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## MEMORANDUM

Date: May 4, 2018  
From: Weston Solutions, Inc., Anchorage, Alaska  
To: Alaska Department of Environmental Conservation, Division of Spill Prevention and Response, Juneau, Alaska  
Subject: Wrangell Monofill Project Support –Revised HELP Model

## INTRODUCTION

Weston Solutions, Inc. (Weston) was tasked by the Alaska Department of Environmental Conservation (ADEC) Division of Spill Prevention and Response to run a revised Hydrologic Evaluation of Landfill Performance (HELP) model based upon a monofill cover design originally developed by Ecology and Environment, Inc. (E&E) and incorporating some design elements from a separate monofill cover design developed by Geosyntec Consultants, Inc. (Geosyntec). The original E&E HELP model can be found in *Volume I, Basis of Design; Wrangell Junkyard Repository Site, Wrangell, Alaska; TDD:17-01-0015*, 9 June 2017 (E&E, 2017); the original Geosyntec HELP model can be found in *Proposed Wrangell Monofill Report of Findings, Wrangell, Alaska*, 27 January 2017 (Ahtna and Geosyntec, 2017). Weston performed an evaluation and comparison of the two models in *Wrangell Monofill Project Support – HELP Model Evaluation Report, Wrangell, Alaska*, April 2018 (Weston, 2018).

Some elements of the Geosyntec cover design (geocomposite drainage system and high density polyethylene [HDPE] liner) were incorporated into the E&E design, and the revised design was analyzed using HELP modeling software. Results from the revised HELP model are summarized herein and in the model output included as Attachment A.

## HELP MODEL ASSUMPTIONS AND INPUT

The following monofill cap layers are included in the revised model (from top to bottom):

1. 24 inches of cover soil, (top 6 inches to be able to sustain vegetative growth)
2. 12 inches of D-1 crushed rock
3. 4 inches of 3/8-inch minus sand, no fines
4. Geocomposite liner – non-woven geotextile heat bonded to both sides of a geonet
5. 60 mil HDPE liner, textured
6. 4 inches of 3/8-inch minus sand
7. 480 inches (40 feet) of contaminated waste soil
8. 24 inches of underlying gravel

A surface slope of 50% and a slope length of 50 feet was used as an input to the HELP model, as previously modeled by E&E. Compaction was not considered in this model as the waste layer has been modeled as a medium to low permeable silt layer.

The effective saturated hydraulic conductivity of the geocomposite has been lowered from HELP database values to better reflect the drainage geocomposite to be used in construction (presumably the GSE FabriNet 200 mil Geocomposite). The effective saturated hydraulic conductivity was lowered by a magnitude of one in order to account for a nonwoven geotextile heat bonded to both sides of a geonet. According to the GSE FabriNet 200 mil product data sheet, the geocomposite is shown to provide drainage flow at an order of magnitude less than utilizing geonet alone. In order to further refine HELP database soil parameters (i.e., Table 6, Default Geosynthetic Material Characteristics, HELP manual Vol. 3), including effective saturated hydraulic conductivity, additional materials and soils testing would be required (United States Environmental Protection Agency [EPA], 1994).

Precipitation data were synthetically generated by HELP using 30 years of stored data coefficients for Olympia, Washington, station latitude of 56.35 degrees. Temperature, evapotranspiration and solar radiation data were synthetically generated by HELP using 30 years of stored data from Annette, Alaska, station latitude of 56.35 degrees. These are the same data locations that were used in the E&E and Geosyntec HELP models.

## HELP MODEL INFILTRATION RESULTS

A summary of infiltration results from the revised HELP model is provided in Table 1.

**Table 1. Revised HELP Model Infiltration Results Summary**

<b>REVISED HELP MODEL INFILTRATION RESULTS – AVERAGE ANNUAL TOTALS</b>	
Percolation/leakage through Layer 5 (60 mil HDPE liner)	262.46 (cubic feet) or 1,963 (gallons/acre/year)
Percolation/leakage through Layer 8 (final layer: base gravel layer)	3.99 (cubic feet) or 29.85 (gallons/acre/year)

The revised HELP model scenario is provided in **ATTACHMENT A**.

## REFERENCES CITED

- Ahtna and Geosyntec (Ahtna Engineering Services, LLC, and Geosyntec Consultants, Inc.). 2017. *Proposed Wrangell Monofill Report of Findings, Wrangell, Alaska*. 27 January.
- E&E (Ecology and Environment, Inc.). 2017. *Volume I, Basis of Design; Wrangell Junkyard Repository Site Wrangell, Alaska; TDD:17-01-0015*. 9 June.

EPA (United States Environmental Protection Agency). 1994. United States Army Engineer Waterways Experiment Station. *The Hydrologic Evaluation of Landfill Performance (HELP) Model User's Guide for Version 3*.

Weston (Weston Solutions, Inc.). 2018. *Wrangell Monofill Project Support – HELP Model Evaluation Report, Wrangell, Alaska*. April.

**ATTACHMENT A**  
**HELP MODEL OUTPUT – WRANGELL MONOFILL REVISED**



OUT

	MATERIAL TEXTURE NUMBER	0	
THICKNESS	=	12.00	INCHES
POROSITY	=	0.3420	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1150	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.399999991000E-01	CM/SEC

LAYER 3

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TYPE 2 - LATERAL DRAINAGE LAYER

	MATERIAL TEXTURE NUMBER	0	
THICKNESS	=	4.00	INCHES
POROSITY	=	0.2650	VOL/VOL
FIELD CAPACITY	=	0.0320	VOL/VOL
WILTING POINT	=	0.0130	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0766	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.659999996000E-01	CM/SEC

LAYER 4

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TYPE 2 - LATERAL DRAINAGE LAYER

	MATERIAL TEXTURE NUMBER	0	
THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3153	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	1.000000000000	CM/SEC
SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	50.0	FEET

LAYER 5

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TYPE 4 - FLEXIBLE MEMBRANE LINER

	MATERIAL TEXTURE NUMBER	35	
THICKNESS	=	0.06	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	4.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	1.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3	- GOOD

LAYER 6

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OUT

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0  
THICKNESS = 4.00 INCHES  
POROSITY = 0.2650 VOL/VOL  
FIELD CAPACITY = 0.0320 VOL/VOL  
WILTING POINT = 0.0130 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0389 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.659999996000E-01 CM/SEC

LAYER 7  
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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0  
THICKNESS = 480.00 INCHES  
POROSITY = 0.4570 VOL/VOL  
FIELD CAPACITY = 0.1310 VOL/VOL  
WILTING POINT = 0.0580 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.1310 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.369989993000E-05 CM/SEC

LAYER 8  
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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 21  
THICKNESS = 24.00 INCHES  
POROSITY = 0.3970 VOL/VOL  
FIELD CAPACITY = 0.0320 VOL/VOL  
WILTING POINT = 0.0130 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0320 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.300000012000 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA  
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NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT  
SOIL DATA BASE USING SOIL TEXTURE # 1 WITH A  
FAIR STAND OF GRASS, A SURFACE SLOPE OF 3. %  
AND A SLOPE LENGTH OF 50. FEET.

SCS RUNOFF CURVE NUMBER = 50.50  
FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT  
AREA PROJECTED ON HORIZONTAL PLANE = 1.000 ACRES  
EVAPORATIVE ZONE DEPTH = 8.0 INCHES  
INITIAL WATER IN EVAPORATIVE ZONE = 2.218 INCHES  
UPPER LIMIT OF EVAPORATIVE STORAGE = 3.336 INCHES  
LOWER LIMIT OF EVAPORATIVE STORAGE = 0.144 INCHES  
INITIAL SNOW WATER = 0.000 INCHES  
INITIAL WATER IN LAYER MATERIALS = 72.945 INCHES  
TOTAL INITIAL WATER = 72.945 INCHES  
TOTAL SUBSURFACE INFLOW = 0.00 INCHES/YEAR

OUT

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
ANNETTE ALASKA

STATION LATITUDE = 56.35 DEGREES  
MAXIMUM LEAF AREA INDEX = 2.00  
START OF GROWING SEASON (JULIAN DATE) = 160  
END OF GROWING SEASON (JULIAN DATE) = 262  
EVAPORATIVE ZONE DEPTH = 8.0 INCHES  
AVERAGE ANNUAL WIND SPEED = 10.60 MPH  
AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 76.00 %  
AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 76.00 %  
AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 80.00 %  
AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 80.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR OLYMPIA WASHINGTON

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
8.50	5.77	4.85	3.13	1.85	1.44
0.76	1.34	2.36	4.68	7.58	8.70

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR ANNETTE ALASKA

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
32.80	36.50	38.00	42.90	48.90	54.00
57.80	56.30	54.10	46.90	39.70	35.60

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR ANNETTE ALASKA  
AND STATION LATITUDE = 56.35 DEGREES

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MONTHLY TOTALS (IN INCHES) FOR YEAR 1

JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC



OUT

PRECIPITATION	6.01 0.89	4.44 2.56	2.16 1.48	2.60 3.99	3.92 9.58	0.72 11.75
RUNOFF	0.060 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.769	0.001 2.756
EVAPOTRANSPIRATION	0.690 0.712	1.008 1.704	1.535 0.823	2.120 1.264	2.416 1.063	1.581 0.694
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.8534 0.5146	3.6185 0.3716	1.9913 0.3372	1.2574 0.6882	0.8899 7.1103	0.4716 7.7153
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0158 0.0021	0.0089 0.0016	0.0057 0.0015	0.0040 0.0025	0.0032 0.0194	0.0019 0.0203
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.083 0.005	0.038 0.004	0.019 0.003	0.012 0.007	0.008 0.114	0.005 0.110
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.161 0.002	0.020 0.002	0.013 0.002	0.007 0.005	0.003 0.190	0.002 0.197

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ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	50.10	181862.984	100.00
RUNOFF	3.586	13016.185	7.16
EVAPOTRANSPIRATION	15.608	56657.531	31.15
DRAINAGE COLLECTED FROM LAYER 4	30.8193	111873.937	61.52
PERC./LEAKAGE THROUGH LAYER 5	0.086863	315.313	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0340		
PERC./LEAKAGE THROUGH LAYER 8	0.000203	0.739	0.00
CHANGE IN WATER STORAGE	0.087	314.612	0.17
SOIL WATER AT START OF YEAR	73.073	265256.344	
SOIL WATER AT END OF YEAR	73.160	265570.937	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	OUT	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE		0.0000	-0.026	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	9.86 1.69	8.63 1.20	6.43 0.70	3.20 6.53	1.19 9.47	1.13 5.81
RUNOFF	0.612 0.000	10.230 0.000	2.356 0.000	0.000 0.000	0.000 0.557	0.000 0.000
EVAPOTRANSPIRATION	0.605 2.661	0.217 1.140	0.762 0.290	1.792 1.143	1.753 0.933	0.731 0.563
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.0462 0.3446	1.1391 0.2829	1.5800 0.2258	3.7675 0.9826	0.6462 7.2474	0.4468 4.8556
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0178 0.0015	0.0037 0.0013	0.0042 0.0011	0.0092 0.0028	0.0025 0.0161	0.0019 0.0112
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.092 0.003	0.012 0.003	0.015 0.002	0.037 0.009	0.006 0.078	0.004 0.046
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.175 0.001	0.006 0.001	0.025 0.000	0.025 0.017	0.003 0.053	0.001 0.030

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ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	55.84	202699.234	100.00
RUNOFF	13.755	49930.473	24.63

EVAPOTRANSPIRATION		OUT 12.591	45705.121	22.55
DRAINAGE COLLECTED FROM LAYER 4	4	28.5648	103690.125	51.15
PERC./LEAKAGE THROUGH LAYER 5	5	0.073587	267.121	0.13
AVG. HEAD ON TOP OF LAYER 5	5	0.0256		
PERC./LEAKAGE THROUGH LAYER 8	8	0.000203	0.738	0.00
CHANGE IN WATER STORAGE		0.929	3372.754	1.66
SOIL WATER AT START OF YEAR		73.160	265570.937	
SOIL WATER AT END OF YEAR		73.064	265220.656	
SNOW WATER AT START OF YEAR		0.000	0.000	0.00
SNOW WATER AT END OF YEAR		1.026	3723.037	1.84
ANNUAL WATER BUDGET BALANCE		0.0000	0.013	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 3

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	9.97 1.09	7.72 1.36	4.39 0.92	4.82 4.77	0.61 8.30	0.80 11.78
RUNOFF	1.887 0.000	0.000 0.000	0.080 0.000	0.233 0.040	0.000 0.035	0.000 3.036
EVAPOTRANSPIRATION	0.682 1.269	0.941 0.479	1.459 1.622	2.487 1.124	1.426 0.905	0.998 0.393
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.8192 0.2744	6.7231 0.1951	5.2266 0.1338	1.8112 0.1619	1.0437 5.6071	0.4661 7.3451
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0196 0.0013	0.0146 0.0010	0.0120 0.0007	0.0054 0.0008	0.0036 0.0148	0.0019 0.0195
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.105 0.003	0.074 0.002	0.050 0.001	0.018 0.002	0.010 0.082	0.005 0.106
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OUT

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5      0.151   0.040   0.028   0.007   0.004   0.001  
 0.001   0.001   0.001   0.001   0.145   0.185

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ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	56.53	205203.875	100.00
RUNOFF	5.312	19283.471	9.40
EVAPOTRANSPIRATION	13.787	50047.016	24.39
DRAINAGE COLLECTED FROM LAYER 4	36.8075	133611.062	65.11
PERC. /LEAKAGE THROUGH LAYER 5	0.095279	345.862	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0380		
PERC. /LEAKAGE THROUGH LAYER 8	0.000203	0.738	0.00
CHANGE IN WATER STORAGE	0.623	2261.549	1.10
SOIL WATER AT START OF YEAR	73.064	265220.656	
SOIL WATER AT END OF YEAR	72.730	264010.844	
SNOW WATER AT START OF YEAR	1.026	3723.037	1.81
SNOW WATER AT END OF YEAR	1.982	7194.401	3.51
ANNUAL WATER BUDGET BALANCE	0.0000	0.039	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	9.86 0.77	3.29 0.76	4.61 4.72	3.11 4.71	1.18 8.98	0.76 7.15
RUNOFF	6.263 0.000	2.851 0.000	0.274 0.267	0.000 0.116	0.000 1.276	0.000 1.172
EVAPOTRANSPIRATION	0.250 0.880	0.106 0.721	1.337 1.037	2.378 1.229	1.630 0.982	0.983 0.687

OUT

LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.7746	0.7467	1.5104	3.1630	0.7613	0.3109
	0.2624	0.2278	0.1861	2.9842	5.9903	4.6222
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0152	0.0028	0.0045	0.0082	0.0028	0.0014
	0.0013	0.0011	0.0009	0.0076	0.0169	0.0108
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.077	0.008	0.014	0.031	0.007	0.003
	0.002	0.002	0.002	0.028	0.097	0.044
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.162	0.003	0.013	0.017	0.003	0.001
	0.001	0.001	0.001	0.021	0.183	0.031

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ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	49.90	181137.000	100.00
RUNOFF	12.219	44355.184	24.49
EVAPOTRANSPIRATION	12.221	44360.711	24.49
DRAINAGE COLLECTED FROM LAYER 4	26.5399	96339.766	53.19
PERC./LEAKAGE THROUGH LAYER 5	0.073679	267.455	0.15
AVG. HEAD ON TOP OF LAYER 5	0.0264		
PERC./LEAKAGE THROUGH LAYER 8	0.000204	0.739	0.00
CHANGE IN WATER STORAGE	-1.080	-3919.392	-2.16
SOIL WATER AT START OF YEAR	72.730	264010.844	
SOIL WATER AT END OF YEAR	73.632	267285.875	
SNOW WATER AT START OF YEAR	1.982	7194.401	3.97
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.002	0.00

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OUT

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MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	4.10 0.12	8.93 1.73	4.32 1.78	4.16 7.14	0.76 7.40	1.31 8.49
RUNOFF	2.143 0.000	8.447 0.000	3.274 0.000	0.076 0.000	0.000 0.067	0.000 1.198
EVAPOTRANSPIRATION	0.581 0.415	0.257 0.335	0.781 2.017	2.287 1.165	1.385 1.081	1.131 0.819
LATERAL DRAINAGE COLLECTED FROM LAYER 4	2.9696 0.4020	0.5368 0.2786	0.2959 0.1524	1.8906 2.3228	1.3292 6.3654	0.3907 5.1859
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0076 0.0018	0.0022 0.0013	0.0014 0.0008	0.0055 0.0054	0.0043 0.0157	0.0017 0.0140
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.028 0.004	0.006 0.003	0.003 0.001	0.019 0.022	0.013 0.083	0.004 0.069
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.026 0.001	0.002 0.000	0.001 0.001	0.009 0.033	0.006 0.105	0.002 0.138

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ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	50.24	182371.172	100.00
RUNOFF	15.205	55194.441	30.26
EVAPOTRANSPIRATION	12.254	44483.617	24.39
DRAINAGE COLLECTED FROM LAYER 4	22.1198	80294.781	44.03
PERC./LEAKAGE THROUGH LAYER 5	0.061579	223.533	0.12
AVG. HEAD ON TOP OF LAYER 5	0.0211		
PERC./LEAKAGE THROUGH LAYER 8	0.000203	0.738	0.00

OUT

CHANGE IN WATER STORAGE	0.661	2397.641	1.31
SOIL WATER AT START OF YEAR	73.632	267285.875	
SOIL WATER AT END OF YEAR	74.293	269683.500	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.053	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 6

