
ANNEXE 7 – Lettre du ministère de la Culture et des communications



Rimouski, le 29 octobre 2001

Madame Natalie Gagné
André Simard et associés
1655, boul. Jean-Talon Ouest
Québec (Québec) G2K 2J5

Madame,

Vous trouverez ci-joint, suite à votre demande dans le cadre de l'étude d'impact relativement au lieu d'enfouissement sanitaire de Rimouski, la description des quatre sites archéologiques présents sur le territoire de la Ville de Rimouski et répertoriés à l'Inventaire des sites archéologiques du Québec (ISAQ).

Je vous confirme que ces sites ne se retrouvent pas sur les lots 131, 132, 133-3 et 135-3 du cadastre de la paroisse de Notre-Dame-du-Sacré-Cœur identifiés dans votre demande du 26 octobre dernier. Ceci n'exclut pas que ces terrains puissent posséder un intérêt culturel ou archéologique que seule une étude de potentiel archéologique réalisée par un archéologue et prévue dans la directive du ministère de l'Environnement pourrait déterminer.

N'hésitez pas à me contacter si vous désirez des renseignements supplémentaires.

Veuillez accepter, Madame, l'expression de mes sentiments les meilleurs.



Euchariste Morin
Chargé de projet

COPIE

p.j.

Direction du Bas-Saint-Laurent

337, rue Moreault
Rimouski (Québec) G5L 1P4
Téléphone : (418) 727-3650
Télécopieur : (418) 727-3824
Adresse électronique : drbsl@mcc.gouv.qc.ca

Description 1 Description 2 Notes

Description du site

Nom:

Date:
 Latitude:
 Longitude:

UTM nord:
 UTM est:
 NAD:
 Carte:
 Échelle:

Photo aérienne:
 Municipalité:
 M.R.C.:

P.A.:
 Comté:

Canton:
 Lot:
 Révisé:
 Statut:
 Localisation formelle:

Propriétaire:

- Identités
- Recommandations
- Types de site
- Situations
- Analyses
- Surveys
- Travaux
- Datations
- Traces
- Artéfacts
- Collecteurs
- Équipement

Description 1 Description 2 Notes

Description du site

Borden: Nom:

Date: Latitude: Longitude:

UTM Nord: UTM Est: NAD: Carte: Bélier:

Photo aérienne: Municipalité: M.R.C.:

R.A.: Comté:

Canton: Lot: Rang: Statut légal:

Propriétaire:

Localisation informelle:

- | | | | | | |
|------------|-----------------|---------------|------------|-------------|----------------|
| Identifiés | Recommandations | Types de site | Structures | Analyses | Sources |
| Traces | Datations | Traces | Artéfacts | Collecteurs | Administratifs |

Description 1 Description 2 Notes

Description du site

Objet: Nom:

Date: Latitude: Longitude:

UTM nord: UTM est: NAD: Carte: Folio:

Photo aérienne: Municipalité: M.R.C.:

R.A.: Comté:

Canton: Loi: Rang: Statut: légal:

Propriétaire:

Localisation informelle:

