TRIASSIC PARK
HAZARDOUS WASTE LANDFILL

HELP RUNS

ALTERNATIVE LINER SYSTEM ANALYSIS

(REVISION 1)

MARCH 1996

Prepared for:

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APPENDIX A

HELP INPUT DATA SHEETS

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM, using 30 yr mean monthly inputs
temperature & source of data	Synthetic	Roswell, NM using 30yr mean monthly inputs
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	1	Poor stand of grass
evaporate zone depth	24 in.	Maximum depth of vegetative soil
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	1	Poor stand of grass
SCS runoff curve number	74.9	HELP model generated, Soil texture 4, 25% slope, poor stand of grass
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	6	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Cover Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Vegetative soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	6	HELP Default for a SM, (geologic data indicates some onsite soil to be a SM w/ a lower permeability than other SM's on site)
porosity	0.453	HELP default for texture 6
field capacity	0.190	HELP default for texture 6
wilting point	0.085	HELP default for texture 6
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	7.2E-4cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	25%	See cover section
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Estimate
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	4	FMC, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 4		
layer type	3	GCL
thickness	0.24 in	See Cover section
soil texture	17	HELP Default for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat.
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	6 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	18 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Cover Alternative

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM Using 30yr avg mean monthly inputs
temperature & source of data	Synthetic	Roswell, NM using 30 yr avg. mean monthly inputs
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	6	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR Floor Liner System

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 1		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on avg moisture content of bulk samples taken from site
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity (does not allow storage)
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 4		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity (does not allow storage)
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 6		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity (allows for immediate saturated flow)
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM using 30 yr avg. mean monthly inputs
temperature & source of data	Synthetic	Roswell, NM using 30 yr avg. mean monthly inputs
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	6	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Slope MTR Liner System

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 1		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 4		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 6		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	6	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Alternative #2 Floor Liner System

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 1		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 6		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	6	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner System

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 1		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	1	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 6		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

APPENDIX B

HELP SIMULATION SUMMARY PRINTOUTS

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******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**              HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                 **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     C:\HELP3\GANDYIN.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDYIN.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDYIN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDYIN.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GF01.D10
OUTPUT DATA FILE:            C:\HELP3\GF01.OUT


TIME:  17:24     DATE:   2/ 4/1996


******************************************************************************

    TITLE:  Gandy Landfill  - MTR - Floor (0-1 yrs)

******************************************************************************


    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   7
         THICKNESS                  =     60.00   INCHES
         POROSITY                   =      0.4730 VOL/VOL
         FIELD CAPACITY             =      0.2220 VOL/VOL
         WILTING POINT              =      0.1040 VOL/VOL
         INITIAL SOIL WATER CONTENT =      0.2055 VOL/VOL
         EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
```

```
                    LAYER  2
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  3
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  4
                    --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

```
                        LAYER  5
                        --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  6
                        --------

              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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER  7
                        --------

              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.877	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	31.501	INCHES
TOTAL INITIAL WATER	=	31.501	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.284	0.235	0.234	0.213	0.205	0.183
	0.206	2.615	3.145	0.044	0.319	0.312
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000

	0.000	0.000	0.000	0.000	0.000	0.000

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.996	(0.0000)	29026.04	91.910
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.704	(0.0000)	2554.95	8.090

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.3170

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0969

****

****

FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)	
1	12.5490	0.2092	[illegible]
2	2.5560	0.1065	[illegible]
3	0.5400	0.0450	
4	0.0000	0.0000	
5	0.5400	0.0450	
6	0.0000	0.0000	
7	16.0200	0.4450	
SNOW WATER	0.000		

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**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\GANDYIN.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDYIN.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDYIN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDYIN.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\gf25.D10
OUTPUT DATA FILE:            C:\HELP3\gf25.OUT


TIME:  17:49     DATE:   2/ 4/1996


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    TITLE:  Gandy Landfill  - MTR - Floor (2-5yrs)

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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   7
          THICKNESS                   =    840.00   INCHES
          POROSITY                    =      0.4730 VOL/VOL
          FIELD CAPACITY              =      0.2220 VOL/VOL
          WILTING POINT               =      0.1040 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.2092 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =  0.520000001000E-03 CM/SEC
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                    LAYER  2
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1065 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  3
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  4
                    --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

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                    LAYER  5
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.929	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	195.384	INCHES
TOTAL INITIAL WATER	=	195.384	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.19	0.16	0.28	0.33	0.58	0.56
	1.81	2.26	1.48	0.61	0.96	0.42
STD. DEVIATIONS	0.22	0.04	0.30	0.18	0.69	0.87
	0.81	1.23	1.13	0.94	1.13	0.35
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.210	0.225	0.222	0.177	0.545	0.696
	1.264	2.202	1.439	0.741	0.669	0.522
STD. DEVIATIONS	0.129	0.094	0.163	0.064	0.422	1.035

	1.527	1.172	1.154	0.711	0.554	0.424

LATERAL DRAINAGE COLLECTED FROM LAYER 3

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	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0007	0.0005	0.0005	0.0005	0.0006	0.0006
	0.0006	0.0006	0.0006	0.0008	0.0009	0.0009
STD. DEVIATIONS	0.0010	0.0009	0.0010	0.0009	0.0009	0.0009
	0.0009	0.0009	0.0008	0.0010	0.0010	0.0011

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0007	0.0007	0.0007	0.0006	0.0007	0.0006
	0.0006	0.0006	0.0006	0.0006	0.0007	0.0007
STD. DEVIATIONS	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007
	0.0007	0.0008	0.0007	0.0008	0.0007	0.0008

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0015	0.0011	0.0011	0.0011	0.0011	0.0011
	0.0011	0.0011	0.0011	0.0016	0.0019	0.0019
STD. DEVIATIONS	0.0021	0.0021	0.0021	0.0020	0.0019	0.0019
	0.0018	0.0018	0.0017	0.0019	0.0022	0.0023

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0101	0.0099	0.0095	0.0091	0.0089	0.0086
	0.0085	0.0084	0.0083	0.0085	0.0092	0.0098

MTR - Sloos

STD. DEVIATIONS	0.0108	0.0103	0.0098	0.0097	0.0098	0.0100
	0.0101	0.0103	0.0104	0.0104	0.0104	0.0106

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 4

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.819)	35056.7	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	8.910	(1.5976)	32343.24	92.260
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00113	(0.00155)	4.100	0.01169
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00787	(0.01029)	28.570	0.08150
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.002)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00784	(0.00794)	28.443	0.08113
ERCOLATION/LEAKAGE THROUGH LAYER 7	0.00001	(0.00001)	0.044	0.00012
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.009	(0.009)		
CHANGE IN WATER STORAGE	0.739	(1.0435)	2680.87	7.647

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 4

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00001	0.03780
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000067	0.24487
AVERAGE HEAD ACROSS LAYER 4	0.004	
DRAINAGE COLLECTED FROM LAYER 5	0.00006	0.20489
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00026
AVERAGE HEAD ACROSS LAYER 7	0.024	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.3170
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0969

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FINAL WATER STORAGE AT END OF YEAR 4

LAYER	(INCHES)	(VOL/VOL)
1	178.7180	0.2128
2	2.5200	0.1050
3	0.5400	0.0450
4	0.0000	0.0000
5	0.5401	0.0450
6	0.0000	0.0000
7	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**              HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                 **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\GANDYIN.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDYIN.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDYIN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDYIN.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GF610.D10
OUTPUT DATA FILE:            C:\HELP3\GF610.OUT


TIME:  17:53     DATE:   2/ 4/1996


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    TITLE:  Gandy Landfill  - MTR - Floor (6-10yrs)

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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   7
        THICKNESS                  =   1080.00   INCHES
        POROSITY                   =      0.4730 VOL/VOL
        FIELD CAPACITY             =      0.2220 VOL/VOL
        WILTING POINT              =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT =      0.2128 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
```

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1050	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.30	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 4

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

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                         LAYER  5
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            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                         LAYER  6
                         --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER  7
                         --------

              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.979	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	249.444	INCHES
TOTAL INITIAL WATER	=	249.444	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.17	0.29	0.26	0.78	0.63
	1.66	1.91	1.64	0.79	0.84	0.49
STD. DEVIATIONS	0.19	0.04	0.26	0.21	0.74	0.77
	0.78	1.32	1.04	0.91	1.02	0.34
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.219	0.227	0.220	0.174	0.475	0.771
	1.204	1.856	1.550	0.940	0.632	0.611
STD. DEVIATIONS	0.114	0.082	0.141	0.056	0.397	0.912

	1.330	1.275	1.030	0.760	0.487	0.418

LATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.710)	35073.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	8.880	(1.3852)	32234.15	91.906
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
RCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.782	(0.9053)	2838.88	8.094

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.3170

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0969

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FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	233.7343	0.2164
2	2.5200	0.1050
3	0.5400	0.0450
4	0.0000	0.0000
5	0.5400	0.0450
6	0.0000	0.0000
7	16.0200	0.4450
SNOW WATER	0.000	

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**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\GANDYIN.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDYIN.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDYIN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDYIN.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\gf1011.D10
OUTPUT DATA FILE:            C:\HELP3\gf1011.OUT


TIME:  18:22     DATE:   2/ 4/1996


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     TITLE:  Gandy Landfill  - MTR - Floor (10-11yrs)

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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   4
          THICKNESS                  =     24.00   INCHES
          POROSITY                   =      0.4370 VOL/VOL
          FIELD CAPACITY             =      0.1050 VOL/VOL
          WILTING POINT              =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.170000002000E-02 CM/SEC
```

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                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     25.00   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

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                        LAYER  5
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                        LAYER  6
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                        LAYER  7
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                        LAYER  8
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
```

```
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  9
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER 11
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

LAYER 12