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	7.66 0.09	7.26 0.25	3.91 0.85	5.02 4.42	2.00 5.66	0.92 5.68
RUNOFF	1.017 0.000	8.786 0.000	0.624 0.000	0.119 0.246	0.000 0.240	0.000 0.204
EVAPOTRANSPIRATION	0.515 0.660	0.087 0.192	1.389 0.440	2.681 0.936	2.633 0.866	0.781 0.650
LATERAL DRAINAGE COLLECTED FROM LAYER 4	6.0213 0.3268	0.8185 0.2127	2.0174 0.1974	1.8049 0.1804	1.4500 2.5411	0.5745 4.7472
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0141 0.0015	0.0029 0.0011	0.0055 0.0010	0.0053 0.0009	0.0046 0.0065	0.0023 0.0112
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.064 0.003	0.009 0.002	0.019 0.002	0.018 0.002	0.014 0.025	0.006 0.045
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.059 0.001	0.003 0.001	0.017 0.001	0.010 0.001	0.006 0.022	0.001 0.024

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OUT

ANNUAL TOTALS FOR YEAR 6

	INCHES	CU. FEET	PERCENT
PRECIPITATION	43.72	158703.625	100.00
RUNOFF	11.234	40781.152	25.70
EVAPOTRANSPIRATION	11.830	42942.094	27.06
DRAINAGE COLLECTED FROM LAYER 4	20.8924	75839.398	47.79
PERC./LEAKAGE THROUGH LAYER 5	0.056989	206.871	0.13
AVG. HEAD ON TOP OF LAYER 5	0.0173		
PERC./LEAKAGE THROUGH LAYER 8	0.000204	0.739	0.00
CHANGE IN WATER STORAGE	-0.237	-859.839	-0.54
SOIL WATER AT START OF YEAR	74.293	269683.500	
SOIL WATER AT END OF YEAR	73.900	268255.469	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.157	568.183	0.36
ANNUAL WATER BUDGET BALANCE	0.0000	0.087	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 7

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	8.87 1.63	3.48 0.65	6.64 1.67	4.23 3.28	1.58 4.83	0.84 12.54
RUNOFF	1.543 0.000	0.000 0.000	0.674 0.000	0.000 0.000	0.000 0.000	0.000 1.979
EVAPOTRANSPIRATION	0.615 1.394	0.831 1.125	1.646 0.113	2.415 1.238	2.224 0.942	0.875 0.699
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.4674 0.2116	3.4144 0.3347	2.6193 0.2955	3.7562 0.2036	1.3865 3.8568	0.5379 6.7103
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0179 0.0010	0.0086 0.0015	0.0071 0.0014	0.0091 0.0010	0.0044 0.0094	0.0022 0.0145
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000



OUT

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.090 0.002	0.036 0.003	0.025 0.003	0.037 0.002	0.013 0.038	0.005 0.064
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.104 0.001	0.017 0.001	0.013 0.000	0.027 0.001	0.006 0.023	0.001 0.034

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ANNUAL TOTALS FOR YEAR 7

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	50.24	182371.219	100.00
RUNOFF	4.197	15234.062	8.35
EVAPOTRANSPIRATION	14.117	51244.043	28.10
DRAINAGE COLLECTED FROM LAYER 4	30.7942	111783.109	61.29
PERC. /LEAKAGE THROUGH LAYER 5	0.078028	283.241	0.16
AVG. HEAD ON TOP OF LAYER 5	0.0265		
PERC. /LEAKAGE THROUGH LAYER 8	0.000192	0.695	0.00
CHANGE IN WATER STORAGE	1.132	4109.276	2.25
SOIL WATER AT START OF YEAR	73.900	268255.469	
SOIL WATER AT END OF YEAR	74.401	270076.937	
SNOW WATER AT START OF YEAR	0.157	568.183	0.31
SNOW WATER AT END OF YEAR	0.787	2856.006	1.57
ANNUAL WATER BUDGET BALANCE	0.0000	0.033	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 8

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JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC  
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OUT

PRECIPITATION	9.35 0.35	8.03 0.26	5.71 0.90	1.97 6.56	2.37 6.36	1.86 8.57
RUNOFF	1.743 0.000	0.062 0.000	0.100 0.000	0.000 0.395	0.000 0.705	0.000 4.634
EVAPOTRANSPIRATION	1.072 1.182	0.865 0.093	1.340 0.422	1.802 1.009	1.867 0.952	1.215 0.400
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.8114 0.4831	8.3723 0.3002	3.6972 0.1479	2.7293 0.9026	0.9653 4.3464	0.4915 4.0181
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0194 0.0020	0.0201 0.0014	0.0092 0.0008	0.0074 0.0024	0.0034 0.0102	0.0020 0.0100
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.102 0.005	0.116 0.003	0.035 0.001	0.027 0.009	0.009 0.043	0.005 0.038
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.139 0.001	0.123 0.000	0.023 0.000	0.011 0.025	0.003 0.028	0.003 0.018

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ANNUAL TOTALS FOR YEAR 8

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	52.29	189812.750	100.00
RUNOFF	7.639	27728.627	14.61
EVAPOTRANSPIRATION	12.218	44351.148	23.37
DRAINAGE COLLECTED FROM LAYER 4	34.2654	124383.234	65.53
PERC./LEAKAGE THROUGH LAYER 5	0.088213	320.214	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0326		
PERC./LEAKAGE THROUGH LAYER 8	0.000191	0.695	0.00
CHANGE IN WATER STORAGE	-1.832	-6650.988	-3.50
SOIL WATER AT START OF YEAR	74.401	270076.937	
SOIL WATER AT END OF YEAR	72.805	264281.625	
SNOW WATER AT START OF YEAR	0.787	2856.006	1.50

SNOW WATER AT END OF YEAR	OUT	0.551	2000.328	1.05
ANNUAL WATER BUDGET BALANCE		0.0000	0.028	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	7.99 0.42	8.46 0.31	4.02 2.50	4.00 4.14	2.83 9.43	1.20 10.97
RUNOFF	6.950 0.000	7.331 0.000	5.264 0.000	0.000 0.000	0.000 0.757	0.000 3.644
EVAPOTRANSPIRATION	0.372 0.535	0.217 0.425	0.869 0.729	2.303 1.330	2.809 0.947	1.231 0.343
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.8960 0.3851	0.3158 0.2756	0.2197 0.2754	1.3007 1.0664	1.0903 4.3252	0.7818 7.9467
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0032 0.0017	0.0015 0.0013	0.0011 0.0013	0.0041 0.0031	0.0037 0.0101	0.0029 0.0201
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.009 0.004	0.003 0.003	0.002 0.003	0.013 0.010	0.010 0.042	0.008 0.107
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.004 0.001	0.001 0.001	0.001 0.001	0.007 0.016	0.005 0.030	0.002 0.157

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ANNUAL TOTALS FOR YEAR 9

	INCHES	CU. FEET	PERCENT
PRECIPITATION	56.27	204260.156	100.00
RUNOFF	23.945	86921.562	42.55

	OUT		
EVAPOTRANSPIRATION	12.109	43955.668	21.52
DRAINAGE COLLECTED FROM LAYER 4	18.8785	68529.125	33.55
PERC./LEAKAGE THROUGH LAYER 5	0.053961	195.878	0.10
AVG. HEAD ON TOP OF LAYER 5	0.0178		
PERC./LEAKAGE THROUGH LAYER 8	0.000179	0.652	0.00
CHANGE IN WATER STORAGE	1.337	4853.048	2.38
SOIL WATER AT START OF YEAR	72.805	264281.625	
SOIL WATER AT END OF YEAR	72.723	263983.031	
SNOW WATER AT START OF YEAR	0.551	2000.328	0.98
SNOW WATER AT END OF YEAR	1.970	7151.980	3.50
ANNUAL WATER BUDGET BALANCE	0.0000	0.101	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 10

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	5.89 0.00	6.82 1.26	5.40 1.52	3.23 6.48	1.48 5.01	2.94 6.53
RUNOFF	2.026 0.000	0.146 0.000	0.001 0.001	0.000 0.283	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION	0.742 0.541	0.784 1.111	1.724 0.596	2.412 1.203	1.753 0.794	2.186 0.490
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.5294 0.3895	6.3510 0.3674	4.9208 0.2520	1.7697 1.1517	1.2961 3.9689	0.5625 4.2994
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0096 0.0017	0.0170 0.0016	0.0112 0.0012	0.0052 0.0029	0.0042 0.0096	0.0022 0.0104
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.041 0.004	0.104 0.003	0.047 0.002	0.017 0.011	0.012 0.039	0.006 0.041
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OUT

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5      0.063   0.221   0.033   0.011   0.006   0.002  
 0.001   0.001   0.001   0.029   0.022   0.022