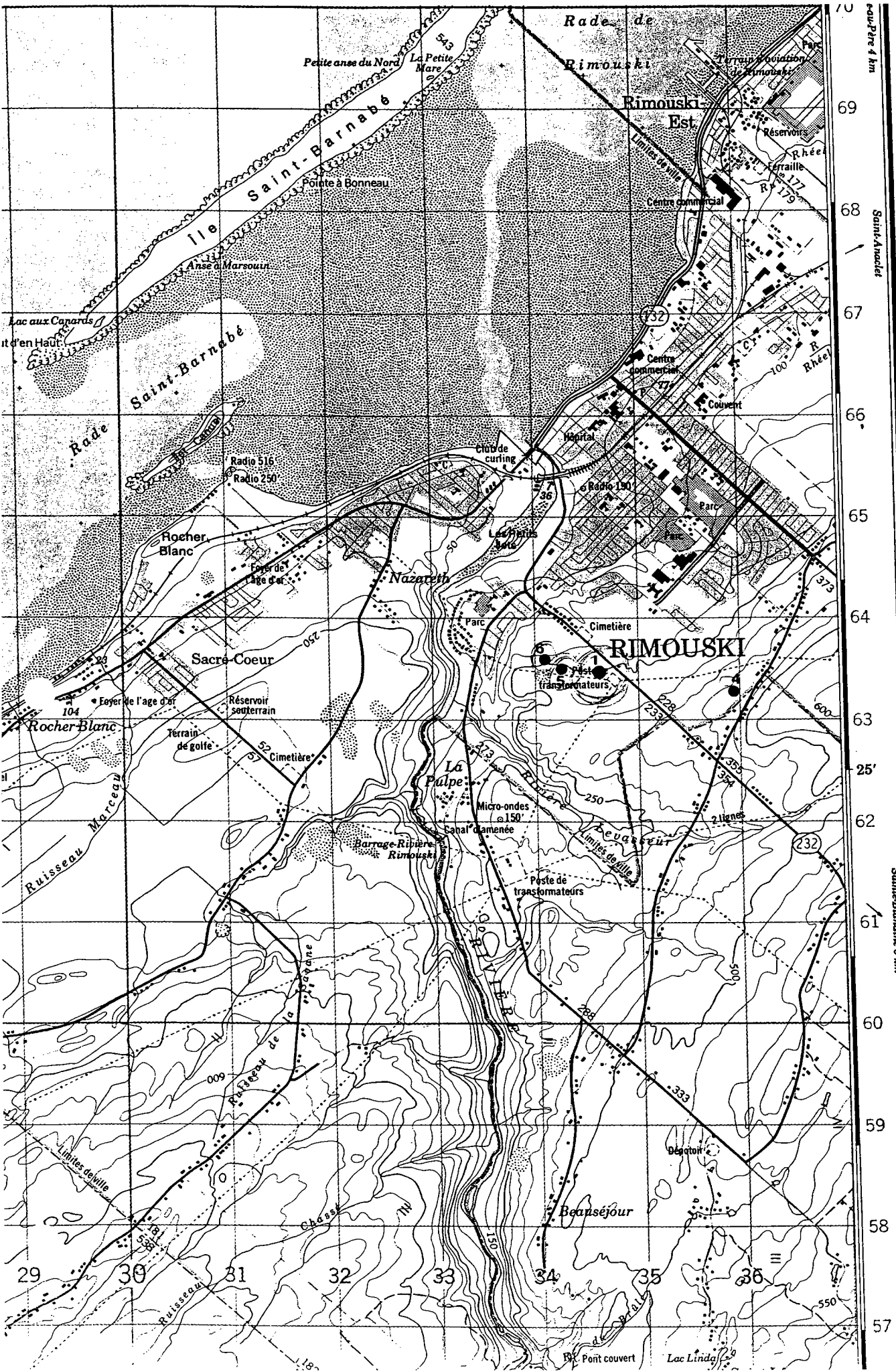
- Identres
- Recommandations
- Types de site
- Structures
- Analyses
- Sources
- Plans
- Datations
- Titres
- Aréaires
- Collections
- États de site

Description 1	Description 2	Notes
---------------	---------------	-------

Description du site

Borden	<input type="text" value="DcEd-6"/>	Nom	<input type="text" value="Rimouski"/>		
Date	<input type="text" value="04-05-1994"/>	Latitude	<input type="text" value="48-25-37"/>	Longitude	<input type="text" value="68-32-22"/>
UTM nord	<input type="text" value="63.60"/>	UTM est	<input type="text" value="34.15"/>	NAD	<input type="text" value="27"/>
Photo aérienne	<input type="text"/>	Municipalité	<input type="text" value="Rimouski"/>	M.R.C.	<input type="text" value="Rimouski-Neigette"/>
R.A.	<input type="text" value="Bas-Saint-Laurent"/>	Comté	<input type="text" value="Rimouski"/>		
Canton	<input type="text" value="aucun"/>	Bois	<input type="text"/>	Rang	<input type="text"/>
Propriétaire	<input type="text" value="Terres publiques (Transports)"/>				
Localisation informelle	<input type="text" value="À la limite nord-ouest de la gravière."/>				

<input type="button" value="Identif."/>	<input type="button" value="Recommandations"/>	<input type="button" value="Types de site"/>	<input type="button" value="Structures"/>	<input type="button" value="Analyses"/>	<input type="button" value="Sources"/>
<input type="button" value="Travaux"/>	<input type="button" value="Datations"/>	<input type="button" value="Traces"/>	<input type="button" value="Artefacts"/>	<input type="button" value="Collections"/>	<input type="button" value="Bibliographie"/>

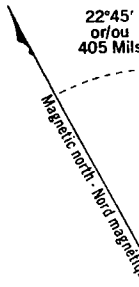


- Aréna
 - Belvédère
 - Chemin d'hiver
 - Déblai de mine
 - Dépotoir
 - Douane
 - Eau
 - Ferraille
 - Fondrière à filaments
 - Fossé
 - Four
 - Foyer de l'âge d'or
 - Gaz
 - Ligne arpentée
 - Limites de ville
 - Parc
 - Patinoire
 - Puits de pétrole
 - Réservoir
 - Station de ski
 - Terrain d'aviation
 - Terrain de golf
 - Usine de filtration
- Pour un glossaire complet, voir
For a complete glossary see rev

