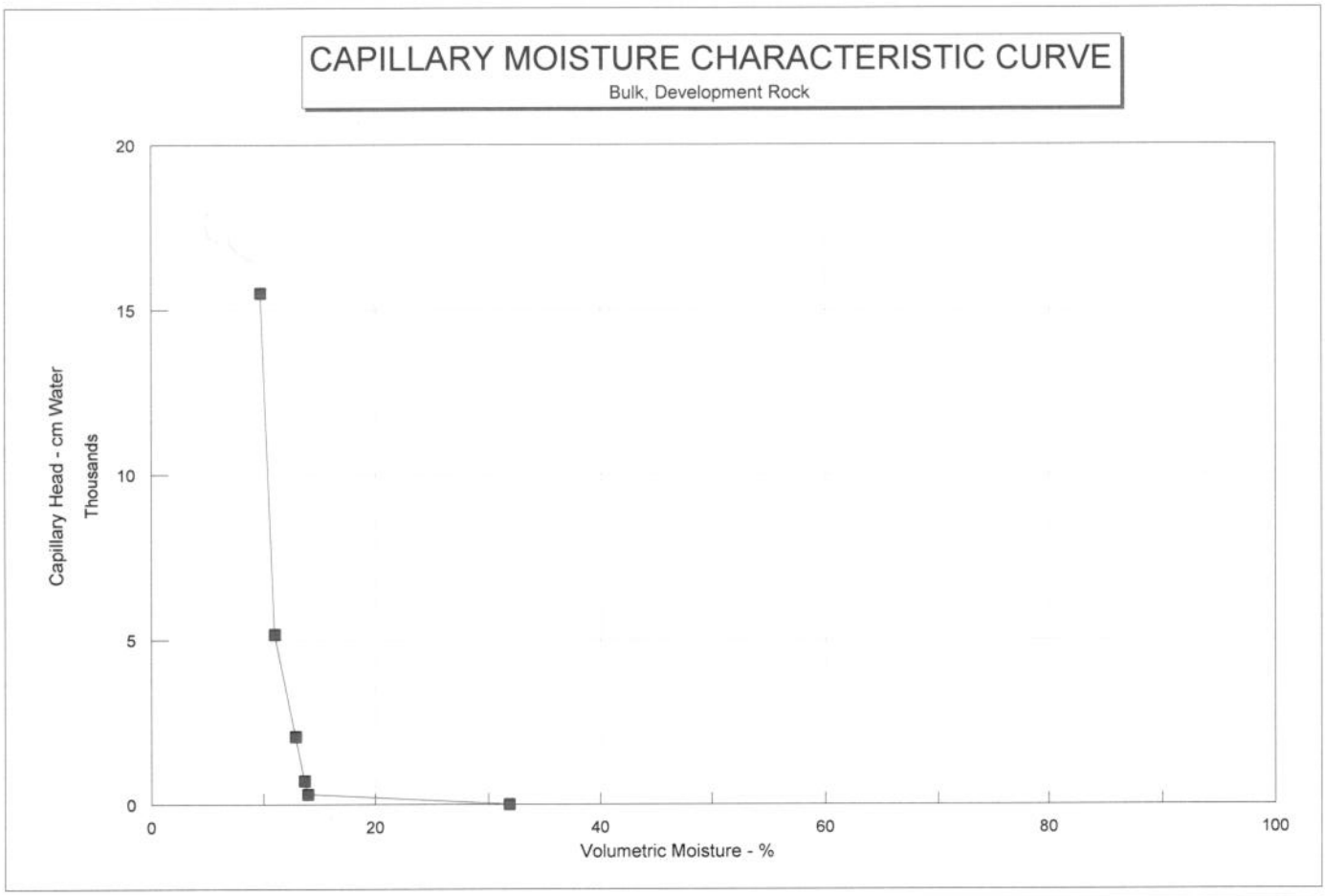

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Soil - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)

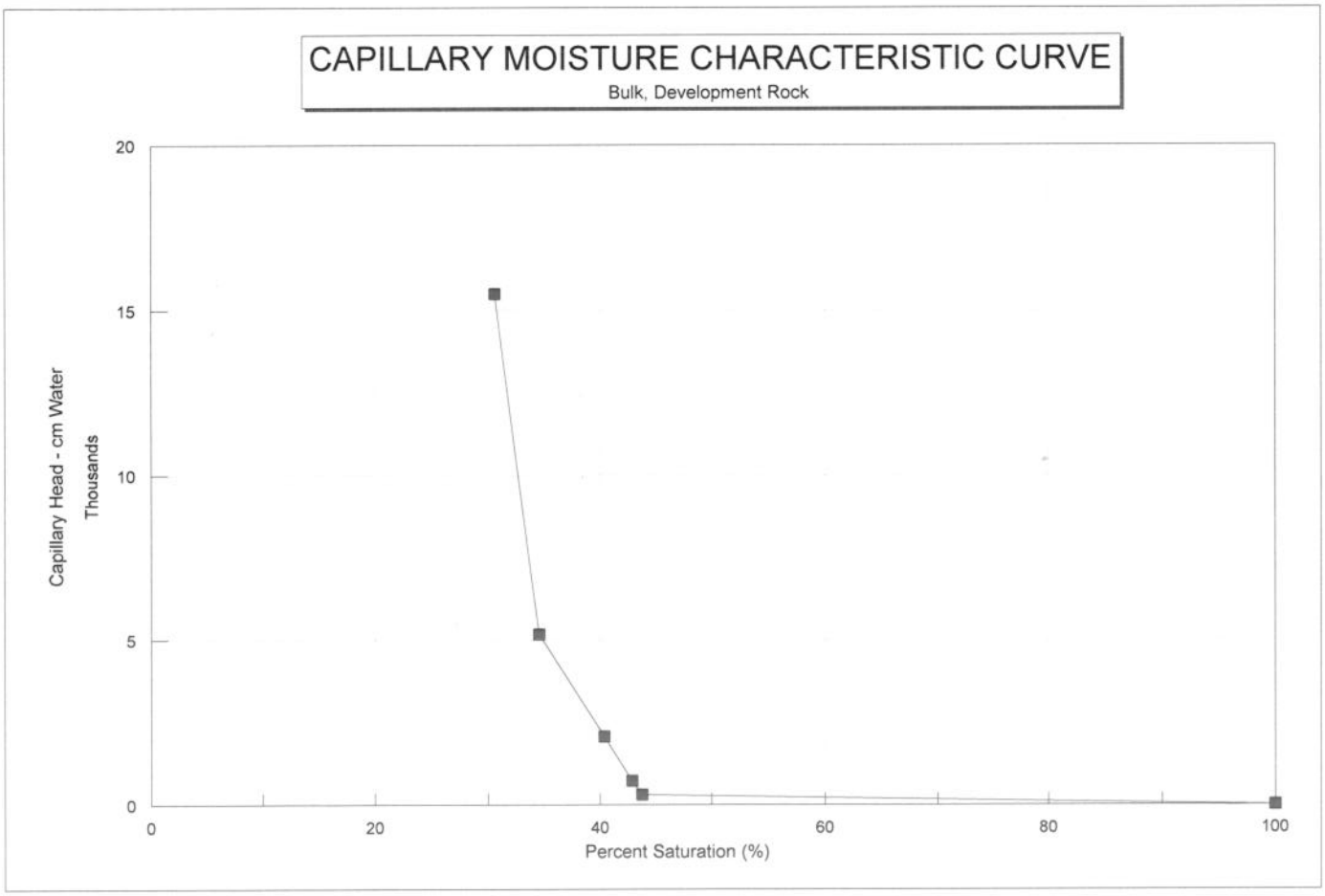

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Borehole Cuttings
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %

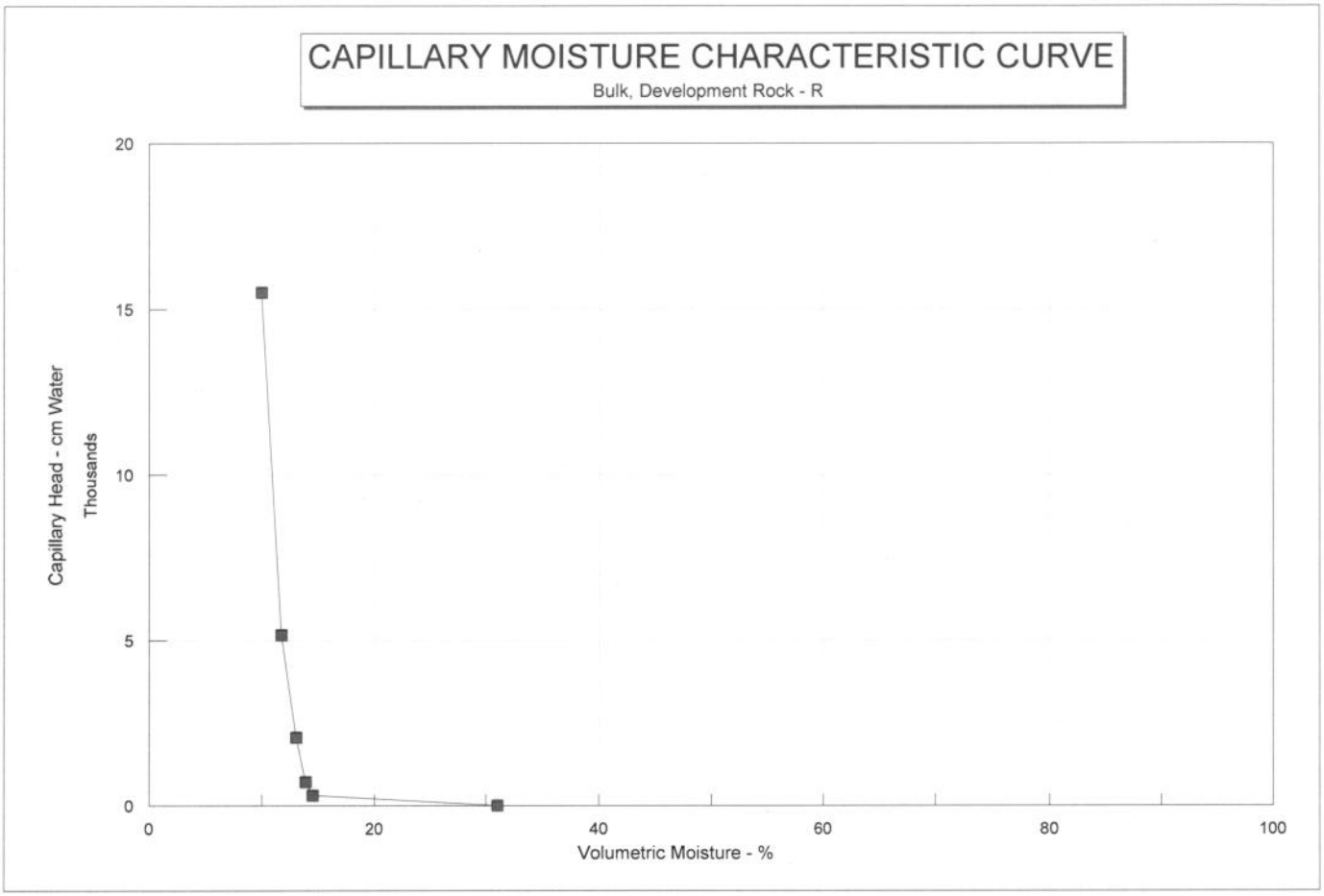

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Borehole Cuttings
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)

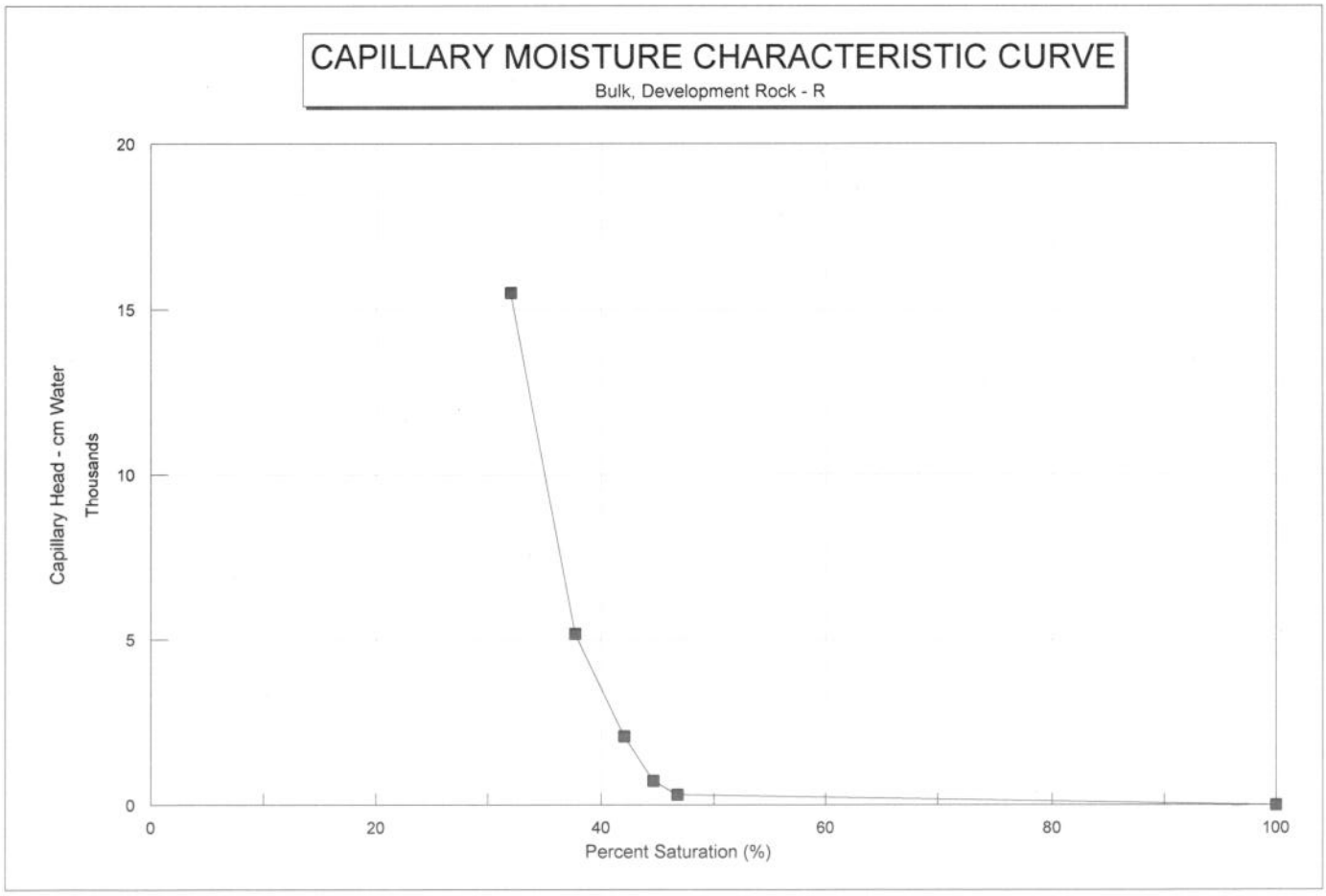

CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Borehole Cuttings - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %


CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Borehole Cuttings - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)


CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Development Rock
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %


CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Development Rock
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)


CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Development Rock - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Volumetric Moisture - %


CAPILLARY MOISTURE CHARACTERISTIC CURVE
Bulk, Development Rock - R
Capillary Head - cm Water
Thousands
20
15
10
5
0
0
20
40
60
80
100
Percent Saturation (%)

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	CDM	JOB NO.	2125-21
BORING NO.	Borehole Cutting	SAMPLED	
DEPTH		TEST STARTED	10/25/12 CAL
SAMPLE NO.		TEST FINISHED	11/07/12 CAL
SOIL DESCR.	64986.14	CELL NUMBER	15S
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	388.5	432.0
Wt. Wet Soil & Pan (g)	396.7	440.2
Wt. Dry Soil & Pan (g)	353.9	353.9
Wt. Lost Moisture (g)	42.9	86.4
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	345.7	345.7
Moisture Content %	12.4	25.0
Wet Density PCF	109.3	125.5
Dry Density PCF	97.3	100.4

Init. Diameter (in)	2.405	(cm)	6.109
Init. Area (sq in)	4.543	(sq cm)	29.310
Init. Height (in)	2.980	(cm)	7.569
Vol. Bef. Consol. (cu ft)	0.00783		
Vol. After Consol. (cu ft)	0.00759		
Porosity %	40.19		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	1
Percentage of Pump setting	100
Q (cc/s)	1.09E-01
Height	2.940
Diameter	2.383
Pressure (psi)	0.094
Area after consol. (cm*cm)	28.769
Gradient	0.885
Permeability k (cm/s)	4.3E-03
Permeability k (m/s)	**4.3E-05**
Back Pressure (psi)	88.0
Cell Pressure (psi)	93.0
Ave. Effective Stress (psi)	4.953

Average temperature degree C: 22.2
NOTE: Remolded -#4 sample.