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ANNUAL TOTALS FOR YEAR 10

	INCHES	CU. FEET	PERCENT
PRECIPITATION	46.56	169012.859	100.00
RUNOFF	2.456	8915.715	5.28
EVAPOTRANSPIRATION	14.338	52046.953	30.79
DRAINAGE COLLECTED FROM LAYER 4	28.8585	104756.234	61.98
PERC./LEAKAGE THROUGH LAYER 5	0.076904	279.160	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0273		
PERC./LEAKAGE THROUGH LAYER 8	0.000167	0.607	0.00
CHANGE IN WATER STORAGE	0.907	3293.287	1.95
SOIL WATER AT START OF YEAR	72.723	263983.031	
SOIL WATER AT END OF YEAR	72.732	264018.687	
SNOW WATER AT START OF YEAR	1.970	7151.980	4.23
SNOW WATER AT END OF YEAR	2.868	10409.597	6.16
ANNUAL WATER BUDGET BALANCE	0.0000	0.065	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 11

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	5.46 1.08	7.12 0.98	3.20 1.02	2.25 2.39	1.08 3.10	1.89 7.89
RUNOFF	1.961 0.000	0.821 0.000	0.000 0.000	0.000 0.234	0.000 0.000	0.000 1.163
EVAPOTRANSPIRATION	0.866 0.821	0.715 1.307	1.832 0.576	2.491 0.667	1.481 0.961	1.928 0.662

OUT

LATERAL DRAINAGE COLLECTED FROM LAYER 4	4.9743	5.3473	2.4888	1.2921	0.5659	0.2610
	0.2676	0.1450	0.2337	0.1658	0.2715	5.1258
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0130	0.0122	0.0067	0.0042	0.0023	0.0012
	0.0013	0.0008	0.0011	0.0009	0.0012	0.0117
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.064	0.060	0.024	0.013	0.005	0.003
	0.003	0.001	0.002	0.002	0.003	0.052
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.124	0.046	0.019	0.005	0.001	0.001
	0.000	0.001	0.001	0.001	0.002	0.047

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ANNUAL TOTALS FOR YEAR 11

	INCHES	CU. FEET	PERCENT
PRECIPITATION	37.46	135979.844	100.00
RUNOFF	4.179	15170.018	11.16
EVAPOTRANSPIRATION	14.307	51935.441	38.19
DRAINAGE COLLECTED FROM LAYER 4	21.1390	76734.469	56.43
PERC./LEAKAGE THROUGH LAYER 5	0.056639	205.600	0.15
AVG. HEAD ON TOP OF LAYER 5	0.0192		
PERC./LEAKAGE THROUGH LAYER 8	0.000120	0.435	0.00
CHANGE IN WATER STORAGE	-2.165	-7860.533	-5.78
SOIL WATER AT START OF YEAR	72.732	264018.687	
SOIL WATER AT END OF YEAR	72.627	263634.656	
SNOW WATER AT START OF YEAR	2.868	10409.597	7.66
SNOW WATER AT END OF YEAR	0.808	2933.106	2.16
ANNUAL WATER BUDGET BALANCE	0.0000	0.010	0.00

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OUT

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MONTHLY TOTALS (IN INCHES) FOR YEAR 12

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	11.52 0.59	8.23 0.92	0.60 1.45	4.26 8.65	1.14 8.95	1.62 13.11
RUNOFF	5.716 0.000	11.136 0.000	0.320 0.000	0.373 0.069	0.000 1.614	0.000 0.335
EVAPOTRANSPIRATION	0.383 0.559	0.394 0.820	0.669 1.158	2.347 0.921	1.815 1.076	1.694 0.822
LATERAL DRAINAGE COLLECTED FROM LAYER 4	2.7409 0.2557	0.5704 0.2310	0.3043 0.2419	1.5454 3.1556	0.6693 7.4559	0.2606 5.2509
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0073 0.0012	0.0023 0.0011	0.0014 0.0012	0.0047 0.0075	0.0026 0.0161	0.0012 0.0122
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.026 0.002	0.006 0.002	0.003 0.002	0.015 0.030	0.006 0.076	0.003 0.050
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.017 0.001	0.002 0.001	0.001 0.001	0.008 0.032	0.001 0.042	0.001 0.021

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ANNUAL TOTALS FOR YEAR 12

	INCHES	CU. FEET	PERCENT
PRECIPITATION	61.04	221575.172	100.00
RUNOFF	19.563	71012.523	32.05
EVAPOTRANSPIRATION	12.658	45949.402	20.74
DRAINAGE COLLECTED FROM LAYER 4	22.6818	82335.062	37.16
PERC./LEAKAGE THROUGH LAYER 5	0.058754	213.276	0.10
AVG. HEAD ON TOP OF LAYER 5	0.0185		
PERC./LEAKAGE THROUGH LAYER 8	0.000143	0.521	0.00

OUT

CHANGE IN WATER STORAGE	6.137	22277.676	10.05
SOIL WATER AT START OF YEAR	72.627	263634.656	
SOIL WATER AT END OF YEAR	72.800	264262.812	
SNOW WATER AT START OF YEAR	0.808	2933.106	1.32
SNOW WATER AT END OF YEAR	6.772	24582.611	11.09
ANNUAL WATER BUDGET BALANCE	0.0000	-0.010	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 13

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	3.27 1.13	6.85 1.67	5.31 3.78	4.49 3.94	1.31 6.67	0.46 6.46
RUNOFF	0.231 0.000	7.388 0.000	4.809 0.000	0.115 0.000	0.000 1.879	0.000 1.716
EVAPOTRANSPIRATION	0.271 1.048	0.289 1.223	0.634 1.547	2.324 1.301	1.616 0.871	0.503 0.673
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.7844 0.2593	2.8950 0.2633	0.5899 0.2828	2.2436 0.6707	1.3331 4.2131	0.6138 2.5191
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0130 0.0012	0.0073 0.0012	0.0023 0.0013	0.0061 0.0024	0.0043 0.0100	0.0025 0.0072
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.055 0.002	0.030 0.002	0.006 0.003	0.022 0.006	0.013 0.041	0.006 0.027
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.030 0.001	0.026 0.001	0.002 0.002	0.017 0.005	0.007 0.030	0.001 0.035

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OUT

ANNUAL TOTALS FOR YEAR 13

	INCHES	CU. FEET	PERCENT
PRECIPITATION	45.34	164584.187	100.00
RUNOFF	16.138	58579.836	35.59
EVAPOTRANSPIRATION	12.301	44651.266	27.13
DRAINAGE COLLECTED FROM LAYER 4	21.6681	78655.242	47.79
PERC./LEAKAGE THROUGH LAYER 5	0.058847	213.615	0.13
AVG. HEAD ON TOP OF LAYER 5	0.0179		
PERC./LEAKAGE THROUGH LAYER 8	0.000180	0.652	0.00
CHANGE IN WATER STORAGE	-4.767	-17302.781	-10.51
SOIL WATER AT START OF YEAR	72.800	264262.812	
SOIL WATER AT END OF YEAR	74.805	271542.656	
SNOW WATER AT START OF YEAR	6.772	24582.611	14.94
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.022	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 14

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	10.28 0.21	6.25 1.17	5.16 0.80	3.15 1.65	1.08 6.08	0.61 5.08
RUNOFF	0.194 0.000	11.957 0.000	2.016 0.000	0.000 0.000	0.002 0.000	0.000 0.029
EVAPOTRANSPIRATION	0.715 0.346	0.135 1.092	0.916 0.582	2.415 0.761	1.249 0.681	1.029 0.859
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.2166 0.3135	0.6377 0.2535	0.9032 0.1988	2.6791 0.1261	0.8760 1.8991	0.5149 4.3509
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0121 0.0014	0.0029 0.0012	0.0028 0.0010	0.0072 0.0007	0.0031 0.0050	0.0021 0.0105
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

OUT

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.053 0.003	0.007 0.002	0.009 0.002	0.026 0.001	0.008 0.019	0.005 0.041
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.049 0.001	0.002 0.001	0.014 0.001	0.018 0.001	0.003 0.020	0.001 0.020

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ANNUAL TOTALS FOR YEAR 14

	INCHES	CU. FEET	PERCENT
PRECIPITATION	41.52	150717.609	100.00
RUNOFF	14.198	51539.152	34.20
EVAPOTRANSPIRATION	10.781	39134.020	25.97
DRAINAGE COLLECTED FROM LAYER 4	17.9695	65229.145	43.28
PERC./LEAKAGE THROUGH LAYER 5	0.050110	181.900	0.12
AVG. HEAD ON TOP OF LAYER 5	0.0147		
PERC./LEAKAGE THROUGH LAYER 8	0.000143	0.521	0.00
CHANGE IN WATER STORAGE	-1.428	-5185.215	-3.44
SOIL WATER AT START OF YEAR	74.805	271542.656	
SOIL WATER AT END OF YEAR	72.687	263854.687	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.689	2502.752	1.66
ANNUAL WATER BUDGET BALANCE	0.0000	-0.021	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 15

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JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC  
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OUT