ABRÉVIATIONS

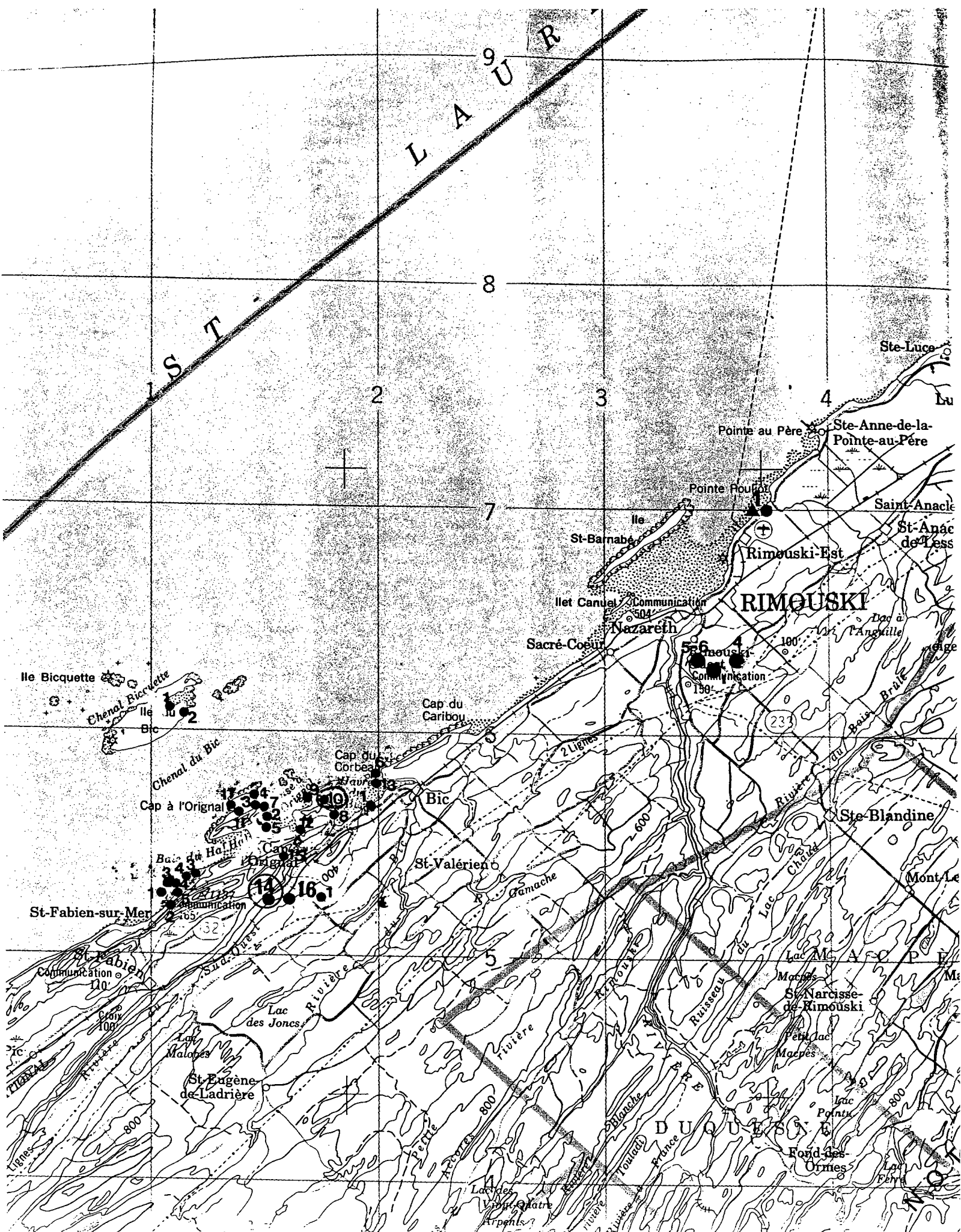
- Aband Abandonné, ée ...
 - P Bureau de poste ...
 - CE Centrale électrique ...
 - C Cimetière ...
 - CTÉ Comté ...
 - É Élévateur ...
 - GRC Gendarmerie Royale ...
-
- H Hôpital ...
 - Micro Micro-ondes ...
 - Mun Municipalité ...
 - Poste de transf. ... Poste de transf. ...
 - RI Réserve indienne ...
 - Rés Réservoir ...
 - Trav Traversier ...

Dc Ed



Use diagram only for APPROXIMATE MAGNETIC DECLINATION FOR C
Annual chart
N'utiliser le diagramme que pour DÉCLINAISON MAGNÉTIQUE AU CENTRE C
Variation annuelle

ONE THOUSAND UNIVERSAL TRANSVERSE MERCATOR QUADRILLAGE TRANSVERSE UNIVERSAL



ANNEXE 8 – Modélisation hydrologique (HELP)

LAYER 2

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 4

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 5

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 1 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 50. METERS.