```
TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

```
NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE
         GROUND CONDITIONS, A SURFACE SLOPE OF 25.% AND
         A SLOPE LENGTH OF  550. FEET.

SCS RUNOFF CURVE NUMBER              =     81.80
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
EVAPORATIVE ZONE DEPTH               =     14.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      1.208  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =      6.118  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      0.658  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =    351.400  INCHES
TOTAL INITIAL WATER                  =    351.400  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.263	0.194	0.185	0.017	0.002	0.000
	0.011	0.121	0.439	0.006	0.031	0.005
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0000	0.0000	0.0000	0.0482	0.0645	0.0479
	0.3671	2.6005	2.6553	0.2655	0.9331	0.2652
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

ERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

AILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0005	0.0035	0.0036	0.0004	0.0013	0.0004
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.273	(0.0000)	4622.42	14.637
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.24728	(0.00000)	26307.623	83.30206
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.010	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
RCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.179	(0.0000)	650.94	2.061

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.51797	1880.22473
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00024
AVERAGE HEAD ACROSS LAYER 4	0.021	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.0863

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0404

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****

FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)
1	2.2503	0.0938
2	0.0022	0.0110
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	311.6160	0.2164
7	2.5200	0.1050
8	0.5400	0.0450
9	0.0000	0.0000
10	0.5400	0.0450
11	0.0000	0.0000
12	16.0200	0.4450
SNOW WATER	0.000	

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              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                 **
               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                  **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                     **
**                  USAE WATERWAYS EXPERIMENT STATION                       **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\ganin2.D4
TEMPERATURE DATA FILE:       C:\HELP3\ganin2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANIN2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANIN2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GF1231.D10
OUTPUT DATA FILE:            C:\HELP3\GF1231.OUT


TIME:  18:29     DATE:   2/ 4/1996


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    TITLE:  Gandy Landfill  - MTR - Floor (12-31yrs)

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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   4
        THICKNESS                    =     24.00   INCHES
        POROSITY                     =      0.4370 VOL/VOL
        FIELD CAPACITY               =      0.1050 VOL/VOL
        WILTING POINT                =      0.0470 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.0938 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0110	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
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              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  9
                        --------

              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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER 11
                        --------
```

```
                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          =      0.50   HOLES/ACRE
    FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
    FML PLACEMENT QUALITY        =  3 - GOOD


                           LAYER 12
                           --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =     36.00   INCHES
    POROSITY                     =      0.4450 VOL/VOL
    FIELD CAPACITY               =      0.3930 VOL/VOL
    WILTING POINT                =      0.2770 VOL/VOL
    INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC


            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

   NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
            SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
            POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
            AND A SLOPE LENGTH OF  550. FEET.

  SCS RUNOFF CURVE NUMBER              =     74.90
  FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
  EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE    =      2.251  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
  INITIAL SNOW WATER                   =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS     =    351.581  INCHES
  TOTAL INITIAL WATER                  =    351.581  INCHES
  TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.23	0.30	0.25	0.30	0.59	0.73
	1.41	1.68	1.44	1.26	0.52	0.35
STD. DEVIATIONS	0.23	0.20	0.25	0.36	0.64	0.60
	0.70	0.97	0.90	1.11	0.64	0.26
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.095	0.068	0.050	0.052	0.137	0.202
	0.364	0.353	0.232	0.153	0.067	0.067
STD. DEVIATIONS	0.190	0.064	0.049	0.041	0.158	0.150
	0.169	0.205	0.125	0.118	0.077	0.052
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.2128	0.1741	0.2379	0.2309	0.4466	0.5109
	0.9797	1.3074	1.2152	1.1417	0.4980	0.2818
STD. DEVIATIONS	0.1680	0.1227	0.1878	0.2978	0.4705	0.4642
	0.5890	0.7558	0.7576	0.9659	0.5110	0.2688
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0006	0.0007
	0.0013	0.0017	0.0017	0.0015	0.0007	0.0004
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0004	0.0006	0.0006
	0.0008	0.0010	0.0010	0.0013	0.0007	0.0004

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.05	(1.776)	32847.9	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.840	(0.3915)	6677.76	20.329
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.23687	(1.51619)	26269.826	79.97421
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.012	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
ERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.027	(0.1840)	-99.72	-0.304

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.41	5118.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.84635	3072.26587
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00035
AVERAGE HEAD ACROSS LAYER 4	0.035	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0942
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0554

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.7006	0.0709
2	0.0033	0.0166
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0713	0.0863
6	311.6160	0.2164
7	2.5200	0.1050
8	0.5400	0.0450
9	0.0000	0.0000
10	0.5400	0.0450
11	0.0000	0.0000
12	16.0200	0.4450
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     C:\HELP3\ganin2.D4
TEMPERATURE DATA FILE:       C:\HELP3\ganin2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANIN2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANIN2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GF3240.D10
OUTPUT DATA FILE:            C:\HELP3\GF3240.OUT


TIME:  18:55     DATE:   2/ 4/1996


******************************************************************************

    TITLE:  Gandy Landfill  - MTR - Floor (32-40yrs)

******************************************************************************


    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   4
        THICKNESS                   =     24.00   INCHES
        POROSITY                    =      0.4370 VOL/VOL
        FIELD CAPACITY              =      0.1050 VOL/VOL
        WILTING POINT               =      0.0470 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.0709 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0166	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------
```

```
                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                         LAYER  9
                         --------

                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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER 10
                         --------

                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                         LAYER 11
                         --------
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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          =      0.50   HOLES/ACRE
    FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
    FML PLACEMENT QUALITY        =  3 - GOOD


                            LAYER 12
                            --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =     36.00   INCHES
    POROSITY                     =      0.4450 VOL/VOL
    FIELD CAPACITY               =      0.3930 VOL/VOL
    WILTING POINT                =      0.2770 VOL/VOL
    INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC


            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
           POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  550. FEET.

  SCS RUNOFF CURVE NUMBER              =     74.90
  FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
  EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE    =      1.702  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
  INITIAL SNOW WATER                   =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS     =    351.032  INCHES
  TOTAL INITIAL WATER                  =    351.032  INCHES
  TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
4[illegible].40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.32	0.26	0.39	0.67	0.59
	1.41	1.86	1.37	1.12	0.81	0.42
STD. DEVIATIONS	0.15	0.20	0.25	0.45	0.62	0.64
	0.70	1.04	0.94	1.23	0.82	0.33
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.072	0.077	0.063	0.061	0.144	0.151
	0.366	0.393	0.241	0.135	0.102	0.081
STD. DEVIATIONS	0.088	0.054	0.059	0.047	0.115	0.145
	0.180	0.244	0.157	0.126	0.097	0.061
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.1688	0.1836	0.2412	0.2924	0.5048	0.4614
	0.9435	1.4550	1.1491	1.0118	0.7449	0.3745
STD. DEVIATIONS	0.1148	0.1093	0.1638	0.3951	0.4602	0.5086
	0.5944	0.8523	0.7558	1.0200	0.6208	0.3415
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0002	0.0003	0.0003	0.0004	0.0007	0.0006
	0.0013	0.0019	0.0016	0.0013	0.0010	0.0005
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0005	0.0006	0.0007
	0.0008	0.0011	0.0010	0.0014	0.0009	0.0005

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 9

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.40	(1.399)	34130.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.887	(0.2119)	6848.07	20.065
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.53096	(1.25759)	27337.377	80.09763
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.013	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
ERAL DRAINAGE COLLECTED ROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.015	(0.0829)	-55.38	-0.162

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 9

	(INCHES)	(CU. FT.)
PRECIPITATION	1.21	4392.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.68906	2501.27344
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00030
AVERAGE HEAD ACROSS LAYER 4	0.028	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0904
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0543

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FINAL WATER STORAGE AT END OF YEAR 9

LAYER	(INCHES)	(VOL/VOL)
1	1.5654	0.0652
2	0.0022	0.0109
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	311.6160	0.2164
7	2.5200	0.1050
8	0.5400	0.0450
9	0.0000	0.0000
10	0.5400	0.0450
11	0.0000	0.0000
12	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\gandyin.D4
TEMPERATURE DATA FILE:       C:\HELP3\gandyin.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\gandyin.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\gandyin.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS01.D10
OUTPUT DATA FILE:            C:\HELP3\GS01.OUT


TIME:  19: 8     DATE:   2/ 4/1996


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    TITLE:  Gandy Landfill  - MTR - Side Slope (0-1yrs)

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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   7
         THICKNESS                    =     60.00   INCHES
         POROSITY                     =      0.4730 VOL/VOL
         FIELD CAPACITY               =      0.2220 VOL/VOL
         WILTING POINT                =      0.1040 VOL/VOL
         INITIAL SOIL WATER CONTENT   =      0.2055 VOL/VOL
         EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC
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                         LAYER  2
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          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                         LAYER  3
                         --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER  4
                         --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
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                         LAYER  5
                         --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER  6
                         --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER  7
                         --------

              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 316. FEET.

SCS RUNOFF CURVE NUMBER	=	88.20	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.877	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	31.501	INCHES
TOTAL INITIAL WATER	=	31.501	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.284	0.235	0.234	0.213	0.205	0.183
	0.206	2.615	3.145	0.044	0.319	0.312
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000

	0.000	0.000	0.000	0.000	0.000	0.000

LATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.996	(0.0000)	29026.04	91.910
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
RCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.704	(0.0000)	2554.95	8.090

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.3170
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0969

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)	
1	12.5490	0.2092	0.2055
2	2.5560	0.1065	0.0963
3	0.5400	0.0450	
4	0.0000	0.0000	
5	0.5400	0.0450	
6	0.0000	0.0000	
7	16.0200	0.4450	
SNOW WATER	0.000		

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\gandyin.D4
TEMPERATURE DATA FILE:       C:\HELP3\gandyin.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\gandyin.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\gandyin.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS25.D10
OUTPUT DATA FILE:            C:\HELP3\GS25.OUT


TIME:   9:27     DATE:   2/ 5/1996


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     TITLE:  Gandy Landfill  - MTR - Side Slope (2-5yrs)

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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   7
          THICKNESS                  =    840.00   INCHES
          POROSITY                   =      0.4730 VOL/VOL
          FIELD CAPACITY             =      0.2220 VOL/VOL
          WILTING POINT              =      0.1040 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.2092 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
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LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1065	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	33.00	PERCENT
DRAINAGE LENGTH	=	316.0	FEET

LAYER 4

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

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                         LAYER  5
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            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER  6
                         --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER  7
                         --------

              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.929	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	195.384	INCHES
TOTAL INITIAL WATER	=	195.384	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.[illegible]	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.19	0.16	0.28	0.33	0.58	0.56
	1.81	2.26	1.48	0.61	0.96	0.42
STD. DEVIATIONS	0.22	0.04	0.30	0.18	0.69	0.87
	0.81	1.23	1.13	0.94	1.13	0.35
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.210	0.225	0.222	0.177	0.545	0.696
	1.264	2.202	1.439	0.741	0.669	0.522
STD. DEVIATIONS	0.129	0.094	0.163	0.064	0.422	1.035

	1.527	1.172	1.154	0.711	0.554	0.424

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004
	0.0005	0.0005	0.0005	0.0008	0.0008	0.0008
STD. DEVIATIONS	0.0008	0.0007	0.0008	0.0007	0.0008	0.0007
	0.0007	0.0007	0.0007	0.0009	0.0009	0.0009

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
STD. DEVIATIONS	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
STD. DEVIATIONS	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005
STD. DEVIATIONS	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004
	0.0004	0.0004	0.0004	0.0006	0.0006	0.0005

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002

MTR - slope

STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 4

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.819)	35056.7	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	8.910	(1.5976)	32343.24	92.260
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00628	(0.00841)	22.797	0.06503
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00272	(0.00353)	9.873	0.02816
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00272	(0.00350)	9.868	0.02815
RCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.006	0.00002
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.739	(1.0400)	2680.79	7.647

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 4

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00006	0.21172
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000023	0.08490
AVERAGE HEAD ACROSS LAYER 4	0.001	
DRAINAGE COLLECTED FROM LAYER 5	0.00002	0.08433
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00003
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.3170
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0969

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FINAL WATER STORAGE AT END OF YEAR 4

LAYER	(INCHES)	(VOL/VOL)
1	178.7180	0.2128
2	2.5200	0.1050
3	0.5400	0.0450
4	0.0000	0.0000
5	0.5400	0.0450
6	0.0000	0.0000
7	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\gandyin.D4
TEMPERATURE DATA FILE:       C:\HELP3\gandyin.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\gandyin.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\gandyin.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS610.D10
OUTPUT DATA FILE:            C:\HELP3\GS610.OUT


TIME:   9:31     DATE:   2/ 5/1996


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    TITLE:  Gandy Landfill  - MTR - Side Slope (6-10yrs)

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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   7
        THICKNESS                   =   1080.00   INCHES
        POROSITY                    =      0.4730 VOL/VOL
        FIELD CAPACITY              =      0.2220 VOL/VOL
        WILTING POINT               =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.2128 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.520000001000E-03 CM/SEC
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                        LAYER  2
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                        LAYER  3
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                        LAYER  4
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
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                    LAYER  5
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          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.979	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	249.444	INCHES
TOTAL INITIAL WATER	=	249.444	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.17	0.29	0.26	0.78	0.63
	1.66	1.91	1.64	0.79	0.84	0.49
STD. DEVIATIONS	0.19	0.04	0.26	0.21	0.74	0.77
	0.78	1.32	1.04	0.91	1.02	0.34
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.219	0.227	0.220	0.174	0.475	0.771
	1.204	1.856	1.550	0.940	0.632	0.611
STD. DEVIATIONS	0.114	0.082	0.141	0.056	0.397	0.912

	1.330	1.275	1.030	0.760	0.487	0.418

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.710)	35073.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	8.880	(1.3852)	32234.15	91.906
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.782	(0.9053)	2838.88	8.094

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.3170

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0969

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FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	233.7343	0.2164
2	2.5200	0.1050
3	0.5400	0.0450
4	0.0000	0.0000
5	0.5400	0.0450
6	0.0000	0.0000
7	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\GANDYIN.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDYIN.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDYIN.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDYIN.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS1011.D10
OUTPUT DATA FILE:            C:\HELP3\GS1011.OUT


TIME:  10:34     DATE:   2/ 5/1996


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    TITLE:  Gandy Landfill  - MTR - Side Slope (10-11yrs)

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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   4
          THICKNESS                  =     24.00   INCHES
          POROSITY                   =      0.4370 VOL/VOL
          FIELD CAPACITY             =      0.1050 VOL/VOL
          WILTING POINT              =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.170000002000E-02 CM/SEC
```

```
                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     25.00   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

```
                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
```

```
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                        LAYER  9
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                        LAYER 11
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

LAYER 12

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

```
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 25.% AND A SLOPE LENGTH OF 550. FEET.

```
SCS RUNOFF CURVE NUMBER              =     81.80
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
EVAPORATIVE ZONE DEPTH               =     14.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      1.208  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =      6.118  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      0.658  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =    351.400  INCHES
TOTAL INITIAL WATER                  =    351.400  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.263	0.194	0.185	0.017	0.002	0.000
	0.011	0.121	0.439	0.006	0.031	0.005
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
'ATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0000	0.0000	0.0000	0.0482	0.0645	0.0479
	0.3671	2.6005	2.6553	0.2655	0.9331	0.2652
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

ERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0005	0.0035	0.0036	0.0004	0.0013	0.0004
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.273	(0.0000)	4622.42	14.637
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.24728	(0.00000)	26307.623	83.30206
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.010	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.179	(0.0000)	650.94	2.061

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.51797	1880.22473
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00024
AVERAGE HEAD ACROSS LAYER 4	0.021	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.0863

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0404

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)	
1	2.2503	0.0938	
2	0.0022	0.0110	
3	0.0000	0.0000	
4	16.0200	0.4450	
5	2.0712	0.0863	
6	311.6160	0.2164	0.3164
7	2.5200	0.1050	
8	0.5400	0.0450	
9	0.0000	0.0000	
10	0.5400	0.0450	
11	0.0000	0.0000	
12	16.0200	0.4450	
SNOW WATER	0.000		

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**                                                                          **
                                                                            **
                HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
                 HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     C:\HELP3\GANIN2.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANIN2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANIN2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANIN2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS1231.D10
OUTPUT DATA FILE:            C:\HELP3\GS1231.OUT


TIME:  10:42     DATE:   2/ 5/1996


******************************************************************************

     TITLE:  Gandy Landfill  - MTR - Side Slope (12-31yrs)

   ****************************************************************************


     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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0938 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0110	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

```
                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------
```

```
              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                        LAYER  9
                        --------

              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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                        LAYER 11
                        --------
```

```
                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          =      0.50   HOLES/ACRE
    FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
    FML PLACEMENT QUALITY        =  3 - GOOD


                          LAYER 12
                          --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =     36.00   INCHES
    POROSITY                     =      0.4450 VOL/VOL
    FIELD CAPACITY               =      0.3930 VOL/VOL
    WILTING POINT                =      0.2770 VOL/VOL
    INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC


            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
           POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  550. FEET.

  SCS RUNOFF CURVE NUMBER              =     74.90
  FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
  EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE    =      2.251  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
  INITIAL SNOW WATER                   =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS     =    351.581  INCHES
  TOTAL INITIAL WATER                  =    351.581  INCHES
  TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.23	0.30	0.25	0.30	0.59	0.73
	1.41	1.68	1.44	1.26	0.52	0.35
STD. DEVIATIONS	0.23	0.20	0.25	0.36	0.64	0.60
	0.70	0.97	0.90	1.11	0.64	0.26
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.095	0.068	0.050	0.052	0.137	0.202
	0.364	0.353	0.232	0.153	0.067	0.067
STD. DEVIATIONS	0.190	0.064	0.049	0.041	0.158	0.150
	0.169	0.205	0.125	0.118	0.077	0.052
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.2128	0.1741	0.2379	0.2309	0.4466	0.5109
	0.9797	1.3074	1.2152	1.1417	0.4980	0.2818
STD. DEVIATIONS	0.1680	0.1227	0.1878	0.2978	0.4705	0.4642
	0.5890	0.7558	0.7576	0.9659	0.5110	0.2688
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0006	0.0007
	0.0013	0.0017	0.0017	0.0015	0.0007	0.0004
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0004	0.0006	0.0006
	0.0008	0.0010	0.0010	0.0013	0.0007	0.0004

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.05	(1.776)	32847.9	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.840	(0.3915)	6677.76	20.329
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.23687	(1.51619)	26269.826	79.97421
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.012	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
TERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.027	(0.1840)	-99.72	-0.304

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.41	5118.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.84635	3072.26587
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00035
AVERAGE HEAD ACROSS LAYER 4	0.035	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0942
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0554

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.7006	0.0709
2	0.0033	0.0166
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0713	0.0863
6	311.6160	0.2164
7	2.5200	0.1050
8	0.5400	0.0450
9	0.0000	0.0000
10	0.5400	0.0450
11	0.0000	0.0000
12	16.0200	0.4450
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     C:\HELP3\GANIN2.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANIN2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANIN2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANIN2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\GS3240.D10
OUTPUT DATA FILE:            C:\HELP3\GS3240.OUT


TIME:  10:10     DATE:   2/ 5/1996


******************************************************************************

     TITLE:  Gandy Landfill  - MTR - Side Slope (32-40yrs)

   ****************************************************************************


     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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0709 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0166	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2164 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
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                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER  9
                         --------

                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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER 10
                         --------

                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER 11
                         --------
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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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 12
                        --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC


          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
         POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
         AND A SLOPE LENGTH OF  550. FEET.

SCS RUNOFF CURVE NUMBER              =     74.90
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      1.702  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =    351.032  INCHES
TOTAL INITIAL WATER                  =    351.032  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.32	0.26	0.39	0.67	0.59
	1.41	1.86	1.37	1.12	0.81	0.42
STD. DEVIATIONS	0.15	0.20	0.25	0.45	0.62	0.64
	0.70	1.04	0.94	1.23	0.82	0.33
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.072	0.077	0.063	0.061	0.144	0.151
	0.366	0.393	0.241	0.135	0.102	0.081
STD. DEVIATIONS	0.088	0.054	0.059	0.047	0.115	0.145
	0.180	0.244	0.157	0.126	0.097	0.061
ATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.1688	0.1836	0.2412	0.2924	0.5048	0.4614
	0.9435	1.4550	1.1491	1.0118	0.7449	0.3745
STD. DEVIATIONS	0.1148	0.1093	0.1638	0.3951	0.4602	0.5086
	0.5944	0.8523	0.7558	1.0200	0.6208	0.3415
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0002	0.0003	0.0003	0.0004	0.0007	0.0006
	0.0013	0.0019	0.0016	0.0013	0.0010	0.0005
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0005	0.0006	0.0007
	0.0008	0.0011	0.0010	0.0014	0.0009	0.0005

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 9

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.40	(1.399)	34130.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.887	(0.2119)	6848.07	20.065
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.53096	(1.25759)	27337.377	80.09763
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.013	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
ERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.015	(0.0829)	-55.38	-0.162

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 9

	(INCHES)	(CU. FT.)
PRECIPITATION	1.21	4392.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.68906	2501.27344
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00030
AVERAGE HEAD ACROSS LAYER 4	0.028	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0904
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0543

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\GANDY1.D4
TEMPERATURE DATA FILE:       C:\HELP3\GANDY1.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\GANDY1.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\GANDY1.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\FLYR01.D10
OUTPUT DATA FILE:            C:\HELP3\flyr01.OUT


TIME:  13:32     DATE:   2/ 4/1996


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    TITLE:  gandy alternative 2, year 0-1, floor

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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   7
          THICKNESS                    =     60.00   INCHES
          POROSITY                     =      0.4730 VOL/VOL
          FIELD CAPACITY               =      0.2220 VOL/VOL
          WILTING POINT                =      0.1040 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.2055 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC
```