PRECIPITATION	9.41 0.60	4.54 0.94	5.51 1.74	3.22 6.80	3.81 5.73	0.46 11.82
RUNOFF	7.567 0.000	4.218 0.000	2.367 0.000	0.000 0.028	0.012 0.851	0.000 1.442
EVAPOTRANSPIRATION	0.461 0.579	0.160 0.516	0.952 1.467	2.706 1.035	1.621 0.959	1.424 0.819
LATERAL DRAINAGE COLLECTED FROM LAYER 4	1.8207 0.6599	0.6026 0.4015	0.4842 0.3600	2.8896 0.5717	1.1601 5.8560	1.2926 7.8484
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0055 0.0026	0.0015 0.0017	0.0018 0.0016	0.0075 0.0017	0.0039 0.0133	0.0041 0.0177
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.017 0.006	0.006 0.004	0.005 0.004	0.028 0.005	0.011 0.061	0.013 0.088
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.007 0.001	0.002 0.002	0.007 0.001	0.018 0.018	0.004 0.047	0.006 0.102

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ANNUAL TOTALS FOR YEAR 15

	INCHES	CU. FEET	PERCENT
PRECIPITATION	54.58	198125.406	100.00
RUNOFF	16.485	59840.766	30.20
EVAPOTRANSPIRATION	12.698	46094.617	23.27
DRAINAGE COLLECTED FROM LAYER 4	23.9472	86928.219	43.88
PERC./LEAKAGE THROUGH LAYER 5	0.063028	228.790	0.12
AVG. HEAD ON TOP OF LAYER 5	0.0206		
PERC./LEAKAGE THROUGH LAYER 8	0.000204	0.739	0.00
CHANGE IN WATER STORAGE	1.449	5261.070	2.66
SOIL WATER AT START OF YEAR	72.687	263854.687	
SOIL WATER AT END OF YEAR	74.826	271618.500	
SNOW WATER AT START OF YEAR	0.689	2502.752	1.26

SNOW WATER AT END OF YEAR	OUT	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE		0.0000	-0.007	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 16

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	12.38 0.15	3.54 0.31	4.62 0.92	2.96 4.10	1.84 5.04	0.88 8.65
RUNOFF	1.714 0.000	1.387 0.000	0.472 0.000	0.000 0.000	0.000 0.000	0.001 0.362
EVAPOTRANSPIRATION	0.643 0.453	0.705 0.513	1.735 0.153	2.599 1.116	2.006 0.895	0.349 0.662
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.7073 0.4075	5.4995 0.2671	3.4587 0.2279	1.1756 0.3798	0.7063 3.7834	0.3453 5.7407
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0177 0.0018	0.0154 0.0013	0.0086 0.0011	0.0039 0.0015	0.0027 0.0091	0.0015 0.0148
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.087 0.004	0.090 0.003	0.033 0.002	0.012 0.004	0.007 0.037	0.003 0.075
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.066 0.001	0.209 0.001	0.027 0.001	0.005 0.006	0.002 0.027	0.002 0.130

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ANNUAL TOTALS FOR YEAR 16

	INCHES	CU. FEET	PERCENT
PRECIPITATION	45.39	164765.734	100.00
RUNOFF	3.936	14286.098	8.67

	OUT		
EVAPOTRANSPIRATION	11.827	42932.074	26.06
DRAINAGE COLLECTED FROM LAYER 4	29.6992	107808.172	65.43
PERC./LEAKAGE THROUGH LAYER 5	0.079274	287.766	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0296		
PERC./LEAKAGE THROUGH LAYER 8	0.000180	0.653	0.00
CHANGE IN WATER STORAGE	-0.072	-261.244	-0.16
SOIL WATER AT START OF YEAR	74.826	271618.500	
SOIL WATER AT END OF YEAR	74.754	271357.250	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.012	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 17

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	11.08 2.15	7.43 0.70	6.31 1.87	5.99 4.53	1.01 15.48	0.71 8.98
RUNOFF	0.108 0.000	12.677 0.000	3.710 0.000	0.145 0.000	0.000 3.714	0.000 0.795
EVAPOTRANSPIRATION	0.700 2.176	0.179 0.323	1.387 1.614	2.439 1.207	1.880 0.585	0.372 0.541
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.6362 0.4313	1.1394 0.3409	1.6923 0.2232	2.4929 0.2404	1.7800 7.1883	0.5629 9.3415
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0131 0.0018	0.0037 0.0015	0.0047 0.0011	0.0067 0.0012	0.0053 0.0187	0.0022 0.0261
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.057 0.004	0.012 0.003	0.016 0.002	0.024 0.002	0.017 0.109	0.006 0.155
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OUT

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.040	0.006	0.019	0.019	0.011	0.002
	0.001	0.001	0.001	0.001	0.181	0.252

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ANNUAL TOTALS FOR YEAR 17

	INCHES	CU. FEET	PERCENT
PRECIPITATION	66.24	240451.219	100.00
RUNOFF	21.150	76772.883	31.93
EVAPOTRANSPIRATION	13.403	48652.590	20.23
DRAINAGE COLLECTED FROM LAYER 4	31.0694	112781.914	46.90
PERC. /LEAKAGE THROUGH LAYER 5	0.086148	312.717	0.13
AVG. HEAD ON TOP OF LAYER 5	0.0339		
PERC. /LEAKAGE THROUGH LAYER 8	0.000204	0.742	0.00
CHANGE IN WATER STORAGE	0.618	2243.035	0.93
SOIL WATER AT START OF YEAR	74.754	271357.250	
SOIL WATER AT END OF YEAR	74.820	271597.187	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.552	2003.116	0.83
ANNUAL WATER BUDGET BALANCE	0.0000	0.051	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 18

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	5.87	1.36	5.33	3.90	0.84	2.08
	0.00	0.55	3.25	3.18	13.68	9.92
RUNOFF	0.073	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	4.152	2.511
EVAPOTRANSPIRATION	0.507	0.643	1.473	2.209	1.450	2.216
	0.292	0.312	1.206	1.388	1.071	0.717

OUT

LATERAL DRAINAGE COLLECTED FROM LAYER 4	6.5586 0.4088	2.3556 0.2712	1.6620 0.1605	2.9121 0.4003	1.7527 7.3972	0.6311 6.2255
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0156 0.0017	0.0065 0.0013	0.0049 0.0008	0.0075 0.0017	0.0052 0.0212	0.0024 0.0152
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.076 0.004	0.025 0.003	0.016 0.002	0.029 0.004	0.017 0.132	0.006 0.074
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.086 0.001	0.013 0.001	0.012 0.001	0.024 0.002	0.011 0.239	0.002 0.090

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ANNUAL TOTALS FOR YEAR 18

	INCHES	CU. FEET	PERCENT
PRECIPITATION	49.96	181354.844	100.00
RUNOFF	6.736	24452.807	13.48
EVAPOTRANSPIRATION	13.483	48941.906	26.99
DRAINAGE COLLECTED FROM LAYER 4	30.7356	111570.297	61.52
PERC./LEAKAGE THROUGH LAYER 5	0.083968	304.805	0.17
AVG. HEAD ON TOP OF LAYER 5	0.0321		
PERC./LEAKAGE THROUGH LAYER 8	0.000241	0.874	0.00
CHANGE IN WATER STORAGE	-0.995	-3611.070	-1.99
SOIL WATER AT START OF YEAR	74.820	271597.187	
SOIL WATER AT END OF YEAR	74.377	269989.219	
SNOW WATER AT START OF YEAR	0.552	2003.116	1.10
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.024	0.00

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OUT

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MONTHLY TOTALS (IN INCHES) FOR YEAR 19

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	9.85 1.36	7.00 0.49	3.77 3.13	3.50 4.15	2.94 7.34	2.25 6.20
RUNOFF	2.028 0.001	1.140 0.000	0.001 0.000	0.000 0.000	0.000 1.017	0.000 1.389
EVAPOTRANSPIRATION	0.516 1.919	0.632 0.315	1.523 1.498	2.644 1.193	1.916 0.872	2.324 0.724
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.7569 0.6947	5.8116 0.3064	4.7735 0.3375	1.1267 0.7535	0.8281 3.6029	1.3176 6.3286
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0127 0.0027	0.0159 0.0014	0.0114 0.0015	0.0037 0.0027	0.0030 0.0090	0.0042 0.0149
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.055 0.007	0.096 0.003	0.045 0.003	0.011 0.007	0.008 0.035	0.013 0.070
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.037 0.002	0.211 0.002	0.019 0.001	0.006 0.007	0.004 0.019	0.007 0.064

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ANNUAL TOTALS FOR YEAR 19

	INCHES	CU. FEET	PERCENT
PRECIPITATION	51.98	188687.391	100.00
RUNOFF	5.575	20238.812	10.73
EVAPOTRANSPIRATION	16.077	58359.004	30.93
DRAINAGE COLLECTED FROM LAYER 4	31.6377	114844.937	60.87
PERC./LEAKAGE THROUGH LAYER 5	0.082943	301.084	0.16
AVG. HEAD ON TOP OF LAYER 5	0.0294		
PERC./LEAKAGE THROUGH LAYER 8	0.000278	1.010	0.00