SCS RUNOFF CURVE NUMBER	=	74.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.128	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	8.340	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.360	CM
INITIAL SNOW WATER	=	7.027	CM
INITIAL WATER IN LAYER MATERIALS	=	7.666	CM
TOTAL INITIAL WATER	=	14.693	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

<u>JAN/JUL</u>	<u>FEB/AUG</u>	<u>MAR/SEP</u>	<u>APR/OCT</u>	<u>MAY/NOV</u>	<u>JUN/DEC</u>
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

<u>JAN/JUL</u>	<u>FEB/AUG</u>	<u>MAR/SEP</u>	<u>APR/OCT</u>	<u>MAY/NOV</u>	<u>JUN/DEC</u>
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

PERCOLATION/LEAKAGE THROUGH 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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	2.3809	1.1024	2.4912	11.0849	13.4188	7.5409
	4.9159	3.8305	5.1459	4.1551	6.8252	4.9434
STD. DEVIATIONS	0.4069	0.1923	3.0418	5.1910	3.4835	1.7244
	0.5376	1.5577	1.3704	1.2491	1.2745	0.8252

DAILY AVERAGE HEAD ON TOP OF 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

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

	INCHES	CU. FEET	PERCENT
PRECIPITATION	36.06 (2.832)	323461.2	100.00
RUNOFF	0.000 (0.0000)	0.00	0.000
EVAPOTRANSPIRATION	15.199 (1.5222)	136333.69	42.148
LATERAL DRAINAGE COLLECTED FROM LAYER 1	21.17498 (3.20961)	189933.875	58.71921
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.00024 (0.00003)	2.138	0.00066
AVERAGE HEAD ON TOP OF LAYER 2	5.653 (0.725)		
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.00024 (0.00003)	2.136	0.00066
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.00000 (0.00000)	0.002	0.00000
AVERAGE HEAD ON TOP OF LAYER 4	0.000 (0.000)		
CHANGE IN WATER STORAGE	-0.313 (1.7253)	-2808.54	-0.868

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(INCHES)	(CU. FT.)
PRECIPITATION	1.64	14725.896
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 1	0.23763	2131.49658
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.000002	0.02034
AVERAGE HEAD ON TOP OF LAYER 2	19.685	
MAXIMUM HEAD ON TOP OF LAYER 2	23.117	
LOCATION OF MAXIMUM HEAD IN LAYER 1 (DISTANCE FROM DRAIN)	63.0 FEET	
DRAINAGE COLLECTED FROM LAYER 3	0.00000	0.02033
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.000000	0.00001
AVERAGE HEAD ON TOP OF LAYER 4	0.000	
MAXIMUM HEAD ON TOP OF LAYER 4	0.014	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	0.0 FEET	
SNOW WATER	15.62	140097.6250
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4170
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

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

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

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	2.6028	0.1322
2	0.0000	0.0000
3	0.0024	0.0100
4	0.0000	0.0000
5	0.1772	0.7500
SNOW WATER	1.437	

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	250.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2250	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.99999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 4

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 6

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 7

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 5. % AND A SLOPE LENGTH OF 35. METERS.

SCS RUNOFF CURVE NUMBER	=	84.70	
FRACTION OF AREA ALLOWING RUNOFF	=	85.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	0.365	CM
INITIAL WATER IN LAYER MATERIALS	=	60.706	CM
TOTAL INITIAL WATER	=	61.071	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CARIBOU MAINE

STATION LATITUDE	=	48.25 DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	140
END OF GROWING SEASON (JULIAN DATE)	=	272
EVAPORATIVE ZONE DEPTH	=	20.0 CM
AVERAGE ANNUAL WIND SPEED	=	12.70 KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	72.24 89.32	83.24 91.10	67.94 92.58	51.76 81.28	47.76 73.60	81.62 83.52
STD. DEVIATIONS	24.48 17.67	17.90 35.47	35.43 50.50	20.95 32.30	11.07 19.99	20.23 27.39
RUNOFF						
TOTALS	0.000 0.331	0.000 0.441	82.498 0.478	160.506 0.096	5.050 0.187	0.209 0.000
STD. DEVIATIONS	0.000 0.379	0.000 0.394	81.541 0.748	125.382 0.135	7.034 0.183	0.313 0.000
EVAPOTRANSPIRATION						
TOTALS	7.360 83.635	6.816 60.034	7.486 57.006	9.453 31.032	53.455 18.018	63.813 8.337
STD. DEVIATIONS	0.528 18.336	0.792 30.363	1.581 6.668	9.467 8.510	13.025 2.865	13.877 1.372
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	20.6350 16.6348	9.6104 11.5981	5.4744 13.2847	3.2890 24.2642	12.8092 22.2801	24.5662 38.0623
STD. DEVIATIONS	13.1116 9.6481	5.9571 7.7712	3.3577 11.2724	2.0227 16.4330	11.1252 14.4598	14.2828 14.0276
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0002 0.0002	0.0001 0.0001	0.0001 0.0002	0.0000 0.0003	0.0002 0.0003	0.0003 0.0005
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0001 0.0002	0.0002 0.0002
LATERAL DRAINAGE COLLECTED FROM LAYER 5						
TOTALS	0.0002 0.0002	0.0001 0.0001	0.0001 0.0002	0.0000 0.0003	0.0002 0.0003	0.0003 0.0005
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0001 0.0002	0.0002 0.0002

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 (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	6.9370	3.5501	1.8404	1.1426	4.3060	8.5334
	5.5922	3.8990	4.6149	8.1451	7.7383	12.7678
STD. DEVIATIONS	4.4078	2.2132	1.1288	0.7026	3.7399	4.9611
	3.2435	2.6125	3.9158	5.5047	5.0210	4.6872