Data entry by: DAW Date: 11/08/2012
Checked by: CAL Date: 11/08/12
FileName: CDP0BRCT

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	CDM	JOB NO.	2125-21
BORING NO.	Borehole Cutting	SAMPLED	
DEPTH		TEST STARTED	10/25/12 CAL
SAMPLE NO.		TEST FINISHED	11/07/12 CAL
SOIL DESCR.	64986.14	SETUP NO.	15S
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.8	12.4				
50.0	48.0	13.6	14.7	38.9	44.6	5.7	0.57
60.0	58.0	15.2	16.0	48.8	55.6	6.8	0.68
70.0	68.0	17.1	18.2	58.7	67.1	8.4	0.84
80.0	78.0	18.6	19.3	68.8	77.7	8.9	0.89
90.0	88.0	19.5	20.2	78.7	87.9	9.2	0.92
100.0		20.4	20.6	88.6	98.1	9.5	0.95

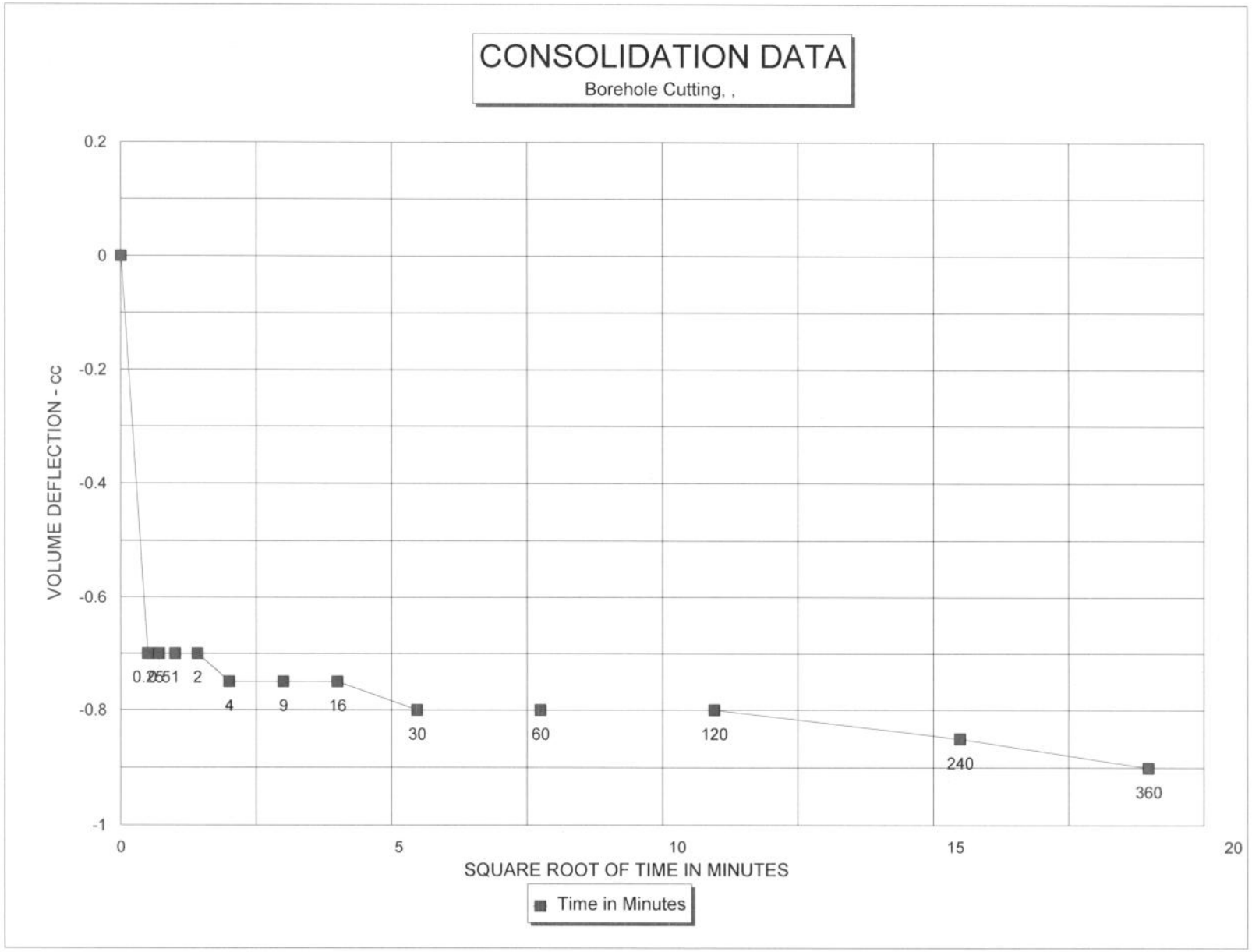
CONSOLIDATION DATA

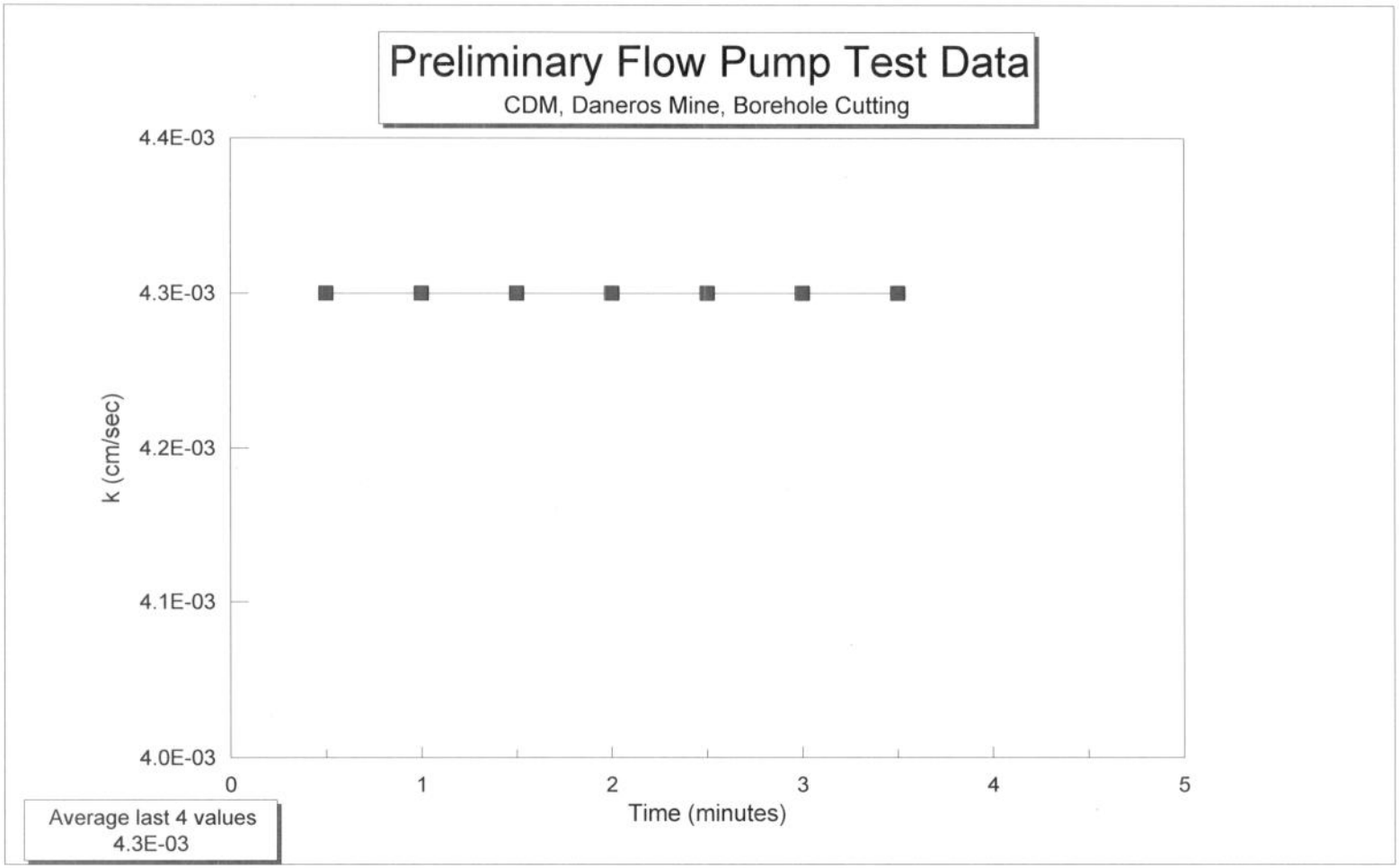
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.30	0.00
0.25	0.50	1.00	-0.70
0.5	0.71	1.00	-0.70
1	1.00	1.00	-0.70
2	1.41	1.00	-0.70
4	2.00	1.05	-0.75
9	3.00	1.05	-0.75
16	4.00	1.05	-0.75
30	5.48	1.10	-0.80
60	7.75	1.10	-0.80
120	10.95	1.10	-0.80
240	15.49	1.15	-0.85
360	18.97	1.20	-0.90

Initial Height (in)	2.980	Init. Vol. (CC)	221.88
Height Change (in)	0.040	Vol. Change (CC)	18.70
Ht. After Cons. (in)	2.940	Cell Exp. (CC)	11.70
Initial Area (sq in)	4.543	Net Change (CC)	7.00
Area After Cons. (sq in)	4.459	Cons. Vol. (CC)	214.88

Data entry by: DAW Date: 11/08/2012
Checked by: ayc Date: 11/8/12
FileName: CDP0BRCT