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0863	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	2.30	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 4

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	2.30	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 6

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 7

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24	INCHES
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.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.877	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	14.585	INCHES
TOTAL INITIAL WATER	=	14.585	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.284	0.233	0.233	0.211	0.205	0.183
	0.205	2.616	2.290	0.055	0.405	0.330
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000

	0.000	0.000	0.000	0.000	0.000	0.000

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
	7.996		29036.21	91.91
EVAPOTRANSPIRATION	7.249	(0.0000)	26312.67	83.318
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	1.451	(0.0000)	5268.33	16.682

M.T.R.
G-M

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2510
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0948

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)
1	12.4790	0.2080
2	3.3735	0.1406
3	0.0020	0.0100
4	0.0000	0.0000
5	0.0020	0.0100
6	0.0000	0.0000
7	0.1800	0.7500
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     a:\GANDY1.D4
TEMPERATURE DATA FILE:       a:\GANDY1.D7
SOLAR RADIATION DATA FILE:   a:\GANDY1.D13
EVAPOTRANSPIRATION DATA:     a:\GANDY1.D11
SOIL AND DESIGN DATA FILE:   a:\FLYR15.D10
OUTPUT DATA FILE:            a:\flyr15.OUT


TIME:  13:37     DATE:   2/ 4/1996


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     TITLE:  gandy alternative 2, year 1-5, floor

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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   7
          THICKNESS                  =    840.00   INCHES
          POROSITY                   =      0.4730 VOL/VOL
          FIELD CAPACITY             =      0.2220 VOL/VOL
          WILTING POINT              =      0.1040 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.2080 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
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                        LAYER  2
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1406 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                        LAYER  3
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  4
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
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                    LAYER  5
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          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

           TYPE 3 - BARRIER SOIL LINER
           MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.912	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	178.278	INCHES
TOTAL INITIAL WATER	=	178.278	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.19	0.16	0.28	0.33	0.58	0.56
	1.81	2.26	1.48	0.61	0.96	0.42
STD. DEVIATIONS	0.22	0.04	0.30	0.18	0.69	0.87
	0.81	1.23	1.13	0.94	1.13	0.35
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.175	0.191	0.186	0.180	0.333	0.546
	1.094	2.022	1.154	0.573	0.559	0.282
STD. DEVIATIONS	0.134	0.065	0.114	0.068	0.275	0.737

	1.248	1.270	0.587	0.625	0.606	0.142

LATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0010	0.0015	0.0019	0.0019	0.0019	0.0016
	0.0015	0.0013	0.0012	0.0011	0.0009	0.0009
STD. DEVIATIONS	0.0007	0.0015	0.0023	0.0024	0.0024	0.0021
	0.0019	0.0016	0.0014	0.0012	0.0010	0.0009

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0114	0.0127	0.0148	0.0142	0.0142	0.0132
	0.0129	0.0123	0.0113	0.0111	0.0103	0.0102
STD. DEVIATIONS	0.0043	0.0070	0.0097	0.0099	0.0100	0.0091
	0.0087	0.0080	0.0071	0.0068	0.0061	0.0058

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0113	0.0127	0.0148	0.0142	0.0142	0.0132
	0.0129	0.0123	0.0113	0.0111	0.0103	0.0102
STD. DEVIATIONS	0.0043	0.0069	0.0097	0.0099	0.0100	0.0091
	0.0087	0.0080	0.0071	0.0068	0.0061	0.0058

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001

flyer - GM

STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 4

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.819)	35056.7	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.295	(0.8248)	26481.94	75.540
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.01666	(0.01903)	60.469	0.17249
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.14862	(0.08970)	539.506	1.53895
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.14861	(0.08960)	539.444	1.53877
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.009	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	2.197	(0.3737)	7974.87	22.748

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 4

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00018	0.66923
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000942	3.42011
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00094	3.42008
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00003
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2932
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0936

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FINAL WATER STORAGE AT END OF YEAR 4

LAYER	(INCHES)	(VOL/VOL)
1	184.1688	0.2192
2	2.7133	0.1131
3	0.0020	0.0100
4	0.0000	0.0000
5	0.0021	0.0103
6	0.0000	0.0000
7	0.1800	0.7500
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\602\in\GANDY1.D4
TEMPERATURE DATA FILE:       C:\HELP3\602\in\GANDY1.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\602\in\GANDY1.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\602\in\GANDY1.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\602\in\FLYR510.D10
OUTPUT DATA FILE:            C:\HELP3\602\out\flyr510.OUT


TIME:  14:15     DATE:   2/ 4/1996


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    TITLE:  gandy alternative 2, year 5-10, floor

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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   7
        THICKNESS                  =   1080.00   INCHES
        POROSITY                   =      0.4730 VOL/VOL
        FIELD CAPACITY             =      0.2220 VOL/VOL
        WILTING POINT              =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT =      0.2192 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
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                    LAYER  2
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1131 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  3
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  4
                    --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
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                        LAYER  5
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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   =      0.0103 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  6
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER  7
                        --------

              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	87.90	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.069	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	239.634	INCHES
TOTAL INITIAL WATER	=	239.634	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.17	0.29	0.26	0.78	0.63
	1.66	1.91	1.64	0.79	0.84	0.49
STD. DEVIATIONS	0.19	0.04	0.26	0.21	0.74	0.77
	0.78	1.32	1.04	0.91	1.02	0.34
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.163	0.159	0.149	0.118	0.328	0.697
	1.019	1.717	1.276	0.622	0.448	0.363
STD. DEVIATIONS	0.119	0.072	0.096	0.085	0.316	0.764

	1.175	1.383	0.807	0.619	0.573	0.223

LATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0053	0.0080	0.0050	0.0017	0.0062	0.0108
	0.0200	0.0203	0.0271	0.0174	0.0111	0.0136
STD. DEVIATIONS	0.0076	0.0110	0.0074	0.0030	0.0103	0.0183
	0.0304	0.0334	0.0433	0.0295	0.0115	0.0169

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0163	0.0206	0.0149	0.0069	0.0179	0.0249
	0.0344	0.0332	0.0403	0.0311	0.0296	0.0312
STD. DEVIATIONS	0.0199	0.0272	0.0183	0.0098	0.0222	0.0315
	0.0419	0.0456	0.0526	0.0410	0.0268	0.0343

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0163	0.0207	0.0151	0.0068	0.0179	0.0248
	0.0344	0.0331	0.0403	0.0310	0.0297	0.0311
STD. DEVIATIONS	0.0199	0.0274	0.0185	0.0095	0.0225	0.0314
	0.0418	0.0456	0.0526	0.0410	0.0269	0.0342

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0001	0.0001	0.0001	0.0000	0.0001	0.0002
	0.0003	0.0003	0.0004	0.0002	0.0002	0.0002
STD. DEVIATIONS	0.0001	0.0002	0.0001	0.0000	0.0001	0.0003
	0.0004	0.0005	0.0006	0.0004	0.0002	0.0002

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0002	0.0003	0.0002	0.0001	0.0002	0.0003
	0.0005	0.0005	0.0006	0.0004	0.0004	0.0004

STD. DEVIATIONS	0.0003	0.0004	0.0003	0.0001	0.0003	0.0004
	0.0006	0.0006	0.0007	0.0006	0.0004	0.0005

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.710)	35073.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.058	(0.6272)	25621.33	73.051
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.14655	(0.20260)	531.967	1.51674
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.30137	(0.34103)	1093.963	3.11910
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.30120	(0.34079)	1093.367	3.11740
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.008	0.00002
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	2.156	(0.4846)	7826.40	22.315

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00451	16.37768
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.004662	16.92473
AVERAGE HEAD ACROSS LAYER 4	0.002	
DRAINAGE COLLECTED FROM LAYER 5	0.00449	16.30823
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00003
AVERAGE HEAD ACROSS LAYER 7	0.002	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2317

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0935

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FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	246.6580	0.2284
2	3.5712	0.1488
3	0.0024	0.0122
4	0.0000	0.0000
5	0.0029	0.0144
6	0.0000	0.0000
7	0.1800	0.7500
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**             HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                  **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                     **
**                  USAE WATERWAYS EXPERIMENT STATION                       **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:      C:\HELP3\602\in\GANDY1.D4
TEMPERATURE DATA FILE:        C:\HELP3\602\in\GANDY1.D7
SOLAR RADIATION DATA FILE:    C:\HELP3\602\in\GANDY1.D13
EVAPOTRANSPIRATION DATA:      C:\HELP3\602\in\GANDY1.D11
SOIL AND DESIGN DATA FILE:    C:\HELP3\602\in\FLYR1011.D10
OUTPUT DATA FILE:             C:\HELP3\602\out\FLYR1011.OUT


TIME:  14:56     DATE:   2/ 4/1996


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  TITLE:  gandy alternative 2, year 10-11, floor

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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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
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                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     25.00   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

          TYPE 3 - BARRIER SOIL LINER
          MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2284 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1488 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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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   =      0.0122 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  9
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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   =      0.0144 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER 11
                        --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

LAYER 12

```
TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

```
NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
       SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE
       GROUND CONDITIONS, A SURFACE SLOPE OF 25.% AND
       A SLOPE LENGTH OF  550. FEET.

SCS RUNOFF CURVE NUMBER              =    81.80
FRACTION OF AREA ALLOWING RUNOFF     =   100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =     1.000  ACRES
EVAPORATIVE ZONE DEPTH               =    14.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =     1.208  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =     6.118  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =     0.658  INCHES
INITIAL SNOW WATER                   =     0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =   352.817  INCHES
TOTAL INITIAL WATER                  =   352.817  INCHES
TOTAL SUBSURFACE INFLOW              =     0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.263	0.194	0.185	0.017	0.002	0.000
	0.011	0.121	0.439	0.006	0.031	0.005
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0000	0.0000	0.0000	0.0482	0.0645	0.0479
	0.3671	2.6005	2.6553	0.2655	0.9331	0.2652
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0120	0.0183	0.0019	0.0031	0.0450	0.0788
	0.0893	0.0899	0.0863	0.0883	0.0846	0.0865
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0305	0.0487	0.0086	0.0077	0.0796	0.1066
	0.1155	0.1159	0.1117	0.1149	0.1106	0.1137
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0309	0.0487	0.0090	0.0072	0.0789	0.1065
	0.1155	0.1159	0.1117	0.1149	0.1106	0.1137
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0005	0.0035	0.0036	0.0004	0.0013	0.0004
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0002	0.0003	0.0000	0.0001	0.0006	0.0011
	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0004	0.0007	0.0001	0.0001	0.0011	0.0015
	0.0016	0.0016	0.0016	0.0016	0.0016	0.0015

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.273	(0.0000)	4622.42	14.637
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.24728	(0.00000)	26307.623	83.30206
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.010	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	0.68398	(0.00000)	2482.858	7.86187
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.96380	(0.00000)	3498.588	11.07814
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.96338	(0.00000)	3497.067	11.07333
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.008	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.001	(0.000)		
CHANGE IN WATER STORAGE	-1.468	(0.0000)	-5329.13	-16.874

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.51797	1880.22473
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00024
AVERAGE HEAD ACROSS LAYER 4	0.021	
DRAINAGE COLLECTED FROM LAYER 8	0.00290	10.54387
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.003741	13.58022
AVERAGE HEAD ACROSS LAYER 9	0.001	
DRAINAGE COLLECTED FROM LAYER 10	0.00374	13.58016
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00003
AVERAGE HEAD ACROSS LAYER 12	0.002	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.0863

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0404

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)
1	2.2503	0.0938
2	0.0022	0.0110
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	326.7110	0.2269
7	4.1079	0.1712
8	0.0030	0.0149
9	0.0000	0.0000
10	0.0033	0.0165
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     C:\HELP3\602\in\GANDY2.D4
TEMPERATURE DATA FILE:       C:\HELP3\602\in\GANDY2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\602\in\GANDY2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\602\in\GANDY2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\602\in\FLYR1131.D10
OUTPUT DATA FILE:            C:\HELP3\602\out\FLYR1131.OUT


TIME:  17: 4     DATE:   2/ 4/1996


******************************************************************************

    TITLE:  gandy alternative 2, year 11-31, floor

******************************************************************************


    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   4
        THICKNESS                   =     24.00   INCHES
        POROSITY                    =      0.4370 VOL/VOL
        FIELD CAPACITY              =      0.1050 VOL/VOL
        WILTING POINT               =      0.0470 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.0938 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0110	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2269 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1712 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------
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```
              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER  20
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   =      0.0149 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  9
                        --------

              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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER  20
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   =      0.0165 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER 11
                        --------
```

```
                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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                          LAYER 12
                          --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC


          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
          POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
          AND A SLOPE LENGTH OF  550. FEET.

SCS RUNOFF CURVE NUMBER              =    74.90
FRACTION OF AREA ALLOWING RUNOFF     =   100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =     1.000  ACRES
EVAPORATIVE ZONE DEPTH               =    24.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =     2.251  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =    10.488  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =     1.128  INCHES
INITIAL SNOW WATER                   =     0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =   351.376  INCHES
TOTAL INITIAL WATER                  =   351.376  INCHES
TOTAL SUBSURFACE INFLOW              =     0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.23	0.30	0.25	0.30	0.59	0.73
	1.41	1.68	1.44	1.26	0.52	0.35
STD. DEVIATIONS	0.23	0.20	0.25	0.36	0.64	0.60
	0.70	0.97	0.90	1.11	0.64	0.26
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.095	0.068	0.050	0.052	0.137	0.202
	0.364	0.353	0.232	0.153	0.067	0.067
STD. DEVIATIONS	0.190	0.064	0.049	0.041	0.158	0.150
	0.169	0.205	0.125	0.118	0.077	0.052
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.2128	0.1741	0.2379	0.2309	0.4466	0.5109
	0.9797	1.3074	1.2152	1.1417	0.4980	0.2818
STD. DEVIATIONS	0.1680	0.1227	0.1878	0.2978	0.4705	0.4642
	0.5890	0.7558	0.7576	0.9659	0.5110	0.2688
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0166	0.0141	0.0126	0.0122	0.0139	0.0140
	0.0139	0.0162	0.0144	0.0132	0.0120	0.0118

STD. DEVIATIONS	0.0321	0.0273	0.0249	0.0240	0.0266	0.0271
	0.0275	0.0322	0.0283	0.0266	0.0250	0.0254

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0258	0.0225	0.0220	0.0211	0.0228	0.0223
	0.0223	0.0241	0.0224	0.0217	0.0201	0.0201
STD. DEVIATIONS	0.0430	0.0377	0.0372	0.0361	0.0393	0.0391
	0.0394	0.0431	0.0400	0.0390	0.0366	0.0371

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0258	0.0225	0.0220	0.0211	0.0228	0.0223
	0.0223	0.0240	0.0224	0.0217	0.0201	0.0202
STD. DEVIATIONS	0.0430	0.0378	0.0372	0.0361	0.0393	0.0391
	0.0395	0.0430	0.0401	0.0391	0.0366	0.0371

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0006	0.0007
	0.0013	0.0017	0.0017	0.0015	0.0007	0.0004
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0004	0.0006	0.0006
	0.0008	0.0010	0.0010	0.0013	0.0007	0.0004

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
STD. DEVIATIONS	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004
	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
STD. DEVIATIONS	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005
	0.0005	0.0006	0.0006	0.0005	0.0005	0.0005

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.05	(1.776)	32847.9	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.840	(0.3915)	6677.76	20.329
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.23687	(1.51619)	26269.826	79.97421
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.012	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
TERAL DRAINAGE COLLECTED FROM LAYER 8	0.16506	(0.31953)	599.169	1.82407
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.26723	(0.46361)	970.043	2.95314
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.26729	(0.46368)	970.273	2.95384
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.006	0.00002
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.001)		
CHANGE IN WATER STORAGE	-0.460	(0.8694)	-1669.16	-5.081

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.41	5118.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.84635	3072.26587
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00035
AVERAGE HEAD ACROSS LAYER 4	0.035	
DRAINAGE COLLECTED FROM LAYER 8	0.00459	16.65179
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.004702	17.06832
AVERAGE HEAD ACROSS LAYER 9	0.002	
DRAINAGE COLLECTED FROM LAYER 10	0.00470	17.06759
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00003
AVERAGE HEAD ACROSS LAYER 12	0.002	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0942
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0554

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.7006	0.0709
2	0.0033	0.0166
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0713	0.0863
6	319.6800	0.2220
7	2.5200	0.1050
8	0.0020	0.0100
9	0.0000	0.0000
10	0.0020	0.0100
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\602\in\GANDY2.D4
TEMPERATURE DATA FILE:       C:\HELP3\602\in\GANDY2.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\602\in\GANDY2.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\602\in\GANDY2.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\602\in\FLYR3140.D10
OUTPUT DATA FILE:            C:\HELP3\602\out\FLYR3140.OUT


TIME:  17:53     DATE:   2/ 4/1996


******************************************************************************

    TITLE:  gandy alternative 2, year 31-40, floor

******************************************************************************


     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   4
          THICKNESS                   =     24.00   INCHES
          POROSITY                    =      0.4370 VOL/VOL
          FIELD CAPACITY              =      0.1050 VOL/VOL
          WILTING POINT               =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0709 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0166	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2220 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
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              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER  9
                        --------

              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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER 10
                        --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                        LAYER 11
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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          =      0.50   HOLES/ACRE
   FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
   FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER 12
                         --------

                TYPE 3 - BARRIER SOIL LINER
                  MATERIAL TEXTURE NUMBER  17
   THICKNESS                    =      0.24   INCHES
   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.    =  0.300000003000E-08 CM/SEC


          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
           POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  550. FEET.