DAILY AVERAGE HEAD ON TOP OF LAYER 6

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

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

	MM		CU. METERS	PERCENT
PRECIPITATION	915.96 (71.942)		9159.6	100.00
RUNOFF	249.795 (94.9595)		2497.95	27.271
EVAPOTRANSPIRATION	406.445 (22.3869)		4064.45	44.374
LATERAL DRAINAGE COLLECTED FROM LAYER 3	202.50827 (106.34358)		2025.083	22.10885
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00243 (0.00128)		0.024	0.00027
AVERAGE HEAD ON TOP OF LAYER 4	57.556 (30.272)			
LATERAL DRAINAGE COLLECTED FROM LAYER 5	0.00242 (0.00127)		0.024	0.00026
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00001 (0.00000)		0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 6	0.000 (0.000)			
CHANGE IN WATER STORAGE	57.209 (5.8700)		572.09	6.246

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(MM)	(CU. METERS)
PRECIPITATION	41.70	417.000
RUNOFF	79.953	799.5316
DRAINAGE COLLECTED FROM LAYER 3	2.26133	22.61328
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000026	0.00026
AVERAGE HEAD ON TOP OF LAYER 4	227.823	
MAXIMUM HEAD ON TOP OF LAYER 4	286.138	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	14.1 METERS	
DRAINAGE COLLECTED FROM LAYER 5	0.00003	0.00026
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 6	0.000	
MAXIMUM HEAD ON TOP OF LAYER 6	0.242	
LOCATION OF MAXIMUM HEAD IN LAYER 5 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4570
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(CM)	(VOL/VOL)
1	4.4119	0.2206
2	72.9999	0.2920
3	8.1579	0.1632
4	0.0000	0.0000
5	0.0060	0.0100
6	0.0000	0.0000
7	0.4500	0.7500
SNOW WATER	3.650	

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 19

THICKNESS	=	150.00	CM
POROSITY	=	0.1680	VOL/VOL
FIELD CAPACITY	=	0.0730	VOL/VOL
WILTING POINT	=	0.0190	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0700	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	350.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 6

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 7

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 75. METERS.

SCS RUNOFF CURVE NUMBER	=	83.80	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	3.650	CM
INITIAL WATER IN LAYER MATERIALS	=	102.456	CM
TOTAL INITIAL WATER	=	106.106	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
<u>PRECIPITATION</u>						
TOTALS	72.24 89.32	83.24 91.10	67.94 92.58	51.76 81.28	47.76 73.60	81.62 83.52
STD. DEVIATIONS	24.48 17.67	17.90 35.47	35.43 50.50	20.95 32.30	11.07 19.99	20.23 27.39
<u>RUNOFF</u>						
TOTALS	0.000 0.253	0.000 0.349	92.429 0.351	186.811 0.059	4.452 0.132	0.154 0.000
STD. DEVIATIONS	0.000 0.310	0.000 0.349	91.381 0.594	136.151 0.099	6.935 0.134	0.264 0.000
<u>EVAPOTRANSPIRATION</u>						
TOTALS	7.360 83.665	6.816 60.080	7.449 56.929	9.447 31.058	54.155 18.021	64.181 8.337
STD. DEVIATIONS	0.528 18.386	0.792 30.213	1.590 6.776	9.474 8.534	12.460 2.870	13.872 1.372
<u>LATERAL DRAINAGE COLLECTED FROM LAYER 4</u>						
TOTALS	22.7324 11.7500	10.6041 9.1670	6.0215 11.3911	3.0248 22.5034	4.7687 21.9629	14.6464 36.8347
STD. DEVIATIONS	14.5707 6.8332	6.6338 6.4926	3.7337 11.1342	1.8371 13.9392	4.1736 15.4675	8.3302 13.6111
<u>PERCOLATION/LEAKAGE THROUGH LAYER 5</u>						
TOTALS	0.0003 0.0001	0.0001 0.0001	0.0001 0.0001	0.0000 0.0003	0.0001 0.0003	0.0002 0.0004
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0001 0.0002	0.0001 0.0002
<u>LATERAL DRAINAGE COLLECTED FROM LAYER 6</u>						
TOTALS	0.0003 0.0001	0.0001 0.0001	0.0001 0.0001	0.0000 0.0003	0.0001 0.0003	0.0002 0.0004
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0000 0.0002	0.0001 0.0002

PERCOLATION/LEAKAGE THROUGH 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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	7.6411	3.9185	2.0243	1.0508	1.6031	5.0879
	3.9501	3.0817	3.9571	7.5601	7.6236	12.3611
STD. DEVIATIONS	4.8972	2.4675	1.2552	0.6382	1.4031	2.8938
	2.2972	2.1827	3.8678	4.6792	5.3631	4.5557

DAILY AVERAGE HEAD ON TOP OF 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