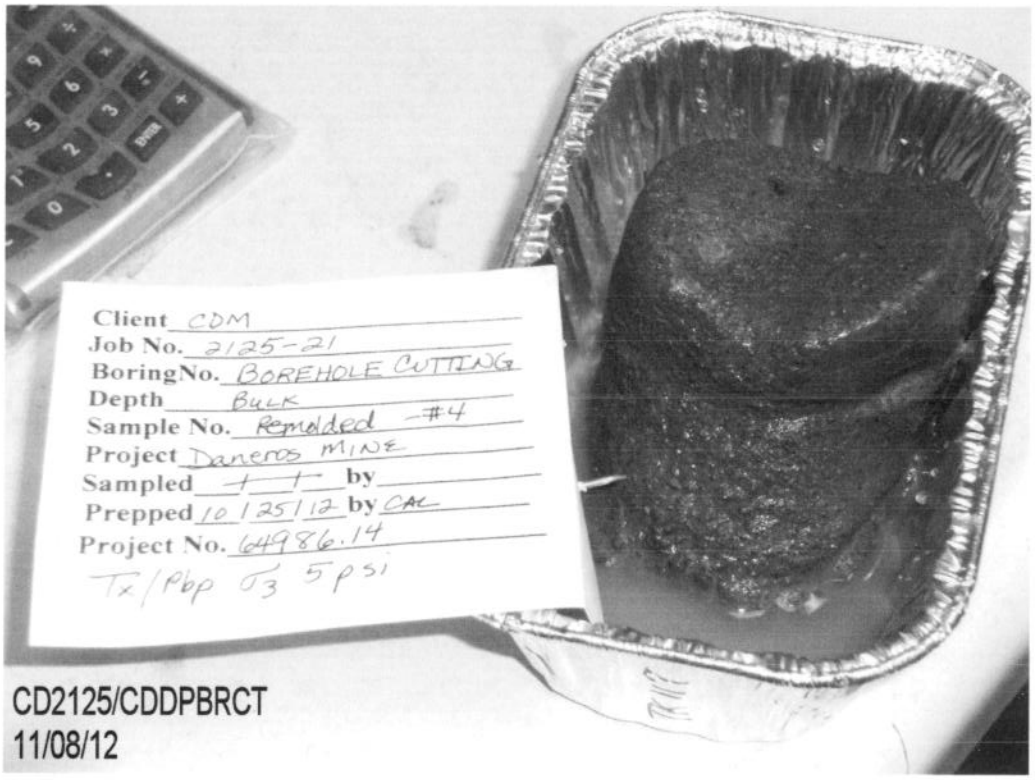
ADVANCED TERRA TESTING, INC. ATT


CONSOLIDATION DATA
Borehole Cutting, ,
VOLUME DEFLECTION - cc
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
5
10
15
20
SQUARE ROOT OF TIME IN MINUTES
0.25
0.25
1
2
4
9
16
30
60
120
240
360
Time in Minutes



Data Entered By: CAL
Data Checked By: DAW
File Name: CDFPBRCT

Date: 11/07/2012
Date Checked: 11/08/12



CD2125/CDDPBRCT
11/08/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	CDM	JOB NO.	2125-21
BORING NO.	DEVELOPMENT ROCK	SAMPLED	9/21/12 DF
DEPTH	BULK	TEST STARTED	10/26/12 CAL
SAMPLE NO.		TEST FINISHED	11/06/12 CAL
SOIL DESCR.	64986.14	CELL NUMBER	19S
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	410.2	459.8
Wt. Wet Soil & Pan (g)	418.4	468.0
Wt. Dry Soil & Pan (g)	384.2	384.2
Wt. Lost Moisture (g)	34.2	83.8
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	376.0	376.0
Moisture Content %	9.1	22.3
Wet Density PCF	115.3	134.4
Dry Density PCF	105.7	109.9

Init. Diameter (in)	2.399	(cm)	6.093
Init. Area (sq in)	4.520	(sq cm)	29.164
Init. Height (in)	2.998	(cm)	7.615
Vol. Bef. Consol. (cu ft)	0.00784		
Vol. After Consol. (cu ft)	0.00754		
Porosity %	39.21		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	1
Percentage of Pump setting	100
Q (cc/s)	1.09E-01
Height	2.975
Diameter	2.362
Pressure (psi)	0.036
Area after consol. (cm*cm)	28.266
Gradient	0.335
Permeability k (cm/s)	1.2E-02
Permeability k (m/s)	**1.2E-04**
Back Pressure (psi)	78.0
Cell Pressure (psi)	83.0
Ave. Effective Stress (psi)	4.982

Average temperature degree C: 23.4

Notes: Remolded -3/8" material at 80% uncorrected max. dry density. Permeability (K) is at that of the equipment without sample. Actual value may be faster.

Data entry by: MLM Date: 11/07/2012

Checked by: CAL Date: 11/07/12

FileName: CDP0DMDR

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	CDM	JOB NO.	2125-21
BORING NO.	DEVELOPMENT ROCK	SAMPLED	9/21/12 DF
DEPTH	BULK	TEST STARTED	10/26/12 CAL
SAMPLE NO.		TEST FINISHED	11/06/12 CAL
SOIL DESCR.	64986.14	SETUP NO.	19S
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.3	14.5				
50.0	48.0	15.7	17.1	39.1	46.6	7.5	0.75
60.0	58.0	17.8	18.6	49.1	57.5	8.4	0.84
70.0	68.0	19.0	19.8	58.2	67.3	9.1	0.91
80.0	78.0	20.0	20.8	68.4	77.7	9.3	0.93
90.0		21.0	21.1	78.1	87.8	9.7	0.97