OUT

CHANGE IN WATER STORAGE	-1.310	-4756.386	-2.52
SOIL WATER AT START OF YEAR	74.377	269989.219	
SOIL WATER AT END OF YEAR	73.035	265117.187	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.032	115.666	0.06
ANNUAL WATER BUDGET BALANCE	0.0000	0.021	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	8.10 0.09	6.78 1.90	5.64 3.96	3.00 4.05	3.37 7.29	0.74 10.85
RUNOFF	1.367 0.000	0.054 0.000	0.080 0.072	0.000 0.001	0.000 1.221	0.000 3.037
EVAPOTRANSPIRATION	0.514 0.781	1.002 1.666	1.214 1.758	2.692 1.254	2.512 0.811	1.296 0.889
LATERAL DRAINAGE COLLECTED FROM LAYER 4	4.6657 0.4048	6.6132 0.2355	2.5107 0.2451	3.7673 1.6130	1.1028 4.1578	0.3974 5.9641
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0124 0.0018	0.0161 0.0010	0.0069 0.0012	0.0093 0.0045	0.0037 0.0103	0.0017 0.0145
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0000	0.0000 0.0000	0.0001 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.062 0.004	0.086 0.002	0.024 0.002	0.041 0.015	0.010 0.048	0.004 0.071
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.137 0.001	0.136 0.001	0.011 0.001	0.058 0.017	0.004 0.059	0.001 0.095

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OUT

ANNUAL TOTALS FOR YEAR 20

	INCHES	CU. FEET	PERCENT
PRECIPITATION	55.77	202445.094	100.00
RUNOFF	5.832	21171.461	10.46
EVAPOTRANSPIRATION	16.390	59494.430	29.39
DRAINAGE COLLECTED FROM LAYER 4	31.6773	114988.758	56.80
PERC./LEAKAGE THROUGH LAYER 5	0.083448	302.917	0.15
AVG. HEAD ON TOP OF LAYER 5	0.0307		
PERC./LEAKAGE THROUGH LAYER 8	0.000352	1.279	0.00
CHANGE IN WATER STORAGE	1.870	6789.149	3.35
SOIL WATER AT START OF YEAR	73.035	265117.187	
SOIL WATER AT END OF YEAR	74.937	272022.000	
SNOW WATER AT START OF YEAR	0.032	115.666	0.06
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.011	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 21

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	11.05 0.48	7.38 2.73	1.62 4.39	2.44 4.77	2.95 6.44	1.52 8.31
RUNOFF	2.072 0.000	0.116 0.157	0.000 0.020	0.000 1.130	0.000 0.000	0.000 1.326
EVAPOTRANSPIRATION	0.946 0.761	0.229 0.697	1.877 2.314	1.633 1.348	2.853 1.027	1.718 0.655
LATERAL DRAINAGE COLLECTED FROM LAYER 4	8.0421 0.3237	5.6813 0.4117	4.3875 1.6100	0.5646 1.2024	0.3414 4.2976	0.5131 5.6989
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0194 0.0015	0.0145 0.0018	0.0112 0.0046	0.0024 0.0040	0.0015 0.0100	0.0021 0.0131
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0001 0.0000	0.0001 0.0000	0.0001 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0001

OUT

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.101 0.003	0.082 0.004	0.052 0.016	0.006 0.011	0.003 0.042	0.005 0.058
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.152 0.001	0.095 0.001	0.083 0.015	0.002 0.005	0.002 0.030	0.002 0.038

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ANNUAL TOTALS FOR YEAR 21

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	54.08	196310.391	100.00
RUNOFF	4.820	17498.410	8.91
EVAPOTRANSPIRATION	16.059	58293.949	29.69
DRAINAGE COLLECTED FROM LAYER 4	33.0743	120059.773	61.16
PERC. /LEAKAGE THROUGH LAYER 5	0.086060	312.396	0.16
AVG. HEAD ON TOP OF LAYER 5	0.0319		
PERC. /LEAKAGE THROUGH LAYER 8	0.000502	1.823	0.00
CHANGE IN WATER STORAGE	0.126	456.492	0.23
SOIL WATER AT START OF YEAR	74.937	272022.000	
SOIL WATER AT END OF YEAR	75.063	272478.469	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.054	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 22

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JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC  
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OUT

PRECIPITATION	6.96 1.40	7.53 0.72	9.35 2.15	4.10 4.05	2.77 6.52	0.94 6.03
RUNOFF	0.826 0.000	1.411 0.000	0.424 0.000	0.067 0.033	0.000 0.422	0.000 0.809
EVAPOTRANSPIRATION	0.876 1.021	0.829 1.345	1.578 1.502	2.644 1.290	1.793 0.925	1.405 0.716
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5.7764 0.4145	5.1916 0.2669	7.5337 0.2381	3.4812 0.2112	1.1370 4.1000	0.4712 2.9819
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0136 0.0018	0.0126 0.0013	0.0193 0.0011	0.0089 0.0011	0.0038 0.0096	0.0019 0.0078
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0001 0.0000	0.0001 0.0000	0.0001 0.0001	0.0001 0.0000	0.0001 0.0000	0.0000 0.0001

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.061 0.004	0.065 0.003	0.102 0.002	0.034 0.002	0.011 0.040	0.005 0.028
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.054 0.001	0.064 0.001	0.189 0.001	0.013 0.001	0.005 0.031	0.002 0.015

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ANNUAL TOTALS FOR YEAR 22

	INCHES	CU. FEET	PERCENT
PRECIPITATION	52.52	190647.609	100.00
RUNOFF	3.992	14491.973	7.60
EVAPOTRANSPIRATION	15.923	57798.910	30.32
DRAINAGE COLLECTED FROM LAYER 4	31.8036	115447.180	60.56
PERC./LEAKAGE THROUGH LAYER 5	0.082759	300.417	0.16
AVG. HEAD ON TOP OF LAYER 5	0.0298		
PERC./LEAKAGE THROUGH LAYER 8	0.000844	3.065	0.00
CHANGE IN WATER STORAGE	0.801	2906.488	1.52
SOIL WATER AT START OF YEAR	75.063	272478.469	
SOIL WATER AT END OF YEAR	74.543	270589.375	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	OUT	1. 321	4795. 599	2. 52
ANNUAL WATER BUDGET BALANCE		0. 0000	0. 001	0. 00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 23

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	6. 03 1. 50	5. 23 0. 89	5. 95 4. 24	2. 18 7. 62	2. 61 6. 19	1. 81 5. 17
RUNOFF	1. 798 0. 000	0. 869 0. 000	0. 000 0. 000	0. 000 1. 923	0. 000 0. 452	0. 000 0. 000
EVAPOTRANSPIRATION	0. 846 1. 518	1. 050 1. 372	1. 693 1. 915	2. 249 1. 299	2. 289 0. 993	1. 718 0. 864
LATERAL DRAINAGE COLLECTED FROM LAYER 4	6. 1840 0. 2526	2. 2180 0. 2534	4. 1338 0. 2828	2. 3454 3. 1181	0. 7768 4. 8260	0. 4120 3. 2519
PERCOLATION/LEAKAGE THROUGH LAYER 5	0. 0138 0. 0012	0. 0061 0. 0012	0. 0100 0. 0013	0. 0063 0. 0070	0. 0029 0. 0112	0. 0018 0. 0084
PERCOLATION/LEAKAGE THROUGH LAYER 8	0. 0001 0. 0001	0. 0002 0. 0001	0. 0001 0. 0001	0. 0002 0. 0001	0. 0000 0. 0001	0. 0001 0. 0002

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0. 059 0. 002	0. 023 0. 002	0. 039 0. 003	0. 023 0. 030	0. 007 0. 047	0. 004 0. 031
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0. 024 0. 002	0. 013 0. 001	0. 024 0. 001	0. 020 0. 037	0. 002 0. 028	0. 001 0. 014

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ANNUAL TOTALS FOR YEAR 23

	INCHES	CU. FEET	PERCENT
PRECIPITATION	49. 42	179394. 609	100. 00
RUNOFF	5. 042	18302. 828	10. 20

	OUT		
EVAPOTRANSPIRATION	17.806	64637.504	36.03
DRAINAGE COLLECTED FROM LAYER 4	28.0547	101838.703	56.77
PERC./LEAKAGE THROUGH LAYER 5	0.071362	259.043	0.14
AVG. HEAD ON TOP OF LAYER 5	0.0226		
PERC./LEAKAGE THROUGH LAYER 8	0.001286	4.667	0.00
CHANGE IN WATER STORAGE	-1.485	-5389.124	-3.00
SOIL WATER AT START OF YEAR	74.543	270589.375	
SOIL WATER AT END OF YEAR	74.379	269995.844	
SNOW WATER AT START OF YEAR	1.321	4795.599	2.67
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.030	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 24