 SCS RUNOFF CURVE NUMBER              =     74.90
 FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
 EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE    =      1.702  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
 INITIAL SNOW WATER                   =      0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS     =    342.180  INCHES
 TOTAL INITIAL WATER                  =    342.180  INCHES
 TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.32	0.26	0.39	0.67	0.59
	1.41	1.86	1.37	1.12	0.81	0.42
STD. DEVIATIONS	0.15	0.20	0.25	0.45	0.62	0.64
	0.70	1.04	0.94	1.23	0.82	0.33
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.072	0.077	0.063	0.061	0.144	0.151
	0.366	0.393	0.241	0.135	0.102	0.081
STD. DEVIATIONS	0.088	0.054	0.059	0.047	0.115	0.145
	0.180	0.244	0.157	0.126	0.097	0.061
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.1688	0.1836	0.2412	0.2924	0.5048	0.4614
	0.9435	1.4550	1.1491	1.0118	0.7449	0.3745
STD. DEVIATIONS	0.1148	0.1093	0.1638	0.3951	0.4602	0.5086
	0.5944	0.8523	0.7558	1.0200	0.6208	0.3415
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0002	0.0003	0.0003	0.0004	0.0007	0.0006
	0.0013	0.0019	0.0016	0.0013	0.0010	0.0005
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0005	0.0006	0.0007
	0.0008	0.0011	0.0010	0.0014	0.0009	0.0005

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 9

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.40	(1.399)	34130.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.887	(0.2119)	6848.07	20.065
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.53096	(1.25759)	27337.377	80.09763
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.013	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.015	(0.0829)	-55.38	-0.162

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 9

	(INCHES)	(CU. FT.)
PRECIPITATION	1.21	4392.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.68906	2501.27344
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00030
AVERAGE HEAD ACROSS LAYER 4	0.028	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00003
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00170
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00109
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00002
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.0904

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0543

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FINAL WATER STORAGE AT END OF YEAR 9

LAYER	(INCHES)	(VOL/VOL)
1	1.5654	0.0652
2	0.0022	0.0109
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	319.6800	0.2220
7	2.5200	0.1050
8	0.0020	0.0100
9	0.0000	0.0000
10	0.0020	0.0100
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**              HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                 **
**              DEVELOPED BY ENVIRONMENTAL LABORATORY                       **
**              USAE WATERWAYS EXPERIMENT STATION                           **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:      a:\GANDY1.D4
TEMPERATURE DATA FILE:        a:\GANDY1.D7
SOLAR RADIATION DATA FILE:    a:\GANDY1.D13
EVAPOTRANSPIRATION DATA:      a:\GANDY1.D11
SOIL AND DESIGN DATA FILE:    a:\SLYR01.D10
OUTPUT DATA FILE:             a:\slyr01.OUT


TIME:  15:18     DATE:   2/ 4/1996


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    TITLE:  gandy alternative 2, year 0-1, slope

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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   7
        THICKNESS                   =     60.00   INCHES
        POROSITY                    =      0.4730 VOL/VOL
        FIELD CAPACITY              =      0.2220 VOL/VOL
        WILTING POINT               =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.2055 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.520000001000E-03 CM/SEC
```

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0863	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	33.00	PERCENT
DRAINAGE LENGTH	=	316.0	FEET

LAYER 4

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

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                    LAYER  5
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          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 33.% AND A SLOPE LENGTH OF 316. FEET.

SCS RUNOFF CURVE NUMBER	=	89.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.877	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	14.585	INCHES
TOTAL INITIAL WATER	=	14.585	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.284	0.233	0.233	0.211	0.205	0.183
	0.205	2.616	2.290	0.055	0.405	0.330
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000

	0.000	0.000	0.000	0.000	0.000	0.000

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
	7.906		28026.04	91.91
EVAPOTRANSPIRATION	7.249	(0.0000)	26312.67	83.318
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
	2.704		[illegible]	8.556
CHANGE IN WATER STORAGE	1.451	(0.0000)	5268.33	16.682

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2510
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0948

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)	
1	12.4790	0.2080	0.2655
2	3.3735	0.1406	[illegible]
3	0.0020	0.0100	
4	0.0000	0.0000	
5	0.0020	0.0100	
6	0.0000	0.0000	
7	0.1800	0.7500	
SNOW WATER	0.000		

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     a:\GANDY1.D4
TEMPERATURE DATA FILE:       a:\GANDY1.D7
SOLAR RADIATION DATA FILE:   a:\GANDY1.D13
EVAPOTRANSPIRATION DATA:     a:\GANDY1.D11
SOIL AND DESIGN DATA FILE:   a:\SLYR15.D10
OUTPUT DATA FILE:            a:\SLYR15.OUT


TIME:  15:26     DATE:   2/ 4/1996


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    TITLE:  gandy alternative 2, year 1-5, slope

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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   7
        THICKNESS                  =    840.00   INCHES
        POROSITY                   =      0.4730 VOL/VOL
        FIELD CAPACITY             =      0.2220 VOL/VOL
        WILTING POINT              =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT =      0.2080 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
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                    LAYER  2
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          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1406 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  3
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  4
                    --------

            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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
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                    LAYER  5
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          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 33.% AND A SLOPE LENGTH OF 316. FEET.

SCS RUNOFF CURVE NUMBER	=	89.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.912	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	178.278	INCHES
TOTAL INITIAL WATER	=	178.278	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.19	0.16	0.28	0.33	0.58	0.56
	1.81	2.26	1.48	0.61	0.96	0.42
STD. DEVIATIONS	0.22	0.04	0.30	0.18	0.69	0.87
	0.81	1.23	1.13	0.94	1.13	0.35
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.175	0.191	0.186	0.180	0.333	0.546
	1.094	2.022	1.154	0.573	0.559	0.282
STD. DEVIATIONS	0.134	0.065	0.114	0.068	0.275	0.737

	1.248	1.270	0.587	0.625	0.606	0.142

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0062	0.0078	0.0094	0.0091	0.0090	0.0081
	0.0078	0.0072	0.0065	0.0062	0.0056	0.0054
STD. DEVIATIONS	0.0033	0.0059	0.0086	0.0088	0.0088	0.0079
	0.0074	0.0067	0.0058	0.0054	0.0047	0.0044

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0062	0.0064	0.0073	0.0070	0.0071	0.0066
	0.0066	0.0064	0.0060	0.0060	0.0056	0.0056
STD. DEVIATIONS	0.0017	0.0026	0.0035	0.0035	0.0035	0.0033
	0.0032	0.0030	0.0027	0.0026	0.0024	0.0023

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0062	0.0064	0.0073	0.0070	0.0071	0.0066
	0.0066	0.0064	0.0060	0.0060	0.0056	0.0056
STD. DEVIATIONS	0.0017	0.0026	0.0035	0.0035	0.0035	0.0033
	0.0032	0.0030	0.0027	0.0026	0.0024	0.0023

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 4

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.819)	35056.7	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.295	(0.8248)	26481.94	75.540
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.08837	(0.07549)	320.778	0.91502
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.07691	(0.03325)	279.199	0.79642
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.07691	(0.03325)	279.197	0.79642
:COLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.002	0.00001
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	2.197	(0.3738)	7974.81	22.748

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 4

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00073	2.65448
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000395	1.43488
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00040	1.43488
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00001
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2932
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0936

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FINAL WATER STORAGE AT END OF YEAR 4

LAYER	(INCHES)	(VOL/VOL)
1	184.1688	0.2192
2	2.7133	0.1131
3	0.0020	0.0100
4	0.0000	0.0000
5	0.0020	0.0100
6	0.0000	0.0000
7	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**              HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                 **
**              DEVELOPED BY ENVIRONMENTAL LABORATORY                       **
**              USAE WATERWAYS EXPERIMENT STATION                           **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:      C:\HELP3\602\in\GANDY1.D4
TEMPERATURE DATA FILE:        C:\HELP3\602\in\GANDY1.D7
SOLAR RADIATION DATA FILE:    C:\HELP3\602\in\GANDY1.D13
EVAPOTRANSPIRATION DATA:      C:\HELP3\602\in\GANDY1.D11
SOIL AND DESIGN DATA FILE:    C:\HELP3\602\in\SLYR510.D10
OUTPUT DATA FILE:             C:\HELP3\602\out\SLYR510.OUT


TIME:  15:58     DATE:   2/ 5/1996


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    TITLE:  gandy alternative 2, year 5-10, slope

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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   7
        THICKNESS                  =   1080.00   INCHES
        POROSITY                   =      0.4730 VOL/VOL
        FIELD CAPACITY             =      0.2220 VOL/VOL
        WILTING POINT              =      0.1040 VOL/VOL
        INITIAL SOIL WATER CONTENT =      0.2192 VOL/VOL
        EFFECTIVE SAT. HYD. COND.  =  0.520000001000E-03 CM/SEC
```

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1131	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	33.00	PERCENT
DRAINAGE LENGTH	=	316.0	FEET

LAYER 4

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

```
                    LAYER  5
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  6
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  7
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER  17
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 7 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 33.% AND A SLOPE LENGTH OF 316. FEET.

SCS RUNOFF CURVE NUMBER	=	89.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.069	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.622	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.456	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	239.634	INCHES
TOTAL INITIAL WATER	=	239.634	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.17	0.29	0.26	0.78	0.63
	1.66	1.91	1.64	0.79	0.84	0.49
STD. DEVIATIONS	0.19	0.04	0.26	0.21	0.74	0.77
	0.78	1.32	1.04	0.91	1.02	0.34
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.163	0.159	0.149	0.118	0.328	0.697
	1.019	1.717	1.276	0.622	0.448	0.363
STD. DEVIATIONS	0.119	0.072	0.096	0.085	0.316	0.764

	1.175	1.383	0.807	0.619	0.573	0.223

ATERAL DRAINAGE COLLECTED FROM LAYER 3

TOTALS	0.0153	0.0213	0.0141	0.0056	0.0172	0.0269
	0.0431	0.0427	0.0547	0.0379	0.0300	0.0340
STD. DEVIATIONS	0.0203	0.0288	0.0193	0.0093	0.0251	0.0402
	0.0602	0.0654	0.0808	0.0585	0.0290	0.0404

PERCOLATION/LEAKAGE THROUGH LAYER 4

TOTALS	0.0064	0.0073	0.0058	0.0031	0.0069	0.0089
	0.0114	0.0108	0.0128	0.0105	0.0107	0.0108
STD. DEVIATIONS	0.0071	0.0093	0.0063	0.0037	0.0072	0.0098
	0.0123	0.0133	0.0149	0.0118	0.0091	0.0108

LATERAL DRAINAGE COLLECTED FROM LAYER 5

TOTALS	0.0064	0.0073	0.0058	0.0031	0.0069	0.0089
	0.0114	0.0108	0.0128	0.0105	0.0107	0.0108
STD. DEVIATIONS	0.0071	0.0093	0.0063	0.0037	0.0072	0.0098
	0.0123	0.0133	0.0149	0.0118	0.0091	0.0108

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.66	(0.710)	35073.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	7.058	(0.6272)	25621.33	73.051
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.34270	(0.43682)	1243.990	3.54685
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.10530	(0.10554)	382.231	1.08981
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.10530	(0.10554)	382.230	1.08981
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00000	(0.00000)	0.002	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	2.156	(0.4848)	7825.53	22.312

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****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.17	4247.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.00796	28.89790
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.001304	4.73336
AVERAGE HEAD ACROSS LAYER 4	0.000	
DRAINAGE COLLECTED FROM LAYER 5	0.00130	4.73336
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00001
AVERAGE HEAD ACROSS LAYER 7	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2317

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0935

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****

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)	
1	246.6580	0.2284	[illegible]
2	3.5712	0.1488	[illegible]
3	0.0020	0.0102	
4	0.0000	0.0000	
5	0.0020	0.0100	
6	0.0000	0.0000	
7	0.1800	0.7500	
SNOW WATER	0.000		

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     a:\GANDY1.D4
TEMPERATURE DATA FILE:       a:\GANDY1.D7
SOLAR RADIATION DATA FILE:   a:\GANDY1.D13
EVAPOTRANSPIRATION DATA:     a:\GANDY1.D11
SOIL AND DESIGN DATA FILE:   a:\SLYR1011.D10
OUTPUT DATA FILE:            a:\SLYR1011.OUT


TIME:  16: 5     DATE:   2/ 4/1996


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    TITLE:  gandy alternative 2, year 10-11, slope

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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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

```
                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     25.00   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     36.00   INCHES
POROSITY                     =      0.4450 VOL/VOL
FIELD CAPACITY               =      0.3930 VOL/VOL
WILTING POINT                =      0.2770 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

```
                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2284 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1488 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER  20
```

```
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   =      0.0102 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET
```

LAYER 9

```
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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

LAYER 10

```
TYPE 2 - LATERAL DRAINAGE LAYER
  MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET
```

LAYER 11

```
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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD
```

LAYER 12

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