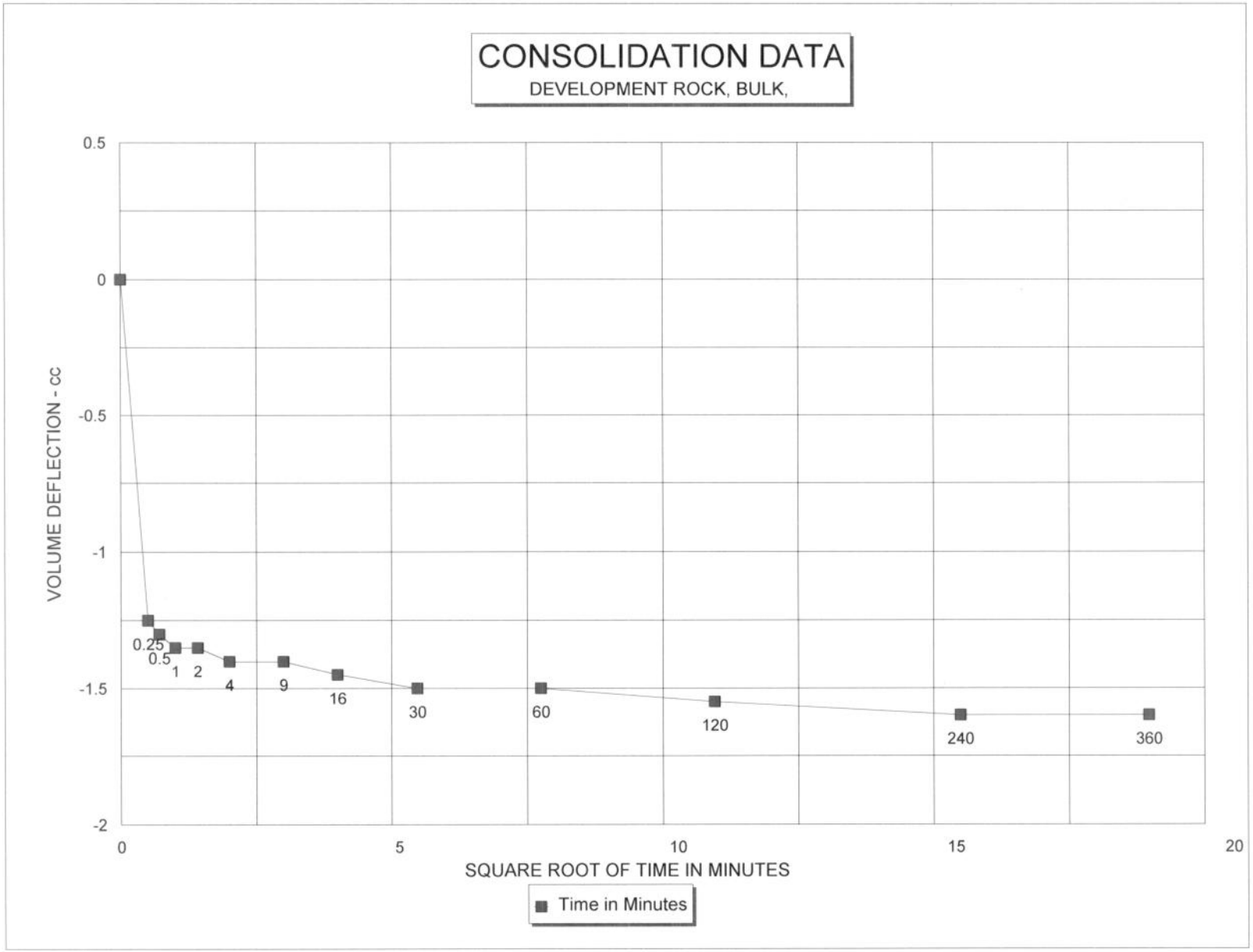
CONSOLIDATION DATA

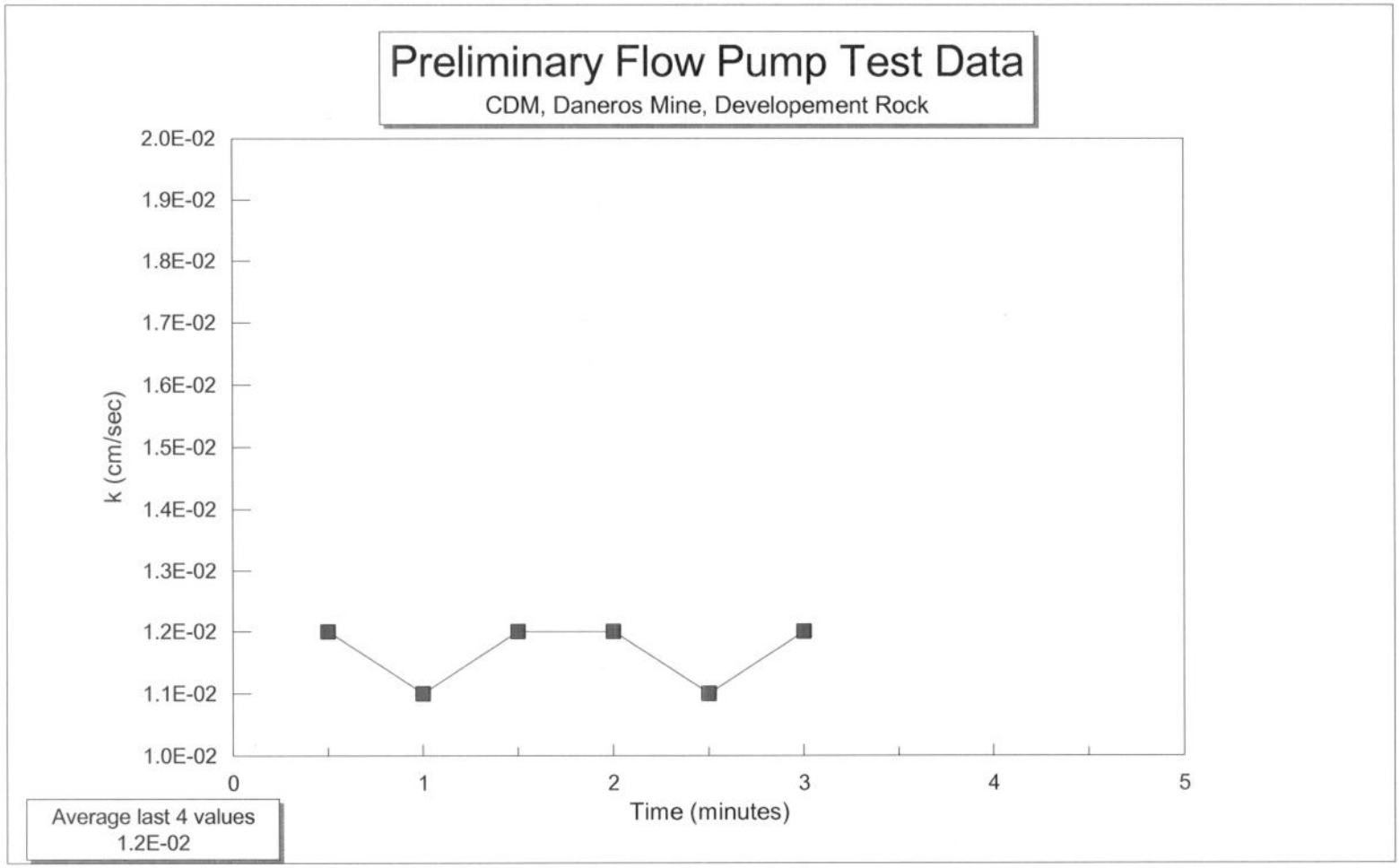
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.50	0.00
0.25	0.50	1.75	-1.25
0.5	0.71	1.80	-1.30
1	1.00	1.85	-1.35
2	1.41	1.85	-1.35
4	2.00	1.90	-1.40
9	3.00	1.90	-1.40
16	4.00	1.95	-1.45
30	5.48	2.00	-1.50
60	7.75	2.00	-1.50
120	10.95	2.05	-1.55
240	15.49	2.10	-1.60
360	18.97	2.10	-1.60

Initial Height (in)	2.998	Init. Vol. (CC)	222.11
Height Change (in)	0.023	Vol. Change (CC)	19.90
Ht. After Cons. (in)	2.975	Cell Exp. (CC)	11.42
Initial Area (sq in)	4.520	Net Change (CC)	8.48
Area After Cons. (sq in)	4.381	Cons. Vol. (CC)	213.63

Data entry by: MLM Date: 11/07/2012
Checked by: Cdr Date: 11/07/12
FileName: CDP0DMDR

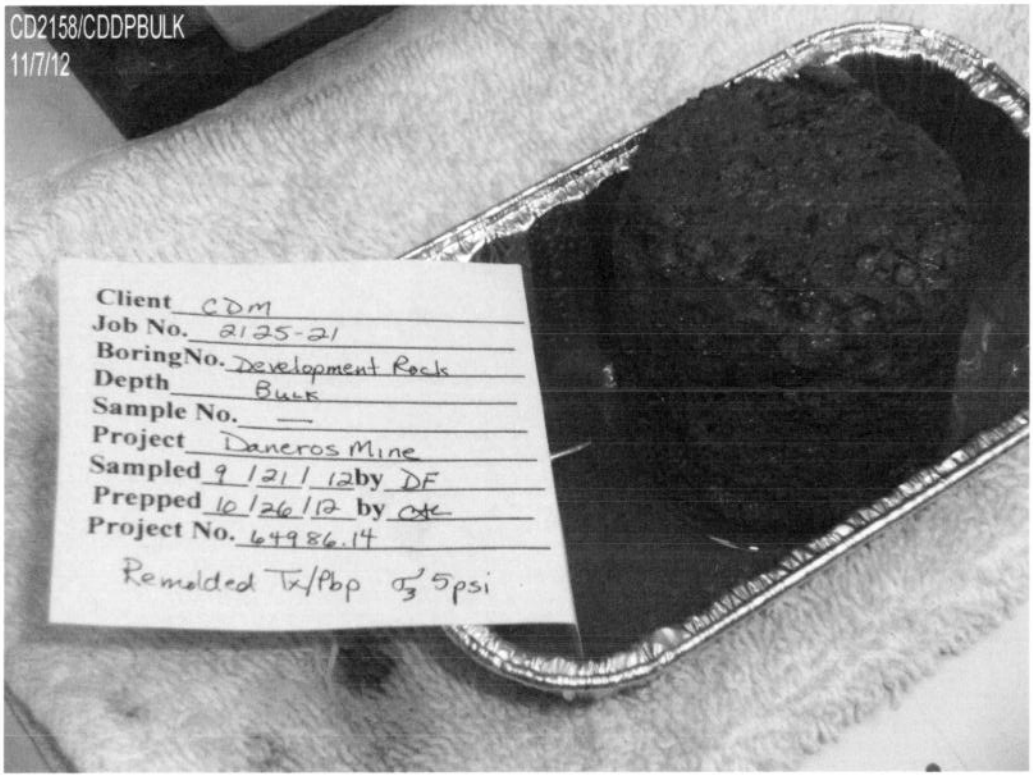
ADVANCED TERRA TESTING, INC. ATT


CONSOLIDATION DATA
DEVELOPMENT ROCK, BULK,
VOLUME DEFLECTION - cc
0.5
0
-0.5
-1
-1.5
-2
0
5
10
15
20
SQUARE ROOT OF TIME IN MINUTES
0.25
0.5
1
2
4
9
16
30
60
120
240
360
Time in Minutes



Data Entered By: CAL
Data Checked By: ym
File Name: CDFPDMDR

Date: 11/06/12
Date Checked: 11/07/12


CD2158/CDDPBULK
11/7/12
Client CDM
Job No. 2125-21
BoringNo. Development Rock
Depth Bulk
Sample No. —
Project Daneros Mine
Sampled 9 /21/ 12 by DF
Prepped 10 /26/ 12 by CAC
Project No. 64986.14
Remolded Tx/Pop σ3 5psi

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT CDM

JOB NO. 2125-21

BORING NO.	SOIL	SAMPLED	10/12/12 DF
DEPTH	Bulk	TEST STARTED	10/18/12 CAL
SAMPLE NO.		TEST FINISHED	10/27/12 CAL
SOIL DESCR.	64986.14	CELL NUMBER	12P
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	387.0	429.1
Wt. Wet Soil & Pan (g)	395.2	437.3
Wt. Dry Soil & Pan (g)	352.2	352.2
Wt. Lost Moisture (g)	43.1	85.2
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	344.0	344.0
Moisture Content %	12.5	24.8
Wet Density PCF	107.6	128.8
Dry Density PCF	95.7	103.2

Init. Diameter (in)	2.408	(cm)	6.116
Init. Area (sq in)	4.554	(sq cm)	29.383
Init. Height (in)	3.008	(cm)	7.640
Vol. Bef. Consol. (cu ft)	0.00793		
Vol. After Consol. (cu ft)	0.00735		
Porosity %	40.92		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	3
Percentage of Pump setting	100
Q (cc/s)	2.33E-02
Height	2.982
Diameter	2.328
Pressure (psi)	0.094
Area after consol. (cm*cm)	27.469
Gradient	0.873
Permeability k (cm/s)	9.7E-04
Permeability k (m/s)	**9.7E-06**
Back Pressure (psi)	78.0
Cell Pressure (psi)	83.0
Ave. Effective Stress (psi)	4.953
Average temperature degree C:	22.2

Notes: Remolded Sample.