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

	MM		CU. METERS	PERCENT
PRECIPITATION	915.96	(71.942)	9159.6	100.00
RUNOFF	284.990	(99.7099)	2849.90	31.114
EVAPOTRANSPIRATION	407.498	(21.9959)	4074.98	44.489
LATERAL DRAINAGE COLLECTED FROM LAYER 4	175.40698	(92.56899)	1754.070	19.15007
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.00210	(0.00111)	0.021	0.00023
AVERAGE HEAD ON TOP OF LAYER 5	49.883	(26.375)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00210	(0.00111)	0.021	0.00023
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.00001	(0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	(0.000)		
CHANGE IN WATER STORAGE	48.064	(5.2309)	480.64	5.247

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(MM)	(CU. METERS)
PRECIPITATION	41.70	417.000
RUNOFF	92.965	929.6508
DRAINAGE COLLECTED FROM LAYER 4	1.85646	18.56458
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.000022	0.00022
AVERAGE HEAD ON TOP OF LAYER 5	191.425	
MAXIMUM HEAD ON TOP OF LAYER 5	245.647	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	13.1 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.00002	0.00022
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	
MAXIMUM HEAD ON TOP OF LAYER 7	0.222	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4018
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(CM)	(VOL/VOL)
1	4.4119	0.2206
2	10.9500	0.0730
3	102.2000	0.2920
4	8.4700	0.1694
5	0.0000	0.0000
6	0.0060	0.0100
7	0.0000	0.0000
8	0.4500	0.7500
SNOW WATER	3.650	

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 19

THICKNESS	=	150.00	CM
POROSITY	=	0.1680	VOL/VOL
FIELD CAPACITY	=	0.0730	VOL/VOL
WILTING POINT	=	0.0190	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0700	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	300.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	300.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2850	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 6

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 7

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 8

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 9

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 75. METERS.

SCS RUNOFF CURVE NUMBER	=	83.80	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	3.650	CM
INITIAL WATER IN LAYER MATERIALS	=	175.456	CM
TOTAL INITIAL WATER	=	179.106	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 5

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

PRECIPITATION						

TOTALS	72.24 89.32	83.24 91.10	67.94 92.58	51.76 81.28	47.76 73.60	81.62 83.52
STD. DEVIATIONS	24.48 17.67	17.90 35.47	35.43 50.50	20.95 32.30	11.07 19.99	20.23 27.39
RUNOFF						

TOTALS	0.000 0.253	0.000 0.349	92.429 0.351	186.811 0.059	4.452 0.132	0.154 0.000
STD. DEVIATIONS	0.000 0.310	0.000 0.349	91.381 0.594	136.151 0.099	6.935 0.134	0.264 0.000
EVAPOTRANSPIRATION						

TOTALS	7.360 83.665	6.816 60.080	7.449 56.929	9.447 31.058	54.155 18.021	64.181 8.337
STD. DEVIATIONS	0.528 18.386	0.792 30.213	1.590 6.776	9.474 8.534	12.460 2.870	13.872 1.372
LATERAL DRAINAGE COLLECTED FROM LAYER 5						

TOTALS	28.7796 14.5623	15.8415 10.5477	8.9805 10.0343	4.4261 16.7158	2.6997 21.8108	11.6336 25.6545
STD. DEVIATIONS	19.7185 8.3165	10.3409 6.8197	5.8201 8.6471	2.8066 11.8218	1.6379 14.9823	7.6056 16.7324
PERCOLATION/LEAKAGE THROUGH LAYER 6						

TOTALS	0.0003 0.0002	0.0002 0.0001	0.0001 0.0001	0.0001 0.0002	0.0000 0.0003	0.0001 0.0003
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0001 0.0002
LATERAL DRAINAGE COLLECTED FROM LAYER 7						

TOTALS	0.0003 0.0002	0.0002 0.0001	0.0001 0.0001	0.0001 0.0002	0.0000 0.0003	0.0001 0.0003
STD. DEVIATIONS	0.0002 0.0001	0.0001 0.0001	0.0001 0.0001	0.0000 0.0001	0.0000 0.0002	0.0001 0.0002

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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 6

AVERAGES	9.6576	5.8606	3.0191	1.5376	0.9076	4.0413
	4.8955	3.5459	3.4858	5.6195	7.5675	8.6196
STD. DEVIATIONS	6.6086	3.8582	1.9566	0.9750	0.5506	2.6420
	2.7958	2.2926	3.0039	3.9742	5.1895	5.6174

DAILY AVERAGE HEAD ON TOP OF LAYER 8

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

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

	MM		CU. METERS	PERCENT
PRECIPITATION	915.96	(71.942)	9159.6	100.00
RUNOFF	284.990	(99.7099)	2849.90	31.114
EVAPOTRANSPIRATION	407.498	(21.9959)	4074.98	44.489
LATERAL DRAINAGE COLLECTED FROM LAYER 5	171.68657	(100.29911)	1716.866	18.74389
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00206	(0.00120)	0.021	0.00022
AVERAGE HEAD ON TOP OF LAYER 6	48.965	(28.628)		
LATERAL DRAINAGE COLLECTED FROM LAYER 7	0.00205	(0.00120)	0.021	0.00022
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00001	(0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.000)		
CHANGE IN WATER STORAGE	51.784	(5.7582)	517.84	5.654