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	4.10 0.68	4.83 1.49	4.15 1.35	4.84 4.51	2.97 3.82	1.69 7.85
RUNOFF	0.000 0.000	4.831 0.000	2.298 0.000	0.017 0.000	0.001 0.209	0.000 1.920
EVAPOTRANSPIRATION	0.669 1.261	0.177 1.043	0.920 0.619	2.088 1.118	3.480 0.817	1.983 0.662
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.3571 0.2422	0.9800 0.2441	0.6570 0.1806	2.5462 0.7292	1.5326 1.3994	0.5251 7.0560
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0087 0.0012	0.0034 0.0012	0.0024 0.0009	0.0068 0.0024	0.0048 0.0044	0.0021 0.0178
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0002 0.0001	0.0001 0.0001	0.0002 0.0001	0.0001 0.0001	0.0001 0.0002	0.0002 0.0002

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.032 0.002	0.010 0.002	0.006 0.002	0.025 0.007	0.015 0.014	0.005 0.093
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OUT

LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.7795	3.6722	5.5436	3.6289	1.2844	0.4353
	0.3211	0.2545	0.2181	0.1896	0.8533	3.0868
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0089	0.0106	0.0168	0.0090	0.0042	0.0019
	0.0014	0.0012	0.0010	0.0009	0.0029	0.0079
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0006	0.0005	0.0007	0.0004	0.0004	0.0003
	0.0003	0.0002	0.0003	0.0001	0.0002	0.0003

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.036	0.057	0.096	0.036	0.012	0.004
	0.003	0.002	0.002	0.002	0.008	0.029
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.033	0.137	0.263	0.023	0.006	0.001
	0.001	0.001	0.002	0.001	0.005	0.018

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ANNUAL TOTALS FOR YEAR 25

	INCHES	CU. FEET	PERCENT
PRECIPITATION	43.50	157905.000	100.00
RUNOFF	4.031	14632.131	9.27
EVAPOTRANSPIRATION	11.926	43290.227	27.42
DRAINAGE COLLECTED FROM LAYER 4	23.2673	84460.336	53.49
PERC./LEAKAGE THROUGH LAYER 5	0.066832	242.600	0.15
AVG. HEAD ON TOP OF LAYER 5	0.0240		
PERC./LEAKAGE THROUGH LAYER 8	0.004308	15.639	0.01
CHANGE IN WATER STORAGE	4.272	15506.631	9.82
SOIL WATER AT START OF YEAR	73.096	265339.500	
SOIL WATER AT END OF YEAR	74.185	269293.156	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	3.183	11552.991	7.32
ANNUAL WATER BUDGET BALANCE	0.0000	0.034	0.00

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OUT

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MONTHLY TOTALS (IN INCHES) FOR YEAR 26

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	11.48 1.04	2.58 1.73	5.05 2.96	2.24 6.77	1.31 11.34	1.04 6.54
RUNOFF	6.252 0.000	10.179 0.000	0.104 0.000	0.001 0.033	0.000 3.008	0.000 0.252
EVAPOTRANSPIRATION	0.387 1.117	0.145 1.373	1.714 0.909	1.476 1.306	2.066 0.960	1.138 0.668
LATERAL DRAINAGE COLLECTED FROM LAYER 4	1.0502 0.2783	0.3357 0.2399	3.8751 0.2323	1.0017 2.6195	0.5158 8.1284	0.2411 4.0546
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0036 0.0013	0.0015 0.0012	0.0097 0.0011	0.0034 0.0063	0.0021 0.0183	0.0012 0.0098
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0003 0.0003	0.0003 0.0002	0.0003 0.0003	0.0003 0.0003	0.0003 0.0003	0.0003 0.0007

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.010 0.003	0.004 0.002	0.044 0.002	0.010 0.025	0.005 0.094	0.002 0.038
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.005 0.001	0.001 0.001	0.061 0.001	0.005 0.034	0.001 0.093	0.001 0.024

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ANNUAL TOTALS FOR YEAR 26

	INCHES	CU. FEET	PERCENT
PRECIPITATION	54.08	196310.391	100.00
RUNOFF	19.828	71976.945	36.66
EVAPOTRANSPIRATION	13.259	48130.617	24.52
DRAINAGE COLLECTED FROM LAYER 4	22.5725	81938.133	41.74
PERC./LEAKAGE THROUGH LAYER 5	0.059530	216.094	0.11
AVG. HEAD ON TOP OF LAYER 5	0.0199		
PERC./LEAKAGE THROUGH LAYER 8	0.003952	14.345	0.01

OUT

CHANGE IN WATER STORAGE	-1.584	-5749.677	-2.93
SOIL WATER AT START OF YEAR	74.185	269293.156	
SOIL WATER AT END OF YEAR	75.784	275096.469	
SNOW WATER AT START OF YEAR	3.183	11552.991	5.89
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.029	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 27

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	7.18 0.55	4.61 0.51	5.49 0.91	2.07 5.06	1.46 4.38	0.31 8.86
RUNOFF	0.088 0.000	0.004 0.000	0.310 0.000	0.000 0.000	0.000 0.000	0.000 0.265
EVAPOTRANSPIRATION	1.142 0.275	0.540 0.463	1.316 0.384	2.124 1.212	1.696 0.919	0.463 1.067
LATERAL DRAINAGE COLLECTED FROM LAYER 4	6.6003 0.3211	4.9942 0.2259	2.1294 0.1511	3.7914 0.1686	0.7157 4.7480	0.3081 6.0550
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0157 0.0015	0.0120 0.0011	0.0061 0.0008	0.0095 0.0008	0.0027 0.0117	0.0014 0.0135
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0007 0.0002	0.0006 0.0003	0.0009 0.0002	0.0006 0.0002	0.0004 0.0003	0.0003 0.0003

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.076 0.003	0.060 0.002	0.020 0.001	0.041 0.002	0.007 0.053	0.003 0.061
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.076 0.001	0.051 0.000	0.014 0.000	0.045 0.002	0.002 0.059	0.002 0.052

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OUT

ANNUAL TOTALS FOR YEAR 27

	INCHES	CU. FEET	PERCENT
PRECIPITATION	41.39	150245.703	100.00
RUNOFF	0.667	2421.628	1.61
EVAPOTRANSPIRATION	11.602	42113.848	28.03
DRAINAGE COLLECTED FROM LAYER 4	30.2086	109657.359	72.99
PERC./LEAKAGE THROUGH LAYER 5	0.076869	279.034	0.19
AVG. HEAD ON TOP OF LAYER 5	0.0274		
PERC./LEAKAGE THROUGH LAYER 8	0.004846	17.591	0.01
CHANGE IN WATER STORAGE	-1.092	-3964.663	-2.64
SOIL WATER AT START OF YEAR	75.784	275096.469	
SOIL WATER AT END OF YEAR	74.692	271131.812	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.067	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 28

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	11.77 0.00	6.39 0.59	2.76 3.00	4.35 2.84	1.71 5.13	2.07 8.89
RUNOFF	2.508 0.000	0.000 0.000	0.128 0.000	3.717 0.001	0.000 0.045	0.001 0.860
EVAPOTRANSPIRATION	0.682 0.407	0.998 0.032	0.791 1.534	0.403 1.159	1.860 0.838	1.924 0.569
LATERAL DRAINAGE COLLECTED FROM LAYER 4	7.9881 0.4355	6.0491 0.4444	2.6714 0.2146	0.8466 0.4978	1.1797 3.0691	0.4782 6.3881
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0180 0.0018	0.0131 0.0019	0.0072 0.0010	0.0031 0.0019	0.0039 0.0077	0.0019 0.0145
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0008 0.0004	0.0009 0.0004	0.0011 0.0003	0.0004 0.0001	0.0002 0.0002	0.0003 0.0001

OUT

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 MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.089 0.004	0.061 0.004	0.025 0.002	0.008 0.005	0.011 0.030	0.005 0.067
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.065 0.002	0.033 0.001	0.016 0.001	0.003 0.005	0.005 0.025	0.003 0.054

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ANNUAL TOTALS FOR YEAR 28

	INCHES	CU. FEET	PERCENT
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PRECIPITATION	49.50	179685.016	100.00
RUNOFF	7.261	26356.146	14.67
EVAPOTRANSPIRATION	11.197	40644.844	22.62
DRAINAGE COLLECTED FROM LAYER 4	30.2626	109853.414	61.14
PERC. /LEAKAGE THROUGH LAYER 5	0.075993	275.854	0.15
AVG. HEAD ON TOP OF LAYER 5	0.0260		
PERC. /LEAKAGE THROUGH LAYER 8	0.005206	18.896	0.01
CHANGE IN WATER STORAGE	0.775	2811.760	1.56
SOIL WATER AT START OF YEAR	74.692	271131.812	
SOIL WATER AT END OF YEAR	75.467	273943.562	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.045	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 29

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 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC  
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OUT