```
THICKNESS                    =      0.24   INCHES
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.    =  0.300000003000E-08 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 25.% AND A SLOPE LENGTH OF 550. FEET.

```
SCS RUNOFF CURVE NUMBER              =    81.80
FRACTION OF AREA ALLOWING RUNOFF     =   100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =     1.000  ACRES
EVAPORATIVE ZONE DEPTH               =    14.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =     1.208  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =     6.118  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =     0.658  INCHES
INITIAL SNOW WATER                   =     0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =   352.816  INCHES
TOTAL INITIAL WATER                  =   352.816  INCHES
TOTAL SUBSURFACE INFLOW              =     0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.00	0.19	0.02	0.56	0.02	0.00
	1.03	2.57	2.89	0.42	0.89	0.11
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.263	0.194	0.185	0.017	0.002	0.000
	0.011	0.121	0.439	0.006	0.031	0.005
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
'ATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0000	0.0000	0.0000	0.0482	0.0645	0.0479
	0.3671	2.6005	2.6553	0.2655	0.9331	0.2652
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0388	0.0620	0.0096	0.0097	0.1187	0.1773
	0.1960	0.1969	0.1895	0.1943	0.1866	0.1914
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

:RCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0032	0.0047	0.0011	0.0011	0.0068	0.0083
	0.0088	0.0089	0.0086	0.0088	0.0085	0.0087
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0032	0.0047	0.0011	0.0011	0.0068	0.0083
	0.0088	0.0089	0.0086	0.0088	0.0085	0.0087
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

ıILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0005	0.0035	0.0036	0.0004	0.0013	0.0004
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0002	0.0004	0.0001	0.0001	0.0006	0.0009
	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

	INCHES		CU. FEET	PERCENT
PRECIPITATION	8.70	(0.000)	31581.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.273	(0.0000)	4622.42	14.637
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.24728	(0.00000)	26307.623	83.30206
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.010	0.00003
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	1.57089	(0.00000)	5702.313	18.05615
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.07748	(0.00000)	281.253	0.89058
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.001	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.07748	(0.00000)	281.253	0.89058
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.001	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-1.469	(0.0000)	-5332.78	-16.886

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	0.87	3158.100
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.51797	1880.22473
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00024
AVERAGE HEAD ACROSS LAYER 4	0.021	
DRAINAGE COLLECTED FROM LAYER 8	0.00636	23.08509
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000286	1.03899
AVERAGE HEAD ACROSS LAYER 9	0.001	
DRAINAGE COLLECTED FROM LAYER 10	0.00029	1.03899
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.00	0.0000

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.0863

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0404

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)
1	2.2503	0.0938
2	0.0022	0.0110
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	326.7110	0.2269
7	4.1079	0.1712
8	0.0020	0.0100
9	0.0000	0.0000
10	0.0020	0.0100
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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******************************************************************************


PRECIPITATION DATA FILE:      a:\GANDY2.D4
TEMPERATURE DATA FILE:        a:\GANDY2.D7
SOLAR RADIATION DATA FILE:    a:\GANDY2.D13
EVAPOTRANSPIRATION DATA:      a:\GANDY2.D11
SOIL AND DESIGN DATA FILE:    a:\SLYR1131.D10
OUTPUT DATA FILE:             a:\SLYR1131.OUT


TIME:  16:19     DATE:   2/ 4/1996


******************************************************************************

     TITLE:  gandy alternative 2, year 11-31, slope

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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   4
          THICKNESS                  =     24.00   INCHES
          POROSITY                   =      0.4370 VOL/VOL
          FIELD CAPACITY             =      0.1050 VOL/VOL
          WILTING POINT              =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0938 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0110	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2269 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1712 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
                    --------
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                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                          LAYER  9
                          --------

                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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                          LAYER 10
                          --------

                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                          LAYER 11
                          --------
```

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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          =      0.50   HOLES/ACRE
    FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
    FML PLACEMENT QUALITY        =  3 - GOOD


                          LAYER 12
                          --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER  17
    THICKNESS                    =      0.24   INCHES
    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.    =  0.300000003000E-08 CM/SEC


            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
           POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  550. FEET.

  SCS RUNOFF CURVE NUMBER              =     74.90
  FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
  EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE    =      2.251  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
  INITIAL SNOW WATER                   =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS     =    351.373  INCHES
  TOTAL INITIAL WATER                  =    351.373  INCHES
  TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.23	0.30	0.25	0.30	0.59	0.73
	1.41	1.68	1.44	1.26	0.52	0.35
STD. DEVIATIONS	0.23	0.20	0.25	0.36	0.64	0.60
	0.70	0.97	0.90	1.11	0.64	0.26
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.095	0.068	0.050	0.052	0.137	0.202
	0.364	0.353	0.232	0.153	0.067	0.067
STD. DEVIATIONS	0.190	0.064	0.049	0.041	0.158	0.150
	0.169	0.205	0.125	0.118	0.077	0.052
ATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.2128	0.1741	0.2379	0.2309	0.4466	0.5109
	0.9797	1.3074	1.2152	1.1417	0.4980	0.2818
STD. DEVIATIONS	0.1680	0.1227	0.1878	0.2978	0.4705	0.4642
	0.5890	0.7558	0.7576	0.9659	0.5110	0.2688
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0401	0.0345	0.0324	0.0312	0.0345	0.0342
	0.0341	0.0381	0.0347	0.0329	0.0301	0.0300

STD. DEVIATIONS	0.0717	0.0618	0.0590	0.0572	0.0629	0.0632
	0.0638	0.0722	0.0653	0.0626	0.0586	0.0595

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0024	0.0021	0.0022	0.0021	0.0022	0.0021
	0.0021	0.0022	0.0021	0.0021	0.0019	0.0020
STD. DEVIATIONS	0.0033	0.0029	0.0029	0.0028	0.0030	0.0030
	0.0030	0.0033	0.0031	0.0030	0.0028	0.0029

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0024	0.0021	0.0022	0.0021	0.0022	0.0021
	0.0021	0.0022	0.0021	0.0021	0.0019	0.0020
STD. DEVIATIONS	0.0033	0.0029	0.0029	0.0028	0.0030	0.0030
	0.0030	0.0033	0.0031	0.0030	0.0028	0.0029

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0003	0.0003	0.0003	0.0003	0.0006	0.0007
	0.0013	0.0017	0.0017	0.0015	0.0007	0.0004
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0004	0.0006	0.0006
	0.0008	0.0010	0.0010	0.0013	0.0007	0.0004

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
STD. DEVIATIONS	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003
	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.05	(1.776)	32847.9	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.840	(0.3915)	6677.76	20.329
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.23687	(1.51619)	26269.826	79.97421
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.012	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
'ERAL DRAINAGE COLLECTED FROM LAYER 8	0.40678	(0.74711)	1476.624	4.49534
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.02546	(0.03576)	92.410	0.28133
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.02546	(0.03576)	92.409	0.28133
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.460	(0.8692)	-1668.75	-5.080

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.41	5118.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.84635	3072.26587
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00035
AVERAGE HEAD ACROSS LAYER 4	0.035	
DRAINAGE COLLECTED FROM LAYER 8	0.00895	32.49166
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000341	1.23697
AVERAGE HEAD ACROSS LAYER 9	0.001	
DRAINAGE COLLECTED FROM LAYER 10	0.00034	1.23697
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0942
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0554

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.7006	0.0709
2	0.0033	0.0166
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0713	0.0863
6	319.6800	0.2220
7	2.5200	0.1050
8	0.0020	0.0100
9	0.0000	0.0000
10	0.0020	0.0100
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.03  (31 DECEMBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     a:\GANDY2.D4
TEMPERATURE DATA FILE:       a:\GANDY2.D7
SOLAR RADIATION DATA FILE:   a:\GANDY2.D13
EVAPOTRANSPIRATION DATA:     a:\GANDY2.D11
SOIL AND DESIGN DATA FILE:   a:\SLYR3140.D10
OUTPUT DATA FILE:            a:\SLYR3140.OUT


TIME:  16:39     DATE:   2/ 4/1996


******************************************************************************

    TITLE:  gandy alternative 2, year 31-40, slope

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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   4
        THICKNESS                   =     24.00   INCHES
        POROSITY                    =      0.4370 VOL/VOL
        FIELD CAPACITY              =      0.1050 VOL/VOL
        WILTING POINT               =      0.0470 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.0709 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.170000002000E-02 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0166	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	0.50	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

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                    LAYER  5
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  6
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   7
THICKNESS                    =   1440.00   INCHES
POROSITY                     =      0.4730 VOL/VOL
FIELD CAPACITY               =      0.2220 VOL/VOL
WILTING POINT                =      0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.2220 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.520000001000E-03 CM/SEC


                    LAYER  7
                    --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   4
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.1050 VOL/VOL
WILTING POINT                =      0.0470 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1050 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC


                    LAYER  8
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                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER  9
                         --------

                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          =      0.50   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER 10
                         --------

                TYPE 2 - LATERAL DRAINAGE LAYER
                  MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                         LAYER 11
                         --------
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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          =      0.50   HOLES/ACRE
    FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
    FML PLACEMENT QUALITY        =  3 - GOOD


                          LAYER 12
                          --------

                TYPE 3 - BARRIER SOIL LINER
                MATERIAL TEXTURE NUMBER  17
    THICKNESS                    =      0.24   INCHES
    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.    =  0.300000003000E-08 CM/SEC


            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE # 4 WITH A
           POOR STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  550. FEET.

  SCS RUNOFF CURVE NUMBER              =     74.90
  FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
  AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
  EVAPORATIVE ZONE DEPTH               =     24.0    INCHES
  INITIAL WATER IN EVAPORATIVE ZONE    =      1.702  INCHES
  UPPER LIMIT OF EVAPORATIVE STORAGE   =     10.488  INCHES
  LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.128  INCHES
  INITIAL SNOW WATER                   =      0.000  INCHES
  INITIAL WATER IN LAYER MATERIALS     =    342.180  INCHES
  TOTAL INITIAL WATER                  =    342.180  INCHES
  TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.24	0.28	0.27	0.37	0.77	0.91
1.38	2.17	1.72	0.99	0.33	0.27

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
41.40	45.90	52.80	61.90	70.30	79.00
81.40	79.20	72.30	61.70	49.10	42.50

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.18	0.32	0.26	0.39	0.67	0.59
	1.41	1.86	1.37	1.12	0.81	0.42
STD. DEVIATIONS	0.15	0.20	0.25	0.45	0.62	0.64
	0.70	1.04	0.94	1.23	0.82	0.33
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.072	0.077	0.063	0.061	0.144	0.151
	0.366	0.393	0.241	0.135	0.102	0.081
STD. DEVIATIONS	0.088	0.054	0.059	0.047	0.115	0.145
	0.180	0.244	0.157	0.126	0.097	0.061
ATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.1688	0.1836	0.2412	0.2924	0.5048	0.4614
	0.9435	1.4550	1.1491	1.0118	0.7449	0.3745
STD. DEVIATIONS	0.1148	0.1093	0.1638	0.3951	0.4602	0.5086
	0.5944	0.8523	0.7558	1.0200	0.6208	0.3415
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 8						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 4

AVERAGES	0.0002	0.0003	0.0003	0.0004	0.0007	0.0006
	0.0013	0.0019	0.0016	0.0013	0.0010	0.0005
STD. DEVIATIONS	0.0002	0.0002	0.0002	0.0005	0.0006	0.0007
	0.0008	0.0011	0.0010	0.0014	0.0009	0.0005

DAILY AVERAGE HEAD ACROSS LAYER 9

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	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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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 9

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.40	(1.399)	34130.1	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	1.887	(0.2119)	6848.07	20.065
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.53096	(1.25759)	27337.377	80.09763
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.013	0.00004
AVERAGE HEAD ACROSS TOP OF LAYER 4	0.001	(0.000)		
ERAL DRAINAGE COLLECTED FROM LAYER 8	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 9	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 10	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.015	(0.0829)	-55.38	-0.162

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 9

	(INCHES)	(CU. FT.)
PRECIPITATION	1.21	4392.300
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.68906	2501.27344
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00030
AVERAGE HEAD ACROSS LAYER 4	0.028	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00047
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00126
AVERAGE HEAD ACROSS LAYER 9	0.000	
DRAINAGE COLLECTED FROM LAYER 10	0.00000	0.00126
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 12	0.000	
SNOW WATER	0.61	2221.2896

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0904
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0543

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FINAL WATER STORAGE AT END OF YEAR 9

LAYER	(INCHES)	(VOL/VOL)
1	1.5654	0.0652
2	0.0022	0.0109
3	0.0000	0.0000
4	16.0200	0.4450
5	2.0712	0.0863
6	319.6800	0.2220
7	2.5200	0.1050
8	0.0020	0.0100
9	0.0000	0.0000
10	0.0020	0.0100
11	0.0000	0.0000
12	0.1800	0.7500
SNOW WATER	0.000	

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              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                 **
                 HELP MODEL VERSION 3.04a  (10 JULY 1995)                   **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                     **
**                  USAE WATERWAYS EXPERIMENT STATION                       **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     d:\602\in\flr.D4
TEMPERATURE DATA FILE:       d:\602\in\flr.D7
SOLAR RADIATION DATA FILE:   d:\602\in\flr.D13
EVAPOTRANSPIRATION DATA:     d:\602\in\flr.D11
SOIL AND DESIGN DATA FILE:   d:\602\in\MTRFL.D10
OUTPUT DATA FILE:            d:\602\out\mtrfl.OUT


TIME:  14:59     DATE:   2/28/1996


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     TITLE:  Gandy Landfill  - MTR - Floor (0-5 yrs)

