

PRILOG 2

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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_388570.inp
OUTPUT DATA FILE:           C:\WHI\VHELP22\data\P3728.VHP\O_388570.prt
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TIME: 11:58 DATE: 2/10/2006

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TITLE: 5% sa laminiranim kompozitnim slojem

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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 6

THICKNESS	=	100.00	CM
POROSITY	=	0.4530	VOL/VOL
FIELD CAPACITY	=	0.1900	VOL/VOL
WILTING POINT	=	0.0850	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1900	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.720000000000E-03	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 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	5.00	PERCENT
DRAINAGE LENGTH	=	80.0	METERS

LAYER 3

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	2.00	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000000000E-08	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	3800.00	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

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

SCS RUNOFF CURVE NUMBER	=	70.22	
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	=	4.750	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	11.325	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	2.125	CM
INITIAL SNOW WATER	=	0.000	CM
INITIAL WATER IN LAYER MATERIALS	=	1198.506	CM
TOTAL INITIAL WATER	=	1198.506	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

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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

NORMAL MEAN MONTHLY PRECIPITATION (MM)

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

HEAD #1: AVERAGE HEAD ON TOP OF LAYER 3

DRAIN #1: LATERAL DRAINAGE FROM LAYER 2 (RECIRCULATION AND COLLECTION)

LEAK #1: PERCOLATION OR LEAKAGE THROUGH LAYER 3

LEAK #2: PERCOLATION OR LEAKAGE THROUGH LAYER 4

PRILOG 2

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 20

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

PRECIPITATION						

TOTALS	91.94 21.86	75.85 43.90	102.40 50.22	67.88 70.36	67.34 79.52	49.46 87.70
STD. DEVIATIONS	45.26 19.47	32.70 39.46	53.08 32.08	45.18 37.11	43.66 37.14	25.03 54.96
RUNOFF						

TOTALS	0.057 0.000	0.019 0.013	0.034 0.041	0.035 0.035	0.010 0.088	0.000 0.085
STD. DEVIATIONS	0.215 0.000	0.083 0.057	0.151 0.127	0.157 0.158	0.040 0.271	0.000 0.239
EVAPOTRANSPIRATION						

TOTALS	28.041 26.599	38.961 36.637	61.166 38.514	66.764 35.611	59.299 21.538	47.833 19.533
STD. DEVIATIONS	1.942 18.724	2.610 27.918	11.837 22.200	26.074 17.726	28.223 4.146	20.172 2.180
LATERAL DRAINAGE COLLECTED FROM LAYER 2						

TOTALS	60.9103 5.4461	50.4787 3.2256	45.6823 3.2792	29.5699 6.3887	14.2620 34.6743	10.6206 61.5770
STD. DEVIATIONS	42.6485 2.5055	28.2901 2.6100	34.3930 4.6734	20.0731 6.5412	9.4227 29.0700	12.1930 45.5665
PERCOLATION/LEAKAGE THROUGH LAYER 3						

TOTALS	0.0663 0.0784	0.0645 0.0523	0.0727 0.0408	0.0742 0.0443	0.0775 0.0597	0.0764 0.0703
STD. DEVIATIONS	0.0188 0.0065	0.0149 0.0286	0.0093 0.0317	0.0053 0.0300	0.0054 0.0181	0.0047 0.0155
PERCOLATION/LEAKAGE THROUGH LAYER 4						

TOTALS	5.3220 4.0131	5.1385 1.6060	5.2558 0.0000	4.7163 0.0304	4.6239 0.0913	4.1212 0.0609
STD. DEVIATIONS	23.8005 17.8042	22.4084 6.7565	23.0762 0.0000	20.8064 0.1361	20.1073 0.2229	18.2879 0.1873

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AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0055	0.0050	0.0041	0.0028	0.0013	0.0010
	0.0005	0.0003	0.0003	0.0006	0.0033	0.0056
STD. DEVIATIONS	0.0039	0.0028	0.0031	0.0019	0.0009	0.0011
	0.0002	0.0002	0.0004	0.0006	0.0027	0.0041

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	MM		CU. METERS	PERCENT
PRECIPITATION	808.41	(155.888)	8084.1	100.00
RUNOFF	0.417	(0.5436)	4.17	0.052
EVAPOTRANSPIRATION	480.495	(64.6950)	4804.95	59.437
LATERAL DRAINAGE COLLECTED FROM LAYER 2	326.11480	(105.22732)	3261.148	40.34052
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.77743	(0.06759)	7.774	0.09617
AVERAGE HEAD ON TOP OF LAYER 3	0.025	(0.008)		
PERCOLATION/LEAKAGE THROUGH LAYER 4	34.97934	(152.99526)	349.793	4.32696
CHANGE IN WATER STORAGE	-33.601	(5.9407)	-336.01	-4.156

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20		
	(MM)	(CU. METERS)
PRECIPITATION	66.60	666.00000
RUNOFF	1.122	11.21698
DRAINAGE COLLECTED FROM LAYER 2	36.68107	366.81069
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.002726	0.02726
AVERAGE HEAD ON TOP OF LAYER 3	1.032	
MAXIMUM HEAD ON TOP OF LAYER 3	2.057	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.1 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 4	3.953845	39.53845
SNOW WATER	23.17	231.6890
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3233
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0850

FINAL WATER STORAGE AT END OF YEAR 20		
LAYER	(CM)	(VOL/VOL)
1	20.2013	0.2020
2	0.0074	0.0123
3	1.5000	0.7500
4	1109.5962	0.2920
SNOW WATER	0.000	