Data entry by: MLM Date: 10/29/2012
Checked by: CAL Date: 11/01/2012
FileName: CDP0SOIL

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	CDM	JOB NO.	2125-21
BORING NO.	SOIL	SAMPLED	10/12/12 DF
DEPTH	Bulk	TEST STARTED	10/18/12 CAL
SAMPLE NO.		TEST FINISHED	10/27/12 CAL
SOIL DESCR.	64986.14	SETUP NO.	12P
LOCATION	Daneros Mine	SATURATED TEST	Yes
CONF. PRES. PSF	720	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.3	18.6				
50.0	48.0	20.5	21.6	38.3	45.9	7.6	0.76
60.0	58.0	23.0	23.9	48.7	56.6	7.9	0.79
70.0	68.0	24.2	24.9	58.7	66.8	8.1	0.81
80.0	78.0	25.3	26.0	68.9	77.5	8.6	0.86
90.0		26.3	26.5	78.9	88.4	9.5	0.95

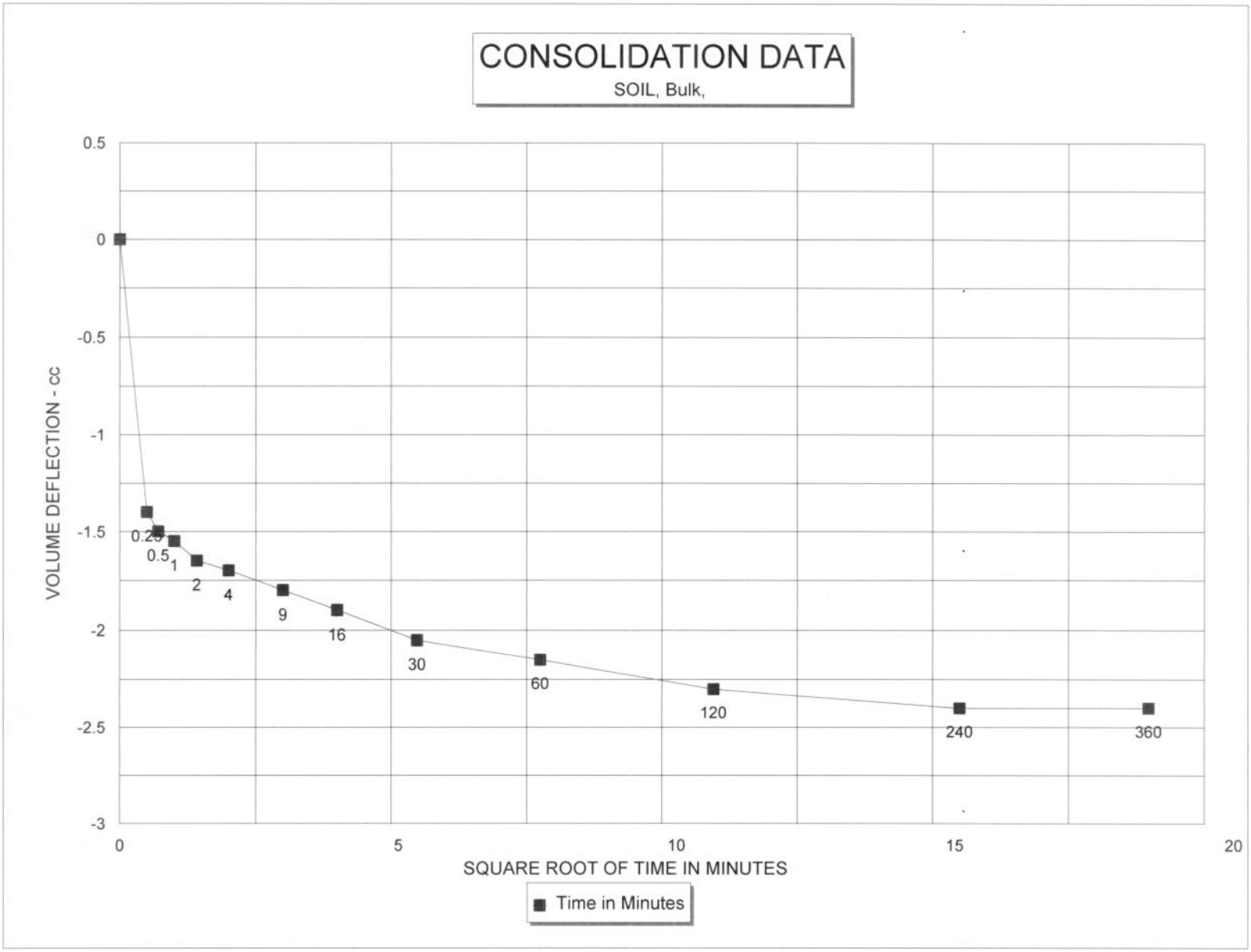
CONSOLIDATION DATA

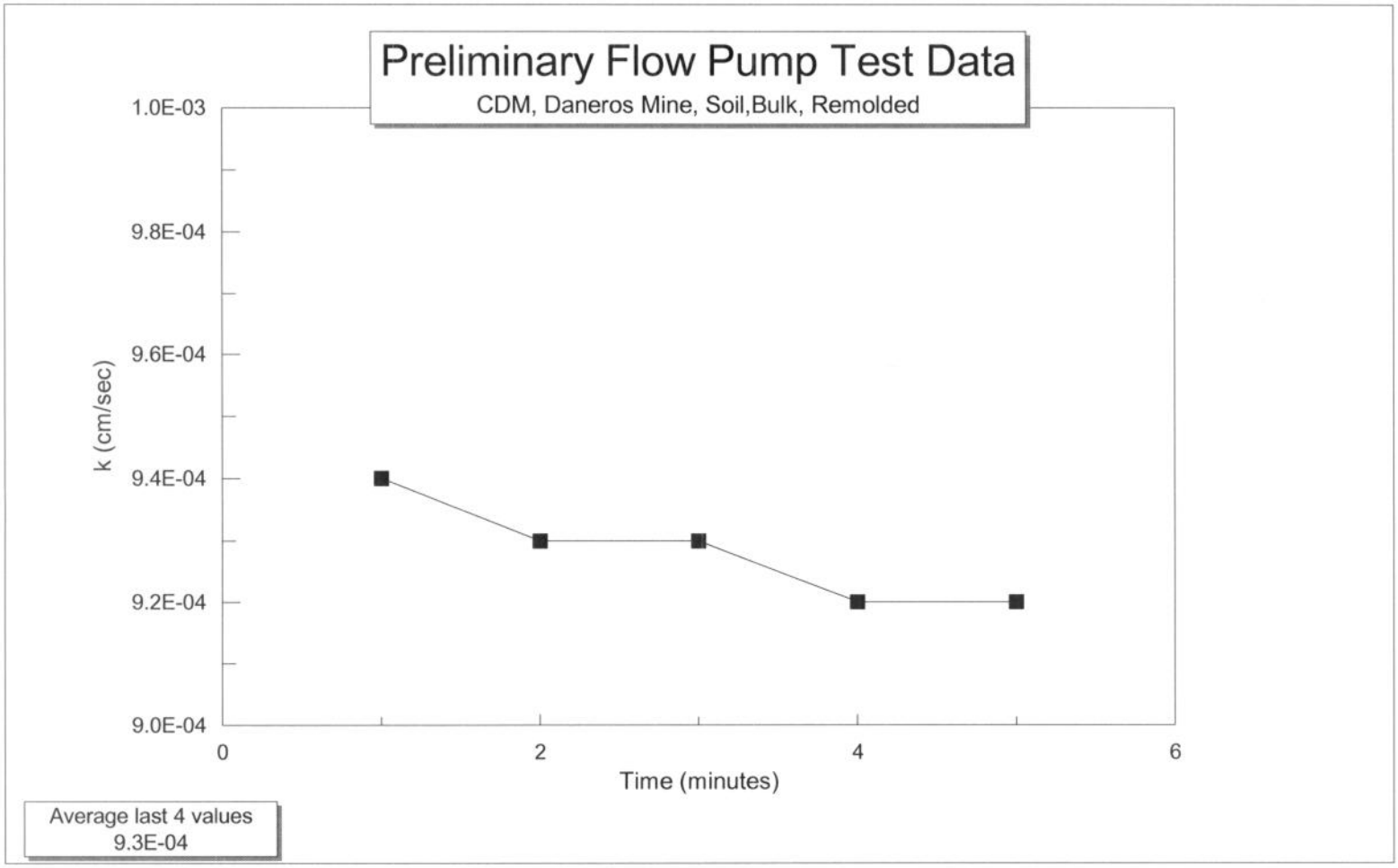
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.50	0.00
0.25	0.50	1.90	-1.40
0.5	0.71	2.00	-1.50
1	1.00	2.05	-1.55
2	1.41	2.15	-1.65
4	2.00	2.20	-1.70
9	3.00	2.30	-1.80
16	4.00	2.40	-1.90
30	5.48	2.55	-2.05
60	7.75	2.65	-2.15
120	10.95	2.80	-2.30
240	15.49	2.90	-2.40
360	18.97	2.90	-2.40

Initial Height (in)	3.008	Init. Vol. (CC)	224.52
Height Change (in)	0.026	Vol. Change (CC)	26.70
Ht. After Cons. (in)	2.982	Cell Exp. (CC)	10.27
Initial Area (sq in)	4.554	Net Change (CC)	16.43
Area After Cons. (sq in)	4.258	Cons. Vol. (CC)	208.09