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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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
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                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      1.00   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET
```

LAYER 5

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	80.50	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	1.208	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.118	INCHES

LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.658	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	19.171	INCHES
TOTAL INITIAL WATER	=	19.171	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	76	
END OF GROWING SEASON (JULIAN DATE)	=	310	
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.42	0.47	0.49	0.69	1.14	1.43
1.99	1.90	1.87	1.13	0.57	0.53

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.60	44.10	51.30	59.80	68.30	76.80
79.30	77.90	71.00	60.10	48.00	40.10

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.30	0.29	0.54	0.49	1.17	0.99
	2.39	1.68	1.79	0.90	1.44	0.97
STD. DEVIATIONS	0.34	0.07	0.47	0.39	1.10	1.20
	1.12	1.16	1.14	1.04	1.76	0.67
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.438	0.303	0.412	0.280	1.097	0.882
	1.825	1.797	1.517	1.018	1.082	0.779
STD. DEVIATIONS	0.190	0.068	0.364	0.162	0.930	1.074
	0.881	1.256	0.771	0.663	0.810	0.425
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0621	0.0457	0.0407	0.0298	0.0227	0.0161
	0.0169	0.0237	0.0320	0.0360	0.0495	0.0777
STD. DEVIATIONS	0.0705	0.0472	0.0388	0.0260	0.0188	0.0130
	0.0100	0.0158	0.0204	0.0216	0.0344	0.0772
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.1049	0.0816	0.0768	0.0603	0.0495	0.0378
	0.0402	0.0519	0.0652	0.0729	0.0922	0.1296

STD. DEVIATIONS	0.1025	0.0723	0.0638	0.0470	0.0373	0.0279
	0.0233	0.0328	0.0394	0.0399	0.0523	0.1029

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0693	0.0661	0.0750	0.0716	0.0707	0.0638
	0.0611	0.0582	0.0568	0.0606	0.0623	0.0737
STD. DEVIATIONS	0.0625	0.0590	0.0659	0.0617	0.0598	0.0530
	0.0492	0.0428	0.0379	0.0375	0.0358	0.0413

PERCOLATION/LEAKAGE THROUGH LAYER 6

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	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.8312	0.6892	0.5543	0.4196	0.3096	0.2268
	0.2301	0.3233	0.4497	0.4901	0.6959	1.0576
STD. DEVIATIONS	0.9305	0.7113	0.5279	0.3656	0.2563	0.1824
	0.1359	0.2155	0.2866	0.2939	0.4840	1.0507

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.9310	0.9967	1.0206	1.0072	0.9627	0.8973
	0.8323	0.7929	0.7990	0.8257	0.8757	1.0028
STD. DEVIATIONS	0.8338	0.8893	0.8971	0.8686	0.8136	0.7451
	0.6699	0.5832	0.5332	0.5109	0.5034	0.5618

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES	CU. FEET	PERCENT

MTR Alt

PRECIPITATION	12.95	(2.076)	47023.0	100.00
NOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	11.431	(1.9467)	41494.45	88.243
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.45305	(0.31273)	1644.561	3.49735
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.86312	(0.52877)	3133.128	6.66297
AVERAGE HEAD ON TOP OF LAYER 3	0.523	(0.361)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.78920	(0.59140)	2864.794	6.09232
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00071	(0.00051)	2.587	0.00550
AVERAGE HEAD ON TOP OF LAYER 5	0.912	(0.683)		
CHANGE IN WATER STORAGE	0.280	(0.8130)	1016.64	2.162

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.40	5082.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.00669	24.27183
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.009581	34.77909
AVERAGE HEAD ON TOP OF LAYER 3	2.822	
MAXIMUM HEAD ON TOP OF LAYER 3	5.131	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	49.7 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.00517	18.76339
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000004	0.01610
AVERAGE HEAD ON TOP OF LAYER 5	2.181	
MAXIMUM HEAD ON TOP OF LAYER 5	4.028	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	41.9 FEET	
SNOW WATER	1.36	4944.3652

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2317
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0470

*** 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 5

LAYER	(INCHES)	(VOL/VOL)
1	2.9768	0.1240
2	0.6687	0.0557
3	0.0000	0.0000
4	0.9060	0.0755
5	0.0000	0.0000
6	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                 HELP MODEL VERSION 3.04a  (10 JULY 1995)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     d:\602\in\flr.D4
TEMPERATURE DATA FILE:       d:\602\in\flr.D7
SOLAR RADIATION DATA FILE:   d:\602\in\flr.D13
EVAPOTRANSPIRATION DATA:     d:\602\in\flr.D11
SOIL AND DESIGN DATA FILE:   d:\602\in\MTRSLP.D10
OUTPUT DATA FILE:            d:\602\out\mtrslp.OUT


TIME:  15: 5     DATE:   2/28/1996


******************************************************************************

     TITLE:  Gandy Landfill  - MTR - Side Slope (0-5yrs)

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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   4
          THICKNESS                  =     24.00   INCHES
          POROSITY                   =      0.4370 VOL/VOL
          FIELD CAPACITY             =      0.1050 VOL/VOL
          WILTING POINT              =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.170000002000E-02 CM/SEC
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                    LAYER  2
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          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET


                    LAYER  3
                    --------

          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          =      1.00   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER   1
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4170 VOL/VOL
FIELD CAPACITY               =      0.0450 VOL/VOL
WILTING POINT                =      0.0180 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0450 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999978000E-02 CM/SEC
SLOPE                        =     33.00   PERCENT
DRAINAGE LENGTH              =    316.0    FEET
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LAYER 5

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4450	VOL/VOL
FIELD CAPACITY	=	0.3930	VOL/VOL
WILTING POINT	=	0.2770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 316. FEET.

SCS RUNOFF CURVE NUMBER	=	81.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	1.208	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.118	INCHES

LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.658	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	19.171	INCHES
TOTAL INITIAL WATER	=	19.171	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	76	
END OF GROWING SEASON (JULIAN DATE)	=	310	
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.42	0.47	0.49	0.69	1.14	1.43
1.99	1.90	1.87	1.13	0.57	0.53

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.60	44.10	51.30	59.80	68.30	76.80
79.30	77.90	71.00	60.10	48.00	40.10

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.30	0.29	0.54	0.49	1.17	0.99
	2.39	1.68	1.79	0.90	1.44	0.97
STD. DEVIATIONS	0.34	0.07	0.47	0.39	1.10	1.20
	1.12	1.16	1.14	1.04	1.76	0.67
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
.VAPOTRANSPIRATION						
TOTALS	0.438	0.303	0.412	0.280	1.097	0.882
	1.825	1.797	1.517	1.018	1.082	0.779
STD. DEVIATIONS	0.190	0.068	0.364	0.162	0.930	1.074
	0.881	1.256	0.771	0.663	0.810	0.425
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0900	0.0779	0.0593	0.0394	0.0317	0.0282
	0.0550	0.1046	0.1121	0.1128	0.2302	0.2378
STD. DEVIATIONS	0.0779	0.0721	0.0454	0.0298	0.0225	0.0211
	0.0613	0.0858	0.0789	0.0732	0.2175	0.2939
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0130	0.0113	0.0096	0.0070	0.0060	0.0053
	0.0086	0.0144	0.0156	0.0159	0.0253	0.0268

STD. DEVIATIONS	0.0099	0.0093	0.0068	0.0048	0.0040	0.0036
	0.0082	0.0109	0.0101	0.0087	0.0188	0.0253

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0143	0.0113	0.0103	0.0075	0.0063	0.0050
	0.0081	0.0128	0.0159	0.0151	0.0214	0.0300
STD. DEVIATIONS	0.0124	0.0091	0.0074	0.0052	0.0042	0.0033
	0.0066	0.0097	0.0103	0.0085	0.0156	0.0300

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0536	0.0521	0.0359	0.0246	0.0191	0.0176
	0.0332	0.0632	0.0700	0.0682	0.1437	0.1437
STD. DEVIATIONS	0.0456	0.0482	0.0275	0.0186	0.0136	0.0132
	0.0370	0.0519	0.0493	0.0442	0.1358	0.1776

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0085	0.0076	0.0062	0.0047	0.0038	0.0031
	0.0049	0.0077	0.0099	0.0091	0.0134	0.0181
STD. DEVIATIONS	0.0073	0.0061	0.0045	0.0032	0.0025	0.0020
	0.0040	0.0059	0.0064	0.0051	0.0097	0.0181

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES	CU. FEET	PERCENT

PRECIPITATION	12.95	(2.076)	47023.0	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	11.431	(1.9467)	41494.45	88.243
LATERAL DRAINAGE COLLECTED FROM LAYER 2	1.17907	(0.81329)	4280.021	9.10197
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.15882	(0.09008)	576.507	1.22601
AVERAGE HEAD ON TOP OF LAYER 3	0.060	(0.042)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.15824	(0.08907)	574.397	1.22152
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00001	(0.00001)	0.042	0.00009
AVERAGE HEAD ON TOP OF LAYER 5	0.008	(0.005)		
CHANGE IN WATER STORAGE	0.186	(0.4322)	674.12	1.434

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.40	5082.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.05930	215.27205
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.004617	16.76041
AVERAGE HEAD ON TOP OF LAYER 3	1.111	
MAXIMUM HEAD ON TOP OF LAYER 3	2.196	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.00353	12.80457
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00068
AVERAGE HEAD ON TOP OF LAYER 5	0.066	
MAXIMUM HEAD ON TOP OF LAYER 5	0.189	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 FEET	
SNOW WATER	1.36	4944.3652

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2317

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0470

*** 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 5

LAYER	(INCHES)	(VOL/VOL)
1	2.9768	0.1240
2	0.5601	0.0467
3	0.0000	0.0000
4	0.5428	0.0452
5	0.0000	0.0000
6	16.0200	0.4450
SNOW WATER	0.000	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                 HELP MODEL VERSION 3.04a  (10 JULY 1995)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     d:\602\in\flr.D4
TEMPERATURE DATA FILE:       d:\602\in\flr.D7
SOLAR RADIATION DATA FILE:   d:\602\in\flr.D13
EVAPOTRANSPIRATION DATA:     d:\602\in\flr.D11
SOIL AND DESIGN DATA FILE:   d:\602\in\ALT2FLR.D10
OUTPUT DATA FILE:            d:\602\out\alt2flr.OUT


TIME:  15: 5     DATE:   2/28/1996


******************************************************************************

     TITLE:  gandy alternative 2, year 0-5, floor

******************************************************************************


     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   4
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4370 VOL/VOL
          FIELD CAPACITY               =      0.1050 VOL/VOL
          WILTING POINT                =      0.0470 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	2.30	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	2.30	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

```
                    LAYER  2
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET


                    LAYER  3
                    --------

          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          =      1.00   HOLES/ACRE
FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                    LAYER  4
                    --------

          TYPE 2 - LATERAL DRAINAGE LAYER
            MATERIAL TEXTURE NUMBER  20
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   =      0.0100 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   10.0000000000     CM/SEC
SLOPE                        =      2.30   PERCENT
DRAINAGE LENGTH              =    550.0    FEET
```

LAYER 5

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24	INCHES
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.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	80.50	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	1.208	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	6.118	INCHES

LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.658	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	2.255	INCHES
TOTAL INITIAL WATER	=	2.255	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	76	
END OF GROWING SEASON (JULIAN DATE)	=	310	
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.42	0.47	0.49	0.69	1.14	1.43
1.99	1.90	1.87	1.13	0.57	0.53

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.60	44.10	51.30	59.80	68.30	76.80
79.30	77.90	71.00	60.10	48.00	40.10

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.30	0.29	0.54	0.49	1.17	0.99
	2.39	1.68	1.79	0.90	1.44	0.97
STD. DEVIATIONS	0.34	0.07	0.47	0.39	1.10	1.20
	1.12	1.16	1.14	1.04	1.76	0.67
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
VAPOTRANSPIRATION						
TOTALS	0.438	0.303	0.412	0.280	1.097	0.882
	1.825	1.797	1.517	1.018	1.082	0.779
STD. DEVIATIONS	0.190	0.068	0.364	0.162	0.930	1.074
	0.881	1.256	0.771	0.663	0.810	0.425
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0416	0.0342	0.0209	0.0120	0.0095	0.0120
	0.0301	0.0626	0.0505	0.0703	0.2054	0.0964
STD. DEVIATIONS	0.0397	0.0333	0.0164	0.0092	0.0072	0.0110
	0.0406	0.0592	0.0375	0.0667	0.2849	0.1230
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0569	0.0502	0.0434	0.0307	0.0252	0.0237
	0.0399	0.0722	0.0681	0.0770	0.1117	0.0973

STD. DEVIATIONS	0.0402	0.0412	0.0311	0.0230	0.0179	0.0196
	0.0460	0.0552	0.0445	0.0424	0.0755	0.0673

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0568	0.0505	0.0434	0.0308	0.0254	0.0237
	0.0396	0.0716	0.0685	0.0768	0.1109	0.0983
STD. DEVIATIONS	0.0400	0.0416	0.0312	0.0231	0.0180	0.0194
	0.0452	0.0549	0.0448	0.0424	0.0746	0.0684

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0006	0.0005	0.0003	0.0002	0.0001	0.0002
	0.0004	0.0009	0.0007	0.0010	0.0029	0.0013
STD. DEVIATIONS	0.0005	0.0005	0.0002	0.0001	0.0001	0.0002
	0.0006	0.0008	0.0005	0.0009	0.0040	0.0017

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0008	0.0008	0.0006	0.0004	0.0003	0.0003
	0.0005	0.0010	0.0010	0.0010	0.0016	0.0013
STD. DEVIATIONS	0.0005	0.0006	0.0004	0.0003	0.0002	0.0003
	0.0006	0.0007	0.0006	0.0006	0.0010	0.0009

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES	CU. FEET	PERCENT

PRECIPITATION	12.95	(2.076)	47023.0	100.00
!OFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	11.431	(1.9467)	41494.45	88.243
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.64535	(0.56767)	2342.634	4.98189
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.69647	(0.36897)	2528.192	5.37650
AVERAGE HEAD ON TOP OF LAYER 3	0.001	(0.001)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.69630	(0.36874)	2527.576	5.37519
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00000	(0.00000)	0.008	0.00002
AVERAGE HEAD ON TOP OF LAYER 5	0.001	(0.000)		
CHANGE IN WATER STORAGE	0.181	(0.4414)	658.36	1.400

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.40	5082.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.10664	387.11032
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.022506	81.69557
AVERAGE HEAD ON TOP OF LAYER 3	0.045	
MAXIMUM HEAD ON TOP OF LAYER 3	0.088	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	11.6 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.02105	76.40586
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00003
AVERAGE HEAD ON TOP OF LAYER 5	0.009	
MAXIMUM HEAD ON TOP OF LAYER 5	0.025	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 FEET	
SNOW WATER	1.36	4944.3652

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2317
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0470

*** 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 5

LAYER	(INCHES)	(VOL/VOL)
1	2.9768	0.1240
2	0.0024	0.0120
3	0.0000	0.0000
4	0.0028	0.0142
5	0.0000	0.0000
6	0.1800	0.7500
SNOW WATER	0.000	

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LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	33.00	PERCENT
DRAINAGE LENGTH	=	316.0	FEET

LAYER 3

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	33.00	PERCENT
DRAINAGE LENGTH	=	316.0	FEET

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                         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          =      1.00   HOLES/ACRE
   FML INSTALLATION DEFECTS     =      3.00   HOLES/ACRE
   FML PLACEMENT QUALITY        =  3 - GOOD


                         LAYER  6
                         --------

               TYPE 3 - BARRIER SOIL LINER
               MATERIAL TEXTURE NUMBER  17
   THICKNESS                    =      0.24   INCHES
   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.    =  0.300000003000E-08 CM/SEC


          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE # 4 WITH BARE
         GROUND CONDITIONS, A SURFACE SLOPE OF 33.% AND
         A SLOPE LENGTH OF  316. FEET.

 SCS RUNOFF CURVE NUMBER              =     82.40
 FRACTION OF AREA ALLOWING RUNOFF     =      0.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
 EVAPORATIVE ZONE DEPTH               =     14.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE    =      1.208  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE   =      6.118  INCHES
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LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.658	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	2.255	INCHES
TOTAL INITIAL WATER	=	2.255	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	76	
END OF GROWING SEASON (JULIAN DATE)	=	310	
EVAPORATIVE ZONE DEPTH	=	14.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.42	0.47	0.49	0.69	1.14	1.43
1.99	1.90	1.87	1.13	0.57	0.53

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.60	44.10	51.30	59.80	68.30	76.80
79.30	77.90	71.00	60.10	48.00	40.10

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.30	0.29	0.54	0.49	1.17	0.99
	2.39	1.68	1.79	0.90	1.44	0.97
STD. DEVIATIONS	0.34	0.07	0.47	0.39	1.10	1.20
	1.12	1.16	1.14	1.04	1.76	0.67
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
APOTRANSPIRATION						
TOTALS	0.223	0.121	0.144	0.096	0.318	0.413
	1.261	0.557	0.702	0.341	0.405	0.398
STD. DEVIATIONS	0.157	0.088	0.153	0.175	0.325	0.765
	0.644	0.326	0.848	0.432	0.413	0.439
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.2838	0.1530	0.3144	0.1666	0.7463	0.5542
	0.7122	1.3258	0.9034	0.5961	1.1245	0.4454
STD. DEVIATIONS	0.2299	0.1388	0.3029	0.0962	0.6884	0.5561
	0.5288	0.9396	0.3697	0.3540	1.3388	0.2356
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0338	0.0244	0.0337	0.0259	0.0528	0.0428
	0.0557	0.0793	0.0653	0.0540	0.0660	0.0459

STD. DEVIATIONS	0.0218	0.0167	0.0253	0.0152	0.0350	0.0287
	0.0235	0.0266	0.0129	0.0137	0.0312	0.0100

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0338	0.0244	0.0337	0.0259	0.0528	0.0428
	0.0557	0.0793	0.0653	0.0540	0.0660	0.0459
STD. DEVIATIONS	0.0218	0.0167	0.0253	0.0152	0.0350	0.0287
	0.0235	0.0266	0.0129	0.0137	0.0312	0.0100

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0002	0.0001	0.0002	0.0001	0.0005	0.0003
	0.0004	0.0008	0.0006	0.0004	0.0007	0.0003
STD. DEVIATIONS	0.0001	0.0001	0.0002	0.0001	0.0004	0.0003
	0.0003	0.0006	0.0002	0.0002	0.0008	0.0001

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001
	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0000	0.0000	0.0001	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES	CU. FEET	PERCENT

gravity slope

PRECIPITATION	12.95	(2.076)	47023.0	100.00
NOFF	0.000	(0.0000)	0.00	0.000
EVAPOTRANSPIRATION	4.979	(0.8403)	18074.46	38.437
LATERAL DRAINAGE COLLECTED FROM LAYER 2	7.32567	(2.24924)	26592.176	56.55140
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.57975	(0.16004)	2104.510	4.47549
AVERAGE HEAD ON TOP OF LAYER 3	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.57975	(0.16004)	2104.509	4.47549
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00000	(0.00000)	0.002	0.00000
AVERAGE HEAD ON TOP OF LAYER 5	0.000	(0.000)		
CHANGE IN WATER STORAGE	0.069	(0.3656)	251.88	0.536

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.40	5082.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.55831	2026.65674
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.010151	36.84814
AVERAGE HEAD ON TOP OF LAYER 3	0.010	
MAXIMUM HEAD ON TOP OF LAYER 3	0.094	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.01015	36.84814
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00001
AVERAGE HEAD ON TOP OF LAYER 5	0.001	
MAXIMUM HEAD ON TOP OF LAYER 5	0.000	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 FEET	
SNOW WATER	1.36	4944.3652

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1804
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0470

*** 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 5

LAYER	(INCHES)	(VOL/VOL)
1	2.4179	0.1007
2	0.0022	0.0112
3	0.0000	0.0000
4	0.0020	0.0100
5	0.0000	0.0000
6	0.1800	0.7500
SNOW WATER	0.000	

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**                                                                          **
                                                                            **
                HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                 HELP MODEL VERSION 3.04a  (10 JULY 1995)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     d:\602\in\flr.D4
TEMPERATURE DATA FILE:       d:\602\in\flr.D7
SOLAR RADIATION DATA FILE:   d:\602\in\flr.D13
EVAPOTRANSPIRATION DATA:     d:\602\in\flr.D11
SOIL AND DESIGN DATA FILE:   d:\602\in\ALT2slp.D10
OUTPUT DATA FILE:            d:\602\out\alt2slp.OUT


TIME:  15: 6     DATE:   2/28/1996


******************************************************************************

    TITLE:  gandy alternative 2, year 0-5, slope

******************************************************************************


    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   4
        THICKNESS                    =     24.00   INCHES
        POROSITY                     =      0.4370 VOL/VOL
        FIELD CAPACITY               =      0.1050 VOL/VOL
        WILTING POINT                =      0.0470 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.0863 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.170000002000E-02 CM/SEC
```