PRECIPITATION	6.78 0.03	6.12 0.87	5.87 3.14	4.66 2.17	0.95 4.76	1.77 11.22
RUNOFF	0.002 0.000	8.628 0.000	2.814 0.624	0.000 0.435	0.000 0.060	0.000 1.487
EVAPOTRANSPIRATION	0.731 0.620	0.171 0.525	0.985 0.392	2.339 1.245	1.298 0.835	1.502 0.397
LATERAL DRAINAGE COLLECTED FROM LAYER 4	4.1257 0.2619	1.0700 0.2014	0.6281 0.1811	4.4477 0.2394	1.2946 2.2953	0.4056 7.6681
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.0100 0.0013	0.0036 0.0010	0.0023 0.0009	0.0106 0.0011	0.0042 0.0061	0.0017 0.0204
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.0000 0.0002	0.0001 0.0001	0.0000 0.0002	0.0001 0.0001	0.0002 0.0001	0.0002 0.0002

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MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)  
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AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.039 0.002	0.011 0.002	0.006 0.002	0.044 0.002	0.012 0.023	0.004 0.114
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.024 0.001	0.005 0.001	0.006 0.001	0.020 0.001	0.006 0.019	0.001 0.190

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ANNUAL TOTALS FOR YEAR 29

	INCHES	CU. FEET	PERCENT
PRECIPITATION	48.34	175474.219	100.00
RUNOFF	14.051	51006.598	29.07
EVAPOTRANSPIRATION	11.040	40076.648	22.84
DRAINAGE COLLECTED FROM LAYER 4	22.8189	82832.461	47.20
PERC./LEAKAGE THROUGH LAYER 5	0.063252	229.604	0.13
AVG. HEAD ON TOP OF LAYER 5	0.0218		
PERC./LEAKAGE THROUGH LAYER 8	0.001557	5.653	0.00
CHANGE IN WATER STORAGE	0.428	1552.873	0.88
SOIL WATER AT START OF YEAR	75.467	273943.562	
SOIL WATER AT END OF YEAR	74.916	271945.812	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	OUT	0. 978	3550. 630	2. 02
ANNUAL WATER BUDGET BALANCE		0. 0000	-0. 013	0. 00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	8. 02 0. 70	4. 42 0. 45	5. 60 1. 94	2. 81 3. 19	3. 34 8. 22	1. 69 11. 29
RUNOFF	2. 872 0. 000	0. 083 0. 000	0. 000 0. 000	0. 000 0. 000	0. 000 0. 850	0. 000 2. 096
EVAPOTRANSPIRATION	0. 534 0. 739	0. 617 0. 311	1. 700 1. 692	2. 317 0. 828	3. 203 0. 880	1. 806 0. 820
LATERAL DRAINAGE COLLECTED FROM LAYER 4	5. 6239 0. 2077	3. 1285 0. 3337	5. 0768 0. 2871	1. 8236 0. 1939	1. 0910 4. 3226	0. 5798 7. 2310
PERCOLATION/LEAKAGE THROUGH LAYER 5	0. 0163 0. 0010	0. 0078 0. 0015	0. 0119 0. 0013	0. 0054 0. 0009	0. 0037 0. 0111	0. 0023 0. 0189
PERCOLATION/LEAKAGE THROUGH LAYER 8	0. 0002 0. 0003	0. 0001 0. 0004	0. 0006 0. 0003	0. 0001 0. 0004	0. 0004 0. 0008	0. 0003 0. 0011

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 5	0. 090 0. 002	0. 033 0. 003	0. 048 0. 003	0. 018 0. 002	0. 010 0. 060	0. 006 0. 102
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0. 213 0. 001	0. 026 0. 002	0. 021 0. 001	0. 008 0. 001	0. 005 0. 140	0. 001 0. 188

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ANNUAL TOTALS FOR YEAR 30

	INCHES	CU. FEET	PERCENT
PRECIPITATION	51. 67	187562. 125	100. 00
RUNOFF	5. 901	21421. 846	11. 42

	OUT		
EVAPOTRANSPIRATION	15.445	56064.098	29.89
DRAINAGE COLLECTED FROM LAYER 4	29.8994	108534.992	57.87
PERC. /LEAKAGE THROUGH LAYER 5	0.082127	298.123	0.16
AVG. HEAD ON TOP OF LAYER 5	0.0314		
PERC. /LEAKAGE THROUGH LAYER 8	0.004950	17.969	0.01
CHANGE IN WATER STORAGE	0.420	1523.254	0.81
SOIL WATER AT START OF YEAR	74.916	271945.812	
SOIL WATER AT END OF YEAR	75.582	274362.687	
SNOW WATER AT START OF YEAR	0.978	3550.630	1.89
SNOW WATER AT END OF YEAR	0.732	2656.995	1.42
ANNUAL WATER BUDGET BALANCE	0.0000	-0.037	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	8.23 0.69	6.10 1.05	4.78 2.17	3.60 4.60	1.90 7.19	1.27 8.68
STD. DEVIATIONS	2.49 0.60	1.97 0.65	1.67 1.21	1.07 1.79	1.01 2.81	0.63 2.37
RUNOFF						
TOTALS	2.054 0.000	3.893 0.005	1.083 0.033	0.162 0.166	0.000 0.797	0.000 1.414
STD. DEVIATIONS	2.234 0.000	4.444 0.029	1.555 0.122	0.677 0.403	0.002 1.102	0.000 1.184
EVAPOTRANSPIRATION						
TOTALS	0.640 0.906	0.512 0.784	1.309 1.068	2.240 1.132	1.978 0.914	1.321 0.665
STD. DEVIATIONS	0.214 0.579	0.332 0.479	0.383 0.612	0.461 0.196	0.572 0.111	0.559 0.170
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	5.2859	3.2276	2.6527	2.3284	1.0501	0.5200

	0. 3585	0. 2813	0. 2770	0. 9297	4. 5075	5. 6538
STD. DEVIATIONS	2. 0307 0. 1183	2. 4538 0. 0689	1. 9062 0. 2584	1. 0599 0. 9561	0. 3591 2. 0479	0. 2452 1. 6945
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0. 0130 0. 0016	0. 0084 0. 0013	0. 0070 0. 0012	0. 0063 0. 0027	0. 0036 0. 0112	0. 0021 0. 0140
STD. DEVIATIONS	0. 0046 0. 0004	0. 0057 0. 0003	0. 0046 0. 0007	0. 0022 0. 0021	0. 0009 0. 0050	0. 0007 0. 0045
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0. 0001 0. 0001	0. 0001 0. 0001	0. 0001 0. 0001	0. 0001 0. 0001	0. 0001 0. 0001	0. 0001 0. 0001
STD. DEVIATIONS	0. 0002 0. 0001	0. 0002 0. 0001	0. 0003 0. 0001	0. 0001 0. 0001	0. 0001 0. 0002	0. 0001 0. 0002

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AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)  
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DAILY AVERAGE HEAD ON TOP OF LAYER 5						
AVERAGES	0. 0611 0. 0034	0. 0410 0. 0027	0. 0282 0. 0027	0. 0231 0. 0088	0. 0100 0. 0537	0. 0051 0. 0665
STD. DEVIATIONS	0. 0279 0. 0011	0. 0352 0. 0007	0. 0248 0. 0025	0. 0108 0. 0091	0. 0034 0. 0326	0. 0024 0. 0313

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	50. 26	( 6. 182)	182437. 8	100. 00
RUNOFF	9. 607	( 6. 3686)	34873. 41	19. 115
EVAPOTRANSPIRATION	13. 470	( 1. 8441)	48894. 86	26. 801
LATERAL DRAINAGE COLLECTED FROM LAYER 4	27. 07256	( 5. 12912)	98273. 383	53. 86680
PERCOLATION/LEAKAGE THROUGH LAYER 5	0. 07230	( 0. 01247)	262. 458	0. 14386
AVERAGE HEAD ON TOP OF LAYER 5	0. 026	( 0. 006)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0. 00110	( 0. 00167)	3. 998	0. 00219



CHANGE IN WATER STORAGE                      0. 108                      <sup>OUT</sup> ( 1. 9743)                      392. 11                      0. 215

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	PEAK DAILY VALUES FOR YEARS      1 THROUGH      30	
	(INCHES)	(CU. FT.)
PRECIPITATION	3. 24	11761. 200
RUNOFF	3. 849	13973. 1611
DRAINAGE COLLECTED FROM LAYER 4	0. 96718	3510. 87158
PERCOLATION/LEAKAGE THROUGH LAYER 5	0. 005706	20. 71285
AVERAGE HEAD ON TOP OF LAYER 5	1. 482	
MAXIMUM HEAD ON TOP OF LAYER 5	2. 325	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	10. 7 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0. 000056	0. 20190
SNOW WATER	8. 74	31730. 7715
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0. 4158
MINIMUM VEG. SOIL WATER (VOL/VOL)		0. 0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR      30		
LAYER	(INCHES)	(VOL/VOL)
1	8. 0009	0. 3334
2	1. 1910	0. 0992
3	0. 2547	0. 0637

OUT

4	0.0441	0.2204
5	0.0000	0.0000
6	0.1521	0.0380
7	65.0377	0.1355
8	0.7735	0.0322

SNOW WATER 0.732

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