Data entry by: MLM Date: 10/29/2012
Checked by: CAL Date: 11/01/2012
FileName: CDP0SOIL

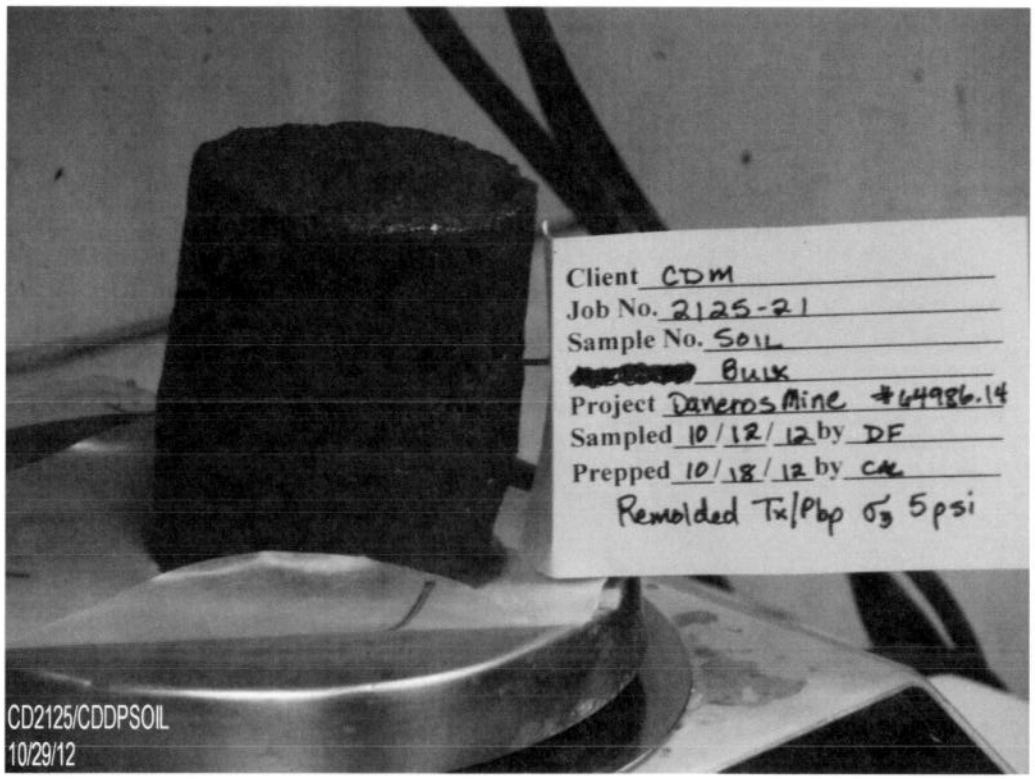
ADVANCED TERRA TESTING, Inc. ATT


CONSOLIDATION DATA
SOIL, Bulk,
VOLUME DEFLECTION - cc
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
0
5
10
15
20
SQUARE ROOT OF TIME IN MINUTES
0.25
0.5
1
2
4
9
16
30
60
120
240
360
Time in Minutes



Data Entered By: CAL
Data Checked By: JM
File Name: CDFPSOIL

Date: 10/27/2012
Date Checked: 10/29/12


Client CDM
Job No. 2125-21
Sample No. SOIL
[redacted] Bulk
Project Daneros Mine #64986.14
Sampled 10/12/12 by DF
Prepped 10/18/12 by CAL
Remolded Tx/Pbp σ_3 5psi
CD2125/CDDPSOIL
10/29/12

Attachment 2

SWRC Fit Computer Program Output

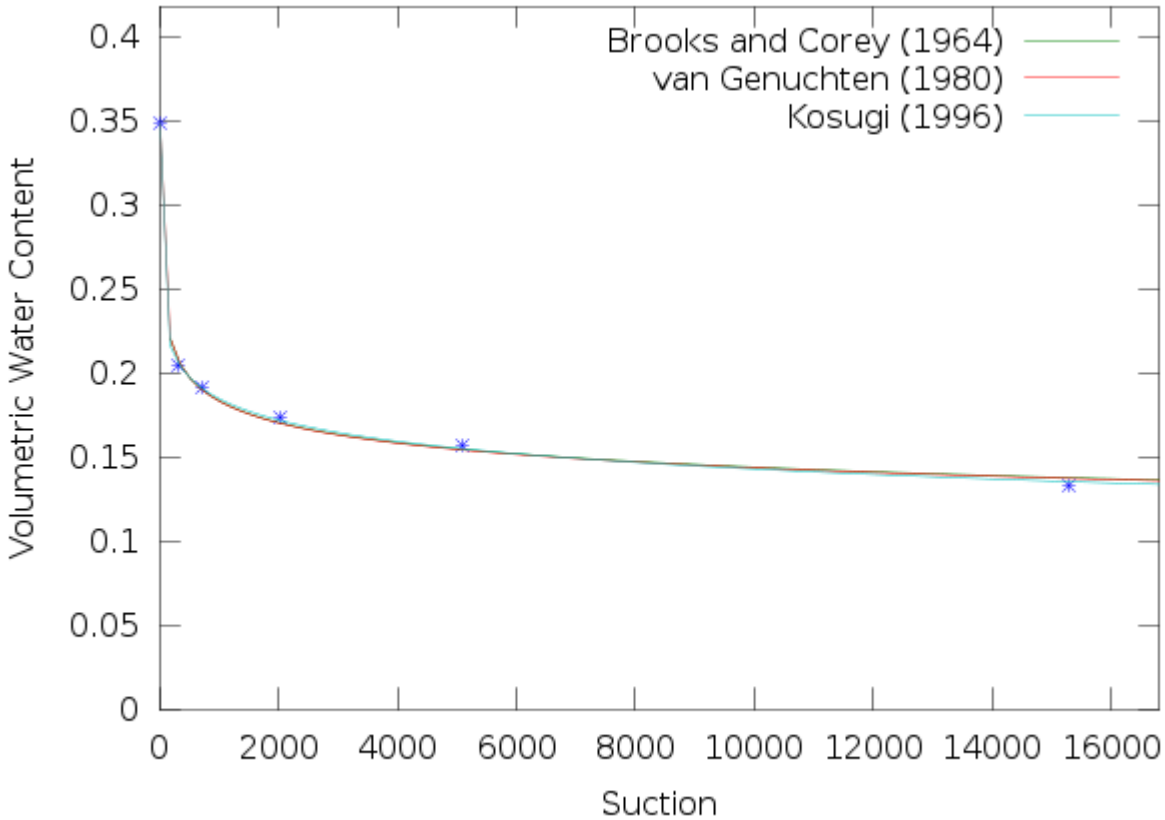
SWRC Fit - Result -

Soil sample: Daneros Mine Soil
Texture:
Name:

Unimodal models

Model	Equation	Parameters	R^2
Brooks and Corey	$S_e = \begin{cases} \left(\frac{h}{h_b}\right)^{-\lambda} & (h > h_b) \\ 1 & (h \le h_b) \end{cases}$	θ_s = 0.34854 θ_r = 2.2787e-06 h_b = 2.1733 λ = 0.10492	0.99832
van Genuchten	$S_e = \left[\frac{1}{1+(\alpha h)^n}\right]^m$ (m=1-1/n)	θ_s = 0.34842 θ_r = 3.5692e-07 α = 0.43868 n = 1.1058	0.99833
Kosugi	$S_e = Q\left[\frac{\ln(h/h_m)}{\sigma}\right]$	θ_s = 0.34861 θ_r = 6.2556e-07 h_m = 1746.8 σ = 7.6215	0.99950

where $S_e = \frac{\theta - \theta_r}{\theta_s - \theta_r}$, i.e., $\theta = \theta_r + (\theta_s - \theta_r) S_e$
and Q(x) is the complementary cumulative normal distribution function, defined by Q(x)=1-Φ(x), in which Φ(x) is a normalized form of the cumulative normal distribution function.



Brooks, R.H., and A.T. Corey (1964): Hydraulic properties of porous media. Hydrol. Paper 3. Colorado State Univ., Fort Collins, CO, USA.

van Genuchten, M. (1980): A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. *Soil Sci. Soc. Am. J.* 44:892-898.

Kosugi, K. (1996): Lognormal distribution model for unsaturated soil hydraulic properties. *Water Resour. Res.* 32: 2697-2703.