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******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                 HELP MODEL VERSION 3.04a  (10 JULY 1995)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**            FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:     d:\602\in\cov.D4
TEMPERATURE DATA FILE:       d:\602\in\cov.D7
SOLAR RADIATION DATA FILE:   d:\602\in\cov.D13
EVAPOTRANSPIRATION DATA:     d:\602\in\cov.D11
SOIL AND DESIGN DATA FILE:   d:\602\in\coverU.D10
OUTPUT DATA FILE:            d:\602\out\coverU.OUT


TIME:   8:31     DATE:   2/29/1996


******************************************************************************

    TITLE:  gandy cover alternative, year 0-5

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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   6
        THICKNESS                   =     24.00   INCHES
        POROSITY                    =      0.4530 VOL/VOL
        FIELD CAPACITY              =      0.1900 VOL/VOL
        WILTING POINT               =      0.0850 VOL/VOL
        INITIAL SOIL WATER CONTENT  =      0.0863 VOL/VOL
        EFFECTIVE SAT. HYD. COND.   =  0.720000011000E-03 CM/SEC
```

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 1.80
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

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	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	25.00	PERCENT
DRAINAGE LENGTH	=	550.0	FEET

LAYER 3

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	=	1.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	3.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24	INCHES
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.	=	0.300000003000E-08	CM/SEC

LAYER 5

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	6.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0863	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

LAYER 6

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 4

THICKNESS	=	18.00	INCHES
POROSITY	=	0.4370	VOL/VOL
FIELD CAPACITY	=	0.1050	VOL/VOL
WILTING POINT	=	0.0470	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0863	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.170000002000E-02	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 6 WITH A POOR STAND OF GRASS, A SURFACE SLOPE OF 25.% AND A SLOPE LENGTH OF 550. FEET.

SCS RUNOFF CURVE NUMBER	=	80.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	24.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.071	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	10.872	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	2.040	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	4.324	INCHES

TOTAL INITIAL WATER = 4.324 INCHES
TOTAL SUBSURFACE INFLOW = 0.00 INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.00
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
EVAPORATIVE ZONE DEPTH	=	24.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.42	0.47	0.49	0.69	1.14	1.43
1.99	1.90	1.87	1.13	0.57	0.53

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
39.60	44.10	51.30	59.80	68.30	76.80
79.30	77.90	71.00	60.10	48.00	40.10

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.30	0.29	0.54	0.49	1.17	0.99
	2.39	1.68	1.79	0.90	1.44	0.97
STD. DEVIATIONS	0.34	0.07	0.47	0.39	1.10	1.20
	1.12	1.16	1.14	1.04	1.76	0.67
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.001	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.001
	0.001	0.000	0.000	0.001	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.660	0.265	0.558	0.266	1.236	1.117
	2.254	1.850	1.519	0.938	1.055	0.987
STD. DEVIATIONS	0.399	0.087	0.467	0.422	1.021	1.293
	1.297	1.206	1.094	0.856	0.675	0.419
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0161	0.0040	0.0138	0.0068	0.0091	0.0063
	0.0347	0.0368	0.0203	0.0122	0.0433	0.0417
STD. DEVIATIONS	0.0295	0.0059	0.0168	0.0102	0.0110	0.0087
	0.0224	0.0189	0.0086	0.0077	0.0579	0.0250
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

ERCOLATION/LEAKAGE THROUGH LAYER 6

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	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	12.95	(2.076)	47023.0	100.00
RUNOFF	0.001	(0.0023)	4.94	0.011
EVAPOTRANSPIRATION	12.706	(1.7289)	46122.80	98.086
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.24518	(0.12170)	890.020	1.89273
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00000	(0.00000)	0.001	0.00000
AVERAGE HEAD ON TOP OF LAYER 3	0.000	(0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00153	(0.00028)	5.554	0.01181
CHANGE IN WATER STORAGE	0.000	(0.5820)	-0.29	-0.001

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	1.40	5082.000
RUNOFF	0.003	12.1114
DRAINAGE COLLECTED FROM LAYER 2	0.04743	172.17372
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000000	0.00003
AVERAGE HEAD ON TOP OF LAYER 3	0.002	
MAXIMUM HEAD ON TOP OF LAYER 3	0.192	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000005	0.01711
SNOW WATER	1.36	4944.3652

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2101

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0850

*** 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 5

LAYER	(INCHES)	(VOL/VOL)
1	2.0774	0.0866
2	0.0030	0.0150
3	0.0000	0.0000
4	0.1800	0.7500
5	0.5159	0.0860
6	1.5477	0.0860
SNOW WATER	0.000	

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ALTERNATIVE 2 - NMED

LIFECYCLE APPROACH

UNCOVERED SLOPE

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	7	

NOTES:

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner System

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Waste, (Vertical percolation layer)
thickness	Varies	Based on 10yr filling plan
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2055	Based on a typical hazardous waste M.C. = 15%
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 3		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 7		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

ALTERNATIVE 2 - NMED

LIFECYCLE APPROACH

UNCOVERED FLOOR

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	7	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Alternative #2 Floor Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Waste, (Vertical percolation layer)
thickness	Varies	Based on 10yr filling plan
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2055	Based on a typical hazardous waste M.C.= 15%
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 7		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

ALTERNATIVE 2 - NMED

LIFECYCLE APPROACH

COVERED SLOPE

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	0	Bare Ground
SCS runoff curve number	81.8	HELP model generated, Soil texture 4, 25% slope, bare ground
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner System

TABLE 1 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	1	Poor stand of grass
evaporate zone depth	24 in.	Maximum depth of vegetative soil
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	1	Poor stand of grass
SCS runoff curve number	74.9	HELP model generated, Soil texture 4, 25% slope, poor stand of grass
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Vegetative soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	25%	See cover section
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Estimate
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	4	FMC, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	3	Compacted Clay Cover
thickness	36 in	See Cover section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	1	Waste, (Vertical percolation layer)
thickness	1440 in	Maximum depth
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2284	Based on output from yrs 6-10
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 7		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.1488	Based on output from years 6-10
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 8		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.0102	Based on output from years 6-10
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 9		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 10		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.0100	Based on output from years 6-10
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 11		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 12		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope liner system

ALTERNATIVE 2 - NMED

LIFECYCLE APPROACH

COVERED FLOOR

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	0	Bare Ground
SCS runoff curve number	81.8	HELP model generated, Soil texture 4, 25% slope, bare ground
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	

NOTES:

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner System

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	1	Poor stand of grass
evaporate zone depth	24 in.	Maximum depth of vegetative soil
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	1	Poor stand of grass
SCS runoff curve number	74.9	HELP model generated, Soil texture 4, 25% slope, poor stand of grass
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	

NOTES:

PROJECT: Triassic Park Disposal Facility, Alternative #2 slope Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Vegetative soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	25%	See cover section
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Estimate
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	4	FMC, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	3	Compacted Clay Cover
thickness	36 in	See Cover section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	1	Waste, (Vertical percolation layer)
thickness	1440 in	Maximum depth
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2284	Based on output from yrs 6-10
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 7		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.1488	Based on output from years 6-10
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 8		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.0122	Based on output from years 6-10
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 9		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 10		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.0144	Based on output from years 6-10
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 11		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 12		
layer type	3	GCL
thickness	0.24 in	HELP default thickness for bentonite mat
soil texture	17	HELP Default texture for bentonite mat
porosity	0.750	HELP default for texture 17
field capacity	0.747	HELP default for texture 17
wilting point	0.400	HELP default for texture 17
moisture content	0.750	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	3.0E-9cm/s	HELP default for bentonite mat
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, Alternative #2 floor liner system

MTR - NMED

LIFECYCLE APPROACH

UNCOVERED FLOOR

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	7	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Waste, (Vertical percolation layer)
thickness	Varies	Based on 10yr filling plan
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2055	Based on a typical hazardous waste M.C.= 15%
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 7		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

MTR - NMED

LIFECYCLE APPROACH

UNCOVERED SLOPE

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	NA	Bare Ground
SCS runoff curve number	NA	0% allowable runoff CN does not affect results
active (uncovered)	Yes	
% of surface runoff that drains from landfill	0%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	7	
NOTES:		

PROJECT: Triassic Park Disposal Facility, Slope MTR Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Waste, (Vertical percolation layer)
thickness	Varies	Based on 10yr filling plan
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2055	Based on a typical hazardous waste M.C. = 15%
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 2		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Moisture content equal to field capacity, does not allow for water storage in lateral drainage layer.
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 7		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

MTR - NMED

LIFECYCLE APPROACH

COVERED FLOOR

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	0	Bare Ground
SCS runoff curve number	81.8	HELP model generated, Soil texture 4, 25% slope, bare ground
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR floor Liner System

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	1	Poor stand of grass
evaporate zone depth	24 in.	Maximum depth of vegetative soil
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	1	Poor stand of grass
SCS runoff curve number	74.9	HELP model generated, Soil texture 4, 25% slope, poor stand of grass
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR Slope Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Vegetative soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C.= 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	25%	See cover section
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Estimate
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR Liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	4	FMC, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 4		
layer type	3	Compacted Clay Cover
thickness	36 in	See Cover section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 5		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	1	Waste, (Vertical percolation layer)
thickness	1440 in	Maximum depth
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2164	Based on output from yrs 6-10
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 7		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.1050	Based on output from years 6-10
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 8		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Based on output from years 6-10
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 9		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 10		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Based on output from years 6-10
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	2.3%	Floor grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Maximum drainage length for phase 1 floor (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 11		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 12		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Based on outputs from years 6-10
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR floor liner system

MTR - NMED

LIFECYCLE APPROACH

COVERED SLOPE

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	0	Bare Ground
evaporate zone depth	14 in.	HELP default for Roswell, NM
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	0	Bare Ground
SCS runoff curve number	81.8	HELP model generated, Soil texture 4, 25% slope, bare ground
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR slope Liner System

TABLE 1
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
CLIMATOLOGICAL DATA		
city	Roswell, NM	Nearby City
precipitation & source of data (default or synthetic)	Synthetic	Only option for Roswell, NM
temperature & source of data	Synthetic	Roswell, NM
latitude	33.24	HELP default for Roswell, NM
maximum leaf area index	1	Poor stand of grass
evaporate zone depth	24 in.	Maximum depth of vegetative soil
growing season start and end day	76/310	HELP default for Roswell, NM
LANDFILL COVER DATA		
type of vegetative cover	1	Poor stand of grass
SCS runoff curve number	74.9	HELP model generated, Soil texture 4, 25% slope, poor stand of grass
active (uncovered)	No	
% of surface runoff that drains from landfill	100%	