PEAK DAILY VALUES FOR YEARS	1 THROUGH	5
	(MM)	(CU. METERS)
PRECIPITATION	41.70	417.000
RUNOFF	92.965	929.6508
DRAINAGE COLLECTED FROM LAYER 5	1.79998	17.99979
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000021	0.00021
AVERAGE HEAD ON TOP OF LAYER 6	185.975	
MAXIMUM HEAD ON TOP OF LAYER 6	239.787	
LOCATION OF MAXIMUM HEAD IN LAYER 5 (DISTANCE FROM DRAIN)	13.0 METERS	
DRAINAGE COLLECTED FROM LAYER 7	0.00002	0.00021
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	
MAXIMUM HEAD ON TOP OF LAYER 8	0.218	
LOCATION OF MAXIMUM HEAD IN LAYER 7 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4018
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(CM)	(VOL/VOL)
1	4.4119	0.2206
2	10.9500	0.0730
3	87.6000	0.2920
4	87.6000	0.2920
5	10.3302	0.2066
6	0.0000	0.0000
7	0.0060	0.0100
8	0.0000	0.0000
9	0.4500	0.7500
SNOW WATER	3.650	

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 19

THICKNESS	=	150.00	CM
POROSITY	=	0.1680	VOL/VOL
FIELD CAPACITY	=	0.0730	VOL/VOL
WILTING POINT	=	0.0190	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0700	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	850.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	500.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2850	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 6

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 7

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 8

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 9

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 75. METERS.

SCS RUNOFF CURVE NUMBER	=	83.80	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	3.650	CM
INITIAL WATER IN LAYER MATERIALS	=	369.956	CM
TOTAL INITIAL WATER	=	373.606	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 6

AVERAGES	7.8863	7.1187	3.6929	1.8666	1.0445	3.8145
	5.2379	4.0038	3.3499	4.4270	4.9041	6.1647
STD. DEVIATIONS	4.9900	6.3068	3.2199	1.5720	0.7673	2.1727
	3.1405	2.6608	2.4147	3.4948	3.8230	3.2887

DAILY AVERAGE HEAD ON TOP OF LAYER 8

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

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 10

	MM		CU. METERS	PERCENT
PRECIPITATION	890.88	(72.792)	8908.8	100.00
RUNOFF	287.738	(74.6807)	2877.38	32.298
EVAPOTRANSPIRATION	390.465	(29.9620)	3904.65	43.829
LATERAL DRAINAGE COLLECTED FROM LAYER 5	155.99631	(88.40591)	1559.963	17.51036
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00187	(0.00106)	0.019	0.00021
AVERAGE HEAD ON TOP OF LAYER 6	44.592	(25.334)		
LATERAL DRAINAGE COLLECTED FROM LAYER 7	0.00187	(0.00106)	0.019	0.00021
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00001	(0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.000)		
CHANGE IN WATER STORAGE	56.679	(5.1321)	566.79	6.362

PEAK DAILY VALUES FOR YEARS	1 THROUGH 10	
	(MM)	(CU. METERS)
PRECIPITATION	42.40	424.000
RUNOFF	102.267	1022.6731
DRAINAGE COLLECTED FROM LAYER 5	2.81701	28.17011
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000032	0.00032
AVERAGE HEAD ON TOP OF LAYER 6	276.386	
MAXIMUM HEAD ON TOP OF LAYER 6	338.041	
LOCATION OF MAXIMUM HEAD IN LAYER 5 (DISTANCE FROM DRAIN)	15.3 METERS	
DRAINAGE COLLECTED FROM LAYER 7	0.00003	0.00032
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	
MAXIMUM HEAD ON TOP OF LAYER 8	0.266	
LOCATION OF MAXIMUM HEAD IN LAYER 7 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4220
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 10

LAYER	(CM)	(VOL/VOL)
1	5.5786	0.2789
2	10.9500	0.0730
3	248.2000	0.2920
4	146.0000	0.2920
5	8.0469	0.1609
6	0.0000	0.0000
7	0.0060	0.0100
8	0.0000	0.0000
9	0.4500	0.7500
SNOW WATER	11.053	


```

*****
*****
**
**
**
**          HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE          **
**          HELP MODEL VERSION 3.07 (1 NOVEMBER 1997)              **
**          DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**          USAE WATERWAYS EXPERIMENT STATION                       **
**          FOR USEPA RISK REDUCTION ENGINEERING LABORATORY        **
**
**
*****
*****