Original Data

```
0 0.34855
306 0.20405
713 0.1911
2038 0.17295
5095 0.15665
15285 0.1328
```

SWRC Fit

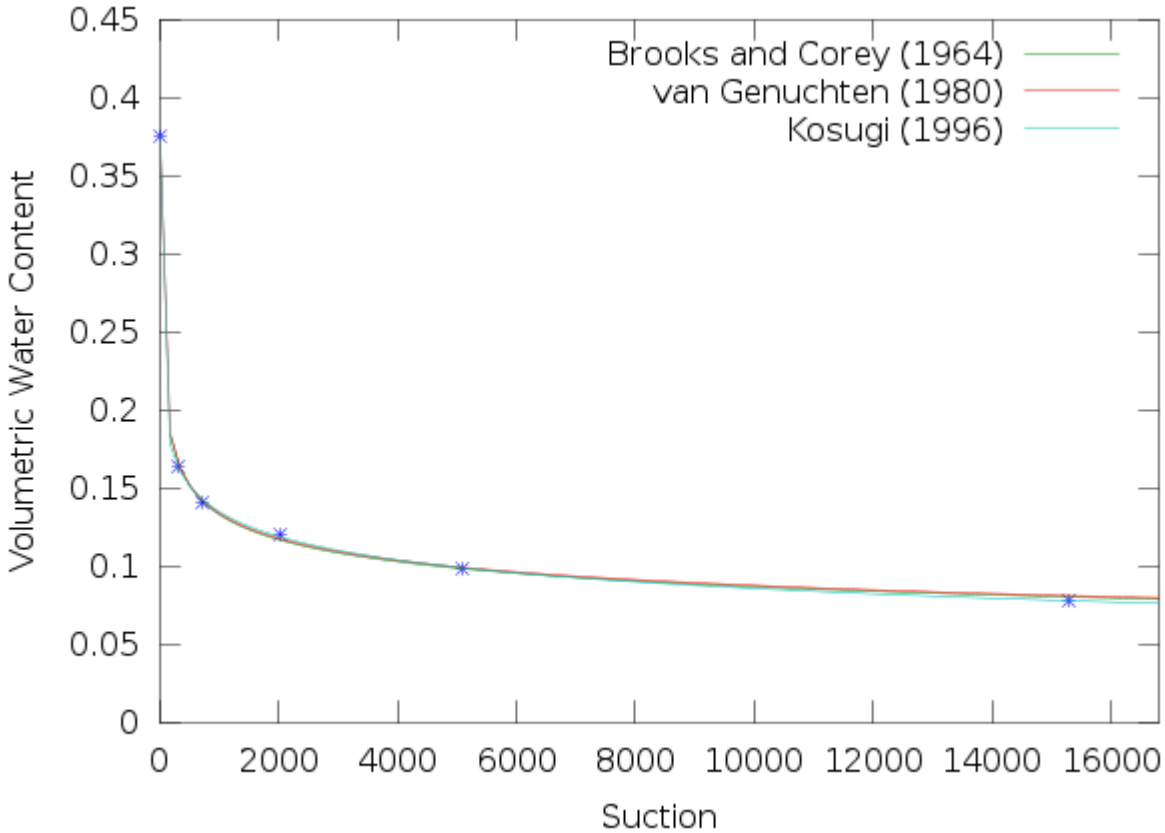
SWRC Fit - Result -

Soil sample: Daneros Mine Bore Hole Cuttings
Texture:
Name:

Unimodal models

Model	Equation	Parameters	R^2
Brooks and Corey	$S_e = \begin{cases} \left(\frac{h}{h_b}\right)^{-\lambda} & (h > h_b) \\ 1 & (h \le h_b) \end{cases}$	θ_s = 0.37539 θ_r = 9.5179e-08 h_b = 3.6615 λ = 0.18533	0.99968
van Genuchten	$S_e = \left[\frac{1}{1+(\alpha h)^n}\right]^m$ (m=1-1/n)	θ_s = 0.37476 θ_r = 3.7291e-07 α = 0.27231 n = 1.1839	0.99969
Kosugi	$S_e = Q\left[\frac{\ln(h/h_m)}{\sigma}\right]$	θ_s = 0.37540 θ_r = 5.4080e-05 h_m = 114.46 σ = 5.9854	0.99993

where $S_e = \frac{\theta - \theta_r}{\theta_s - \theta_r}$, i.e., $\theta = \theta_r + (\theta_s - \theta_r) S_e$
and Q(x) is the complementary cumulative normal distribution function, defined by Q(x)=1-Φ(x), in which Φ(x) is a normalized form of the cumulative normal distribution function.



Brooks, R.H., and A.T. Corey (1964): Hydraulic properties of porous media. Hydrol. Paper 3. Colorado State Univ., Fort Collins, CO, USA.

van Genuchten, M. (1980): A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. *Soil Sci. Soc. Am. J.* 44:892-898.

Kosugi, K. (1996): Lognormal distribution model for unsaturated soil hydraulic properties. *Water Resour. Res.* 32: 2697-2703.

Original Data

```
0 0.3754
306 0.16385
713 0.1412
2038 0.1196
5095 0.09845
15285 0.0776
```

SWRC Fit

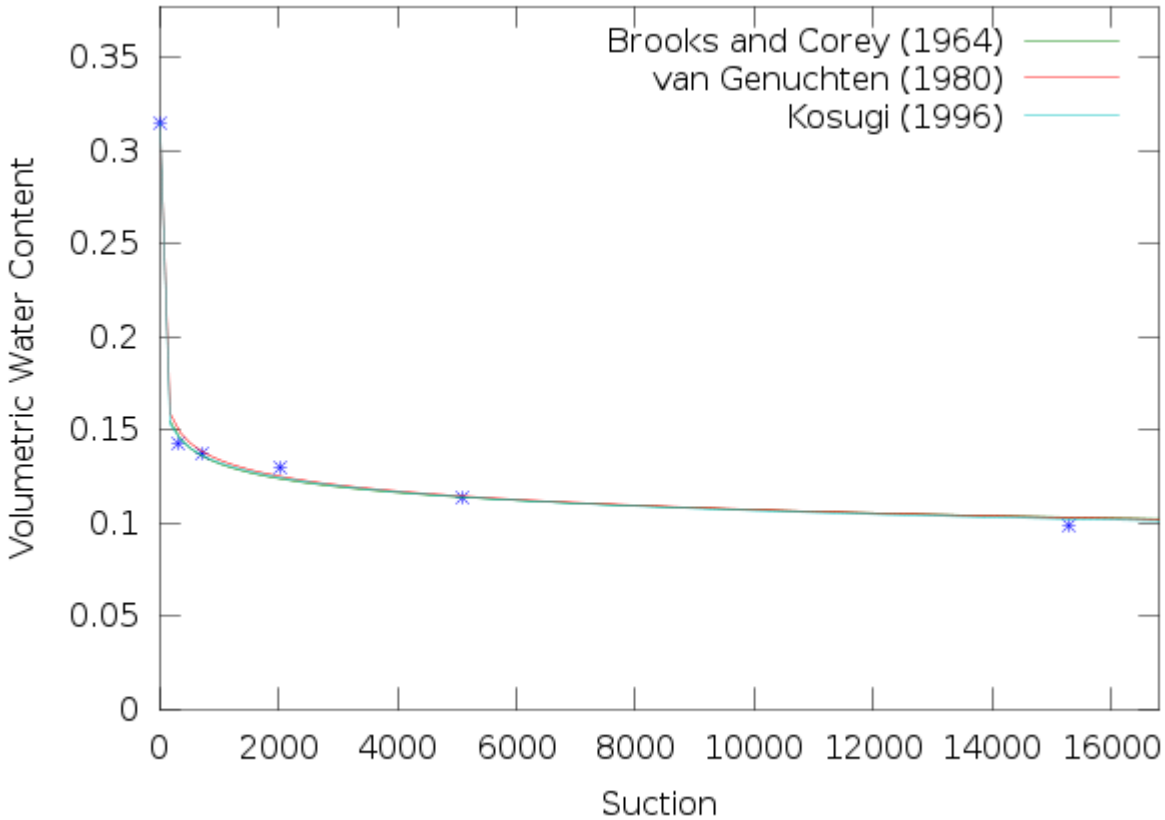
SWRC Fit - Result -

Soil sample: Daneros Mine Development Rock
Texture:
Name:

Unimodal models

Model	Equation	Parameters	R^2
Brooks and Corey	$S_e = \begin{cases} \left(\frac{h}{h_b}\right)^{-\lambda} & (h > h_b) \\ 1 & (h \le h_b) \end{cases}$	θ_s = 0.31476 θ_r = 1.0736e-06 h_b = 0.063733 λ = 0.090192	0.99753
van Genuchten	$S_e = \left[\frac{1}{1+(\alpha h)^n}\right]^m$ (m=1-1/n)	θ_s = 0.31313 θ_r = 2.1323e-06 α = 6.6591 n = 1.0966	0.99719
Kosugi	$S_e = Q\left[\frac{\ln(h/h_m)}{\sigma}\right]$	θ_s = 0.31482 θ_r = 2.7783e-06 h_m = 116.90 σ = 10.671	0.99818

where $S_e = \frac{\theta - \theta_r}{\theta_s - \theta_r}$, i.e., $\theta = \theta_r + (\theta_s - \theta_r) S_e$
and Q(x) is the complementary cumulative normal distribution function, defined by Q(x)=1-Φ(x), in which Φ(x) is a normalized form of the cumulative normal distribution function.



Brooks, R.H., and A.T. Corey (1964): Hydraulic properties of porous media. Hydrol. Paper 3. Colorado State Univ., Fort Collins, CO, USA.

van Genuchten, M. (1980): A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. *Soil Sci. Soc. Am. J.* 44:892-898.

Kosugi, K. (1996): Lognormal distribution model for unsaturated soil hydraulic properties. *Water Resour. Res.* 32: 2697-2703.

Original Data

```
0 0.31475
306 0.14245
713 0.13775
2038 0.1297
5095 0.1138
15285 0.09865
```

SWRC Fit