surface area	1 acre	Unit area, (outputs to be converted to gallons/acre/day)
SOIL AND DESIGN DATA		
source of soil characteristics		HELP defaults, useing lab data for onsite soils
number of layers	12	
NOTES:		

PROJECT: Triassic Park Disposal Facility, MTR floor Liner System

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 1		
layer type	1	Vegetative soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 2		
layer type	2	Geocomposite (lateral drainage layer)
thickness	0.2 in	HELP default thickness for texture 20(consistant w/ materials on the market)
soil texture	20	HELP Default for drainage net.(conservative, ignores added capacity of geotextile
porosity	0.850	HELP default for texture 20
field capacity	0.010	HELP default for texture 20
wilting point	0.005	HELP default for texture 20
moisture content	0.010	Moisture content equal to field capacity, does not allow for water storage in Lateral drainage layer
saturated hydraulic conductivity	1.0E1cm/s	HELP default for texture 20
Is layer compacted?	NA	
slope (if lateral drainage layer)	25%	See cover section
maximum horizontal drainage distance (if lateral drainage layer)	550 ft	Estimate
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope Liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 3		
layer type	4	FMC, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 4		
layer type	3	Compacted Clay Cover
thickness	36 in	See Cover section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Moisture content equal to porosity, allows for imediate saturated flow (HELP default).
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 5		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See cover section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.0863	Based on a avg. M.C. = 5.9% for Natural moisture contents of Silty Sands tested from the site.
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 6		
layer type	1	Waste, (Vertical percolation layer)
thickness	1440 in	Maximum depth
soil texture	7	HELP Default for a SM, typical waste generaly has a large soil constituant.
porosity	0.473	HELP default for texture 7
field capacity	0.222	HELP default for texture 7
wilting point	0.104	HELP default for texture 7
moisture content	0.2164	Based on output from yrs 6-10
saturated hydraulic conductivity	5.2E-4cm/s	HELP default for texture 7
Is layer compacted?	Yes	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 7		
layer type	1	Protective soil, (Vertical percolation layer)
thickness	24 in	See liner section
soil texture	4	HELP Default for a SM, (lab data indicates onsite soil to be a SM)
porosity	0.473	HELP default for texture 4
field capacity	0.0105	HELP default for texture 4
wilting point	0.047	HELP default for texture 4
moisture content	0.1050	Based on output from years 6-10
saturated hydraulic conductivity	1.7E-3cm/s	HELP default for texture 4
Is layer compacted?	No	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 8		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Based on output from years 6-10
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 9		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 10		
layer type	2	Sand lateral drainage layer
thickness	12 in	See liner section, (ignore geotextile cushion & seperation layers)
soil texture	1	HELP Default for a poorly graded sand, (typical drainage material).
porosity	0.417	HELP default for texture 1
field capacity	0.045	HELP default for texture 1
wilting point	0.018	HELP default for texture 1
moisture content	0.045	Based on output from years 6-10
saturated hydraulic conductivity	1.0E-2cm/s	HELP default for texture 1 (also EPA minimum required value)
Is layer compacted?	No	
slope (if lateral drainage layer)	33%	Slope grade from cell layout drawing
maximum horizontal drainage distance (if lateral drainage layer)	316 ft	Maximum drainage length for phase 1 slope (scaled from drawings)
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	

NOTES: (make additional copies for each layer as required)

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2 LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS		
INPUT PARAMETER	**VALUE**	**JUSTIFICATION**
LAYER NUMBER: 11		
layer type	4	FML, (HDPE Geomembrane)
thickness	0.06 in	60 mil (typical geomembrane thickness)
soil texture	35	HELP Default texture for HDPE geomembrane.
porosity	NA	
field capacity	NA	
wilting point	NA	
moisture content	NA	
saturated hydraulic conductivity	2.0E-13cm/s	HELP default for texture 35
Is layer compacted?	NA	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	0.5	Typical value recommended by HELP manual.
geomembrane installation defects	3	Typical value recommended by HELP manual for good installation.
liner installation quality (if geomembrane)	3	Good installation
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

TABLE 2
LANDFILL ALTERNATIVE LINER OR COVER DESIGN MODELING INPUT PARAMETERS

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER: 12		
layer type	3	Compacted Clay Liner
thickness	36 in	See liner section
soil texture	0	HELP Default texture 26 (compacted CL) w/ a modified k value. (lab data indicates soil to be a CL)
porosity	0.445	HELP default for texture 26
field capacity	0.393	HELP default for texture 26
wilting point	0.445	HELP default for texture 26
moisture content	0.445	Based on outputs from years 6-10
saturated hydraulic conductivity	1.0E-7cm/s	Lab data indicates this permeability is possible w/ this soil.
Is layer compacted?	YES	
slope (if lateral drainage layer)	NA	
maximum horizontal drainage distance (if lateral drainage layer)	NA	
geomembrane pinhole density	NA	
geomembrane installation defects	NA	
liner installation quality (if geomembrane)	NA	
geotextile transmissivity	NA	
NOTES: (make additional copies for each layer as required)		

PROJECT: Triassic Park Disposal Facility, MTR slope liner system

APPENDIX C

NEW MEXICO ENVIRONMENTAL DEPARTMENT
DRAFT GUIDANCE DOCUMENT FOR PERFORMANCE DEMONSTRATION

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Guidance Document

for

Performance Demonstration for an Alternative Cover Design Using the HELP Modeling Program Under the New Mexico Solid Waste Management Regulations (20 NMAC 9.1)

and

Performance Demonstration for an Alternative Liner Design Using the HELP Modeling Program Under the New Mexico Solid Waste Management Regulations (20 NMAC 9.1)

Prepared by the
New Mexico Environment Department
Solid Waste Bureau
Permit Section

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Performance Demonstration for an Alternative Cover Design Using the HELP Modeling Program Under the New Mexico Solid Waste Management Regulations (20 NMAC 9.1)

1. Existing Solid Waste Landfills without a Liner System:

A prescriptive landfill cover system must in accordance with Section 502.A.1 consist of an infiltration layer comprised of a minimum of 18 inches of earthen material with the required hydraulic conductivity (K) and a minimum of 6 inches of soil that is capable of sustaining native plant growth as an erosion layer (Figure 1). The cover component of 18 inches of earthen material must be equivalent to the least hydraulically conductive natural subsoils or a saturated hydraulic conductivity of no greater than 1×10^{-5} cm/sec. For example, if the hydraulic conductivity of the natural subsoils is 1×10^{-6} cm/sec, then the K of the infiltration layer material must be equivalent to these soils. If the hydraulic conductivity of the natural subsoils is greater than 1×10^{-5} cm/sec (e.g., 1×10^{-4} cm/sec), the K of the infiltration layer material must equate to the 1×10^{-5} cm/sec requirement.

If the infiltration layer meets the minimum hydraulic conductivity of 1×10^{-5} cm/sec or that of the natural subsoils and the minimum 18 inch condition then a HELP Model simulation is not required. If an alternative cover design is proposed, it must achieve an equivalent reduction in infiltration as the infiltration layer specified in Section 502.A.1.a. Therefore, a HELP Model simulation is required to demonstrate that the design of such a cover provides equivalent reduction in infiltration as the prescriptive cover design. If the natural subsoils have a hydraulic conductivity of less than 1×10^{-5} cm/sec (e.g., 1×10^{-6} cm/sec), then the cover must achieve equivalent reduction in infiltration as that of the prescriptive cover but with an 18 inch infiltration layer with a hydraulic conductivity of 1×10^{-6} cm/sec.

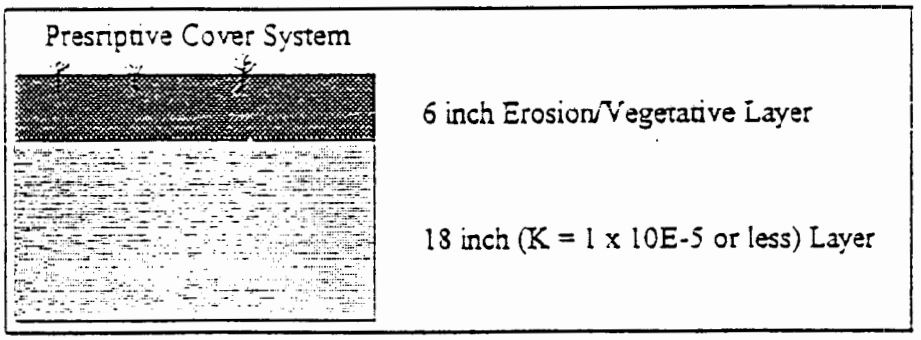

Figure 1. Prescriptive Cover System

A demonstration of equivalent reduction in infiltration is determined by using the EPA HELP Model. The HELP Model simulations need to compare the prescriptive cover and the alternative cover design (Figure 2). The simulation for the prescriptive cover must include the erosion, infiltration and intermediate layers. The alternative cover design simulation includes the

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intermediate and alternative cover layers. The two designs are to be simulated for years 1 through 5 with vegetation during the post-closure care period to demonstrate equivalency. Precipitation, evapotranspiration, temperature, and solar radiation data must be site specific and identical for both alternative and prescriptive cover designs simulations. Provide justification for all input parameters in the model utilizing the attached forms. Demonstrate the relationship of the characteristics of on-site or other sources of soil proposed for the construction of cover or liner and the parameter values in the model. It is anticipated that the entire area of the landfill or cell will be modelled.

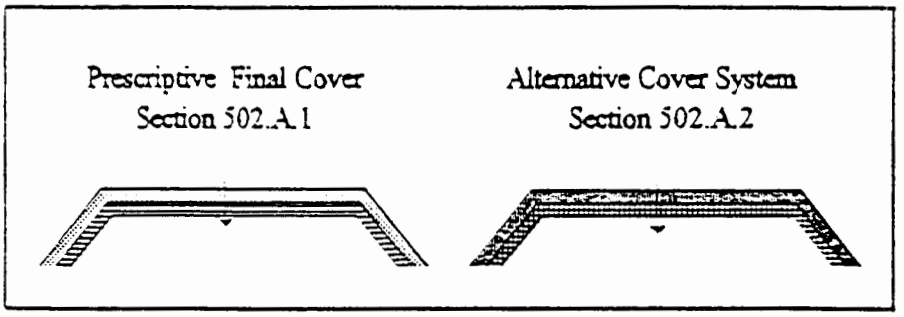

Figure 2.

For example, comparing the prescriptive cover of:

1) 6 inches of topsoil
2) 18 inches of compacted soil ($K = 5 \times 10^{-6}$; to meet natural subsoils $K = 5 \times 10^{-6}$)

with a proposed alternative cover system of:

1) 6 inches of topsoils
2) 30 inches of compacted ($K = 1 \times 10^{-5}$)
3) 12 inches of uncompacted intermediate cover

2. New Solid Waste Landfills:

As in the above case, the cover for the proposed landfill with a the prescriptive or alternative liner must achieve the equivalent protection as the liner. If an alternative final cover is proposed for the landfill, then a demonstration must be submitted to the Bureau for approval pursuant to Section 502.A.2.a. It must be determined by this demonstration that the proposed final cover design includes an infiltration layer that achieves an equivalent reduction in infiltration as the bottom liner (Figure 3). A HELP Model simulation comparison is acceptable for this demonstration for a 5 year period with vegetation. Precipitation, evapotranspiration, temperature, and solar radiation data must be site specific and identical for both liner and cover design simulations. Provide justification for all input parameters in the model utilizing the attached forms. Demonstrate the relationship of the characteristics of on-site or other sources of soil proposed for the construction of cover or liner and the parameter values in the model. It is anticipated that the entire area of the landfill or cell will be modelled.

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For example, the comparison must include a HELP Model simulation for the liner and the proposed final cover systems as below.

The simulation for an alternative liner system* could include:

1) the drainage/protective layer of the liner with leachate collection system,
2) the 60-mil HDPE FML,
3) the 0.2 inch ($K = 2 \times 10^{-9}$) GCL (geosynthetic clay liner),
4) the 6 inches of compacted in situ soil used as the prepared subgrade, and
5) with the solid waste cell open and no runoff.

*Any alternative liner system must meet the demonstration as described in the "Performance Demonstration For An Alternative Liner Design Using The HELP Modeling Program Under the New Mexico Solid Waste Management Regulations (20 NMAC 9.1)."

A liner system is compared with a HELP Model simulation for a proposed final cover:

1) 18 inches uncompacted material (6 inches of topsoil with poor grass and 12 inches of uncompacted soil),
2) the 0.2 inch GCL ($K = 2 \times 10^{-9}$),
3) 12 inches of intermediate cover (6 inches of compacted soil and 6 inches of uncompacted soil), and
4) with the solid waste cell closed and final placement of the cover to include runoff.

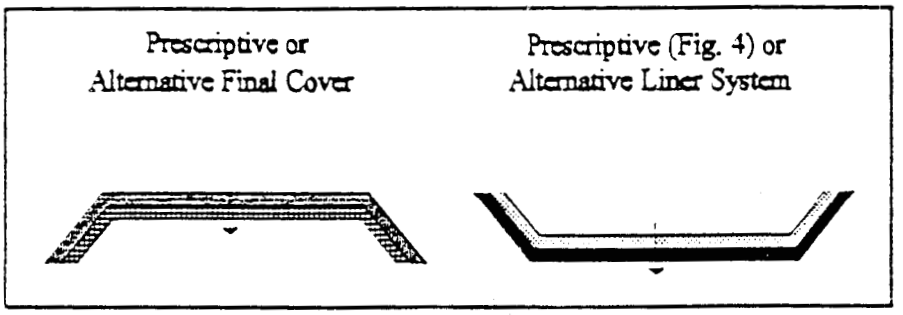

Figure 3.

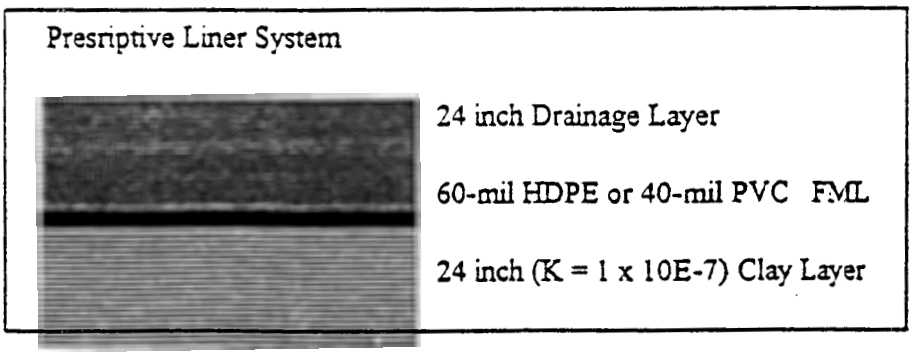

Figure 4.

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Performance Demonstration for an Alternative Liner Design Using the HELP Modeling Program Under the New Mexico Solid Waste Management Regulations (20 NMAC 9.1)

1. Section 306.A.2 of the regulations requires the design of the alternative liner must provide equivalent protection as the composite liner defined in Section 306.A.1. Two computer modeling analyses must be performed - an analysis of the composite liner specified in Section 306.A.1 and an analysis of the proposed alternative liner as specified in Section 306.A.2. Equivalent protection must be demonstrated through a comparison of the performance of the Section 306.A.2 alternative liner with the performance of Section 306.A.1 composite liner (Figure 5).

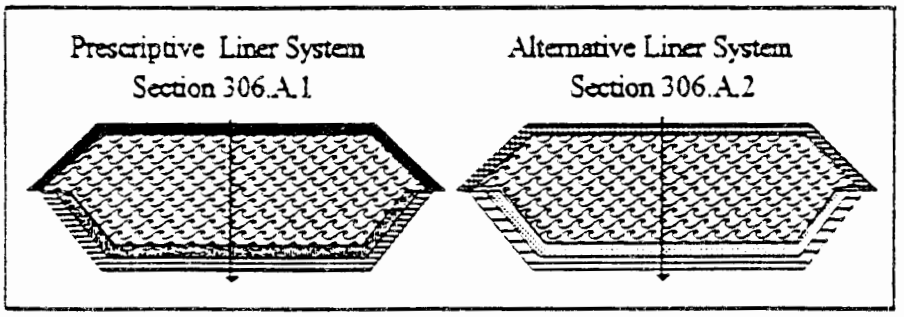

Figure 5.

2. Provide justification for all input parameters in the model utilizing the attached forms. Demonstrate the relationship of the characteristics of on-site or other sources of soil proposed for the construction and operation of the landfill and the parameter values used in the model. Show justification for the soil and waste moisture content parameters as well as geomembrane liner data and storm water runoff fraction.

3. Simulate actual design conditions and operational development of the landfill as closely as possible by doing a succession of model simulations. This succession must attempt to simulate moisture conditions in the landfill as closely as possible. To aid in accomplishing this, each successive computer simulation must use the previous simulation's moisture content output as the input for the following simulation. Describe the design approach modelled.

3.1 Initial simulation of the open landfill at start-up when landfill has little to no waste. The time period should extend for the anticipated duration of this condition, a minimum of one year and a probable maximum of five years.

3.2 A succeeding simulation to model conditions of the partially full landfill for some anticipated time period, most probably five years. This would incorporate daily cover and intermediate cover.

3.3. Perform subsequent computer simulations to model the landfill in the closed

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condition for the duration of the entire post-closure care period.

3.3.1 Model bare ground for the time period expected until vegetation becomes established.

3.3.2 Model the vegetated condition for the remainder of the post-closure care period.

4. Compliance with the regulatory requirement of not exceeding a 12 inch hydraulic head on the bottom liner must be demonstrated. Consequently, the area modeled must incorporated, at a minimum, one leachate collection "watershed" in order to simulate the leachate drainage distance. It is anticipated that the entire area of the landfill or cell will be modelled.

5. If there is no infiltration through the alternative liner system for the simulation(s), then these HELP Model simulation(s) will serve to demonstrate the concentration values listed in Section 1110 (Appendix K, EIB/SWMR-4) will not be exceeded in the uppermost aquifer or the relative point of compliance.