

PRILOG 8

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**
**          HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE          **
**          HELP MODEL VERSION 3.07 (1 November 1997)              **
**          DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**          USAE WATERWAYS EXPERIMENT STATION                       **
**          FOR USEPA RISK REDUCTION ENGINEERING LABORATORY         **
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PRECIPITATION DATA FILE:      C:\WHI\VHELP22\data\P3728.VHP\_weather1.dat
TEMPERATURE DATA FILE:       C:\WHI\VHELP22\data\P3728.VHP\_weather2.dat
SOLAR RADIATION DATA FILE:   C:\WHI\VHELP22\data\P3728.VHP\_weather3.dat
EVAPOTRANSPIRATION DATA:    C:\WHI\VHELP22\data\P3728.VHP\_weather4.dat
SOIL AND DESIGN DATA FILE:   C:\WHI\VHELP22\data\P3728.VHP\I_389116.inp
OUTPUT DATA FILE:           C:\WHI\VHELP22\data\P3728.VHP\O_389116.prt
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TIME: 12: 9 DATE: 2/10/2006

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TITLE: Kraj_ploha 1 + 2_5%

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NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
WERE SPECIFIED BY THE USER.

LAYER 1 -----

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 5

THICKNESS	=	30.00	CM
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.	=	0.100000000000E-02	CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 5.00
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

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LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	3500.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.3100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000224000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 5

THICKNESS	=	60.00	CM
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.	=	0.100000000000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 21

THICKNESS	=	50.00	CM
POROSITY	=	0.3970	VOL/VOL
FIELD CAPACITY	=	0.0320	VOL/VOL
WILTING POINT	=	0.0130	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000000000	CM/SEC
SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	120.0	METERS

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.10	CM
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.	=	0.200000000000E-12	CM/SEC
FML PINHOLE DENSITY	=	7.50	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	7.50	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4 - POOR	

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LAYER 6

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 28

THICKNESS	=	10.00	CM
POROSITY	=	0.4520	VOL/VOL
FIELD CAPACITY	=	0.4110	VOL/VOL
WILTING POINT	=	0.3110	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4520	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.120000000000E-05	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
SOIL DATA BASE USING SOIL TEXTURE # 5 WITH A
POOR STAND OF GRASS, A SURFACE SLOPE OF 5. %
AND A SLOPE LENGTH OF 120. METERS.

SCS RUNOFF CURVE NUMBER	=	77.23	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	25.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	3.275	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	11.425	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.450	CM
INITIAL SNOW WATER	=	0.000	CM
INITIAL WATER IN LAYER MATERIALS	=	1102.810	CM
TOTAL INITIAL WATER	=	1102.810	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SPLIT/KASTEL FORM

STATION LATITUDE	=	43.53	DEGREES
MAXIMUM LEAF AREA INDEX	=	5.00	
START OF GROWING SEASON (JULIAN DATE)	=	74	
END OF GROWING SEASON (JULIAN DATE)	=	319	
EVAPORATIVE ZONE DEPTH	=	25.0	CM
AVERAGE ANNUAL WIND SPEED	=	11.26	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	72.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	61.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	76.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SPLIT/KASTEL FORM

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NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
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82.1	80.0	94.8	70.1	79.0	50.5
20.0	50.2	52.5	79.1	89.0	99.8

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SPLIT/KASTEL FORM

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
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7.3	7.9	10.2	13.1	17.6	21.3
24.3	24.2	20.8	16.8	11.7	8.9

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SPLIT/KASTEL FORM
AND STATION LATITUDE = 43.86 DEGREES

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HEAD #1: AVERAGE HEAD ON TOP OF LAYER 5
DRAIN #1: LATERAL DRAINAGE FROM LAYER 4 (RECIRCULATION AND COLLECTION)
LEAK #1: PERCOLATION OR LEAKAGE THROUGH LAYER 6

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 3

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

TOTALS	89.17 34.30	88.80 28.70	72.77 23.33	96.10 103.07	50.90 101.00	30.80 85.60
STD. DEVIATIONS	89.98 30.36	20.29 34.92	16.54 19.38	52.77 36.76	30.78 25.87	12.90 36.82
RUNOFF						

TOTALS	0.000 0.000	0.002 0.426	0.000 0.000	0.000 0.366	0.000 0.070	0.000 0.137
STD. DEVIATIONS	0.000 0.000	0.003 0.738	0.000 0.000	0.000 0.530	0.000 0.122	0.000 0.237
EVAPOTRANSPIRATION						

TOTALS	25.017 31.336	36.732 28.743	54.675 23.088	75.329 52.559	50.228 24.558	34.141 20.572
STD. DEVIATIONS	6.243 26.910	6.103 25.458	3.704 19.381	27.193 9.089	4.690 4.113	8.961 2.232
LATERAL DRAINAGE COLLECTED FROM LAYER 4						

TOTALS	30.1956 45.9833	50.2668 31.8288	56.0171 24.8242	69.4104 9.0667	71.4080 8.6298	55.2361 26.7766
STD. DEVIATIONS	26.7320 39.3428	41.6026 42.0946	23.2325 30.3469	10.2614 5.0841	17.8090 4.0824	34.3181 8.6166
PERCOLATION/LEAKAGE THROUGH LAYER 6						

TOTALS	0.0246 0.0367	0.0398 0.0258	0.0447 0.0205	0.0545 0.0086	0.0560 0.0081	0.0438 0.0224
STD. DEVIATIONS	0.0213 0.0298	0.0304 0.0320	0.0170 0.0234	0.0075 0.0044	0.0130 0.0034	0.0258 0.0071

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AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.7523	1.3866	1.3956	1.7870	1.7791	1.4221
	1.1457	0.7930	0.6391	0.2259	0.2222	0.6671
STD. DEVIATIONS	0.6660	1.1476	0.5788	0.2642	0.4437	0.8835
	0.9802	1.0488	0.7813	0.1267	0.1051	0.2147

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 3

	MM		CU. METERS	PERCENT
PRECIPITATION	804.53	(141.833)	8045.3	100.00
RUNOFF	1.001	(0.5794)	10.01	0.124
EVAPOTRANSPIRATION	456.979	(22.3543)	4569.79	56.800
LATERAL DRAINAGE COLLECTED FROM LAYER 4	479.64337	(197.75597)	4796.434	59.61759
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.38539	(0.14712)	3.854	0.04790
AVERAGE HEAD ON TOP OF LAYER 5	10.180	(4.231)		
CHANGE IN WATER STORAGE	-133.475	(11.1053)	-1334.75	-16.590

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 3		
	(MM)	(CU. METERS)
PRECIPITATION	55.30	553.00000
RUNOFF	1.278	12.78497
DRAINAGE COLLECTED FROM LAYER 4	4.00305	40.03052
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.003017	0.03017
AVERAGE HEAD ON TOP OF LAYER 5	30.918	
MAXIMUM HEAD ON TOP OF LAYER 5	58.506	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	6.4 METERS	
SNOW WATER	0.00	0.0000
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.2933
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

FINAL WATER STORAGE AT END OF YEAR 3		
LAYER	(CM)	(VOL/VOL)
1	6.3226	0.2108
2	1033.7048	0.2953
3	15.1438	0.2524
4	3.0762	0.0615
5	0.0000	0.0000
6	4.5200	0.4520
SNOW WATER	0.000	