```

```

PRECIPITATION DATA FILE:   C:\HELP3\RIM-PE1.D4
TEMPERATURE DATA FILE:    C:\HELP3\RIM-TE1.D7
SOLAR RADIATION DATA FILE: C:\HELP3\RIM-SE1.D13
EVAPOTRANSPIRATION DATA:  C:\HELP3\RIM-EE1.D11
SOIL AND DESIGN DATA FILE: C:\HELP3\RIM-IFE.D10
OUTPUT DATA FILE:         C:\HELP3\RIM-OFE.OUT

```

```

TIME: 12:17    DATE: 5/27/2002

```

```

*****
TITLE: LET Rimouski - 15 m de MR - Front d'emfouissement
*****

```

```

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

```

```

LAYER 1
-----

```

```

          TYPE 1 - VERTICAL PERCOLATION LAYER
          MATERIAL TEXTURE NUMBER 5
THICKNESS           = 20.00 CM
POROSITY            = 0.4570 VOL/VOL
FIELD CAPACITY      = 0.1310 VOL/VOL
WILTING POINT      = 0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.1250 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.10000005000E-02 CM/SEC

```

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 19

THICKNESS	=	150.00	CM
POROSITY	=	0.1680	VOL/VOL
FIELD CAPACITY	=	0.0730	VOL/VOL
WILTING POINT	=	0.0190	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0700	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	850.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	500.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2850	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 5

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 6

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 7

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 8

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 9

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 30.% AND A SLOPE LENGTH OF 85. METERS.

SCS RUNOFF CURVE NUMBER	=	84.70	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	3.650	CM
INITIAL WATER IN LAYER MATERIALS	=	369.956	CM
TOTAL INITIAL WATER	=	373.606	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 6

AVERAGES	7.8711	7.0217	3.6507	1.8463	1.0329	3.8078
	5.2385	3.9993	3.3419	4.4246	4.8669	6.1315
STD. DEVIATIONS	5.0053	6.2060	3.1803	1.5526	0.7543	2.1705
	3.1385	2.6544	2.4159	3.4809	3.7748	3.3032

DAILY AVERAGE HEAD ON TOP OF LAYER 8

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

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 10				
	MM		CU. METERS	PERCENT
PRECIPITATION	890.88	(72.792)	8908.8	100.00
RUNOFF	288.696	(74.5784)	2886.96	32.406
EVAPOTRANSPIRATION	390.339	(30.0389)	3903.39	43.815
LATERAL DRAINAGE COLLECTED FROM LAYER 5	155.19191	(88.00533)	1551.919	17.42007
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00186	(0.00106)	0.019	0.00021
AVERAGE HEAD ON TOP OF LAYER 6	44.361	(25.219)		
LATERAL DRAINAGE COLLECTED FROM LAYER 7	0.00186	(0.00105)	0.019	0.00021
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.00001	(0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.000)		
CHANGE IN WATER STORAGE	56.651	(5.1028)	566.51	6.359

PEAK DAILY VALUES FOR YEARS	1 THROUGH	10
	(MM)	(CU. METERS)
PRECIPITATION	42.40	424.000
RUNOFF	102.267	1022.6731
DRAINAGE COLLECTED FROM LAYER 5	2.81614	28.16140
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000032	0.00032
AVERAGE HEAD ON TOP OF LAYER 6	276.314	
MAXIMUM HEAD ON TOP OF LAYER 6	337.963	
LOCATION OF MAXIMUM HEAD IN LAYER 5 (DISTANCE FROM DRAIN)	15.3 METERS	
DRAINAGE COLLECTED FROM LAYER 7	0.00003	0.00032
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 8	0.000	
MAXIMUM HEAD ON TOP OF LAYER 8	0.266	
LOCATION OF MAXIMUM HEAD IN LAYER 7 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4220
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 10

LAYER	(CM)	(VOL/VOL)
1	5.5786	0.2789
2	10.9500	0.0730
3	248.2000	0.2920
4	146.0000	0.2920
5	8.0192	0.1604
6	0.0000	0.0000
7	0.0060	0.0100
8	0.0000	0.0000
9	0.4500	0.7500
SNOW WATER	11.053	


```

*****
*****
**
**
**          HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE          **
**          HELP MODEL VERSION 3.07 (1 NOVEMBER 1997)              **
**          DEVELOPED BY ENVIRONMENTAL LABORATORY                  **
**          USAE WATERWAYS EXPERIMENT STATION                     **
**          FOR USEPA RISK REDUCTION ENGINEERING LABORATORY       **
**
**
*****
*****

```

```

PRECIPITATION DATA FILE:   C:\HELP3\RIM-PE1.D4
TEMPERATURE DATA FILE:    C:\HELP3\RIM-TE1.D7
SOLAR RADIATION DATA FILE: C:\HELP3\RIM-SE1.D13
EVAPOTRANSPIRATION DATA:  C:\HELP3\RIM-EE1.D11
SOIL AND DESIGN DATA FILE: C:\HELP3\RIM-I15F.D10
OUTPUT DATA FILE:         C:\HELP3\RIM-O15F.OUT

```

TIME: 10:42 DATE: 5/27/2002

```

*****
TITLE: LET Rimouski - 15 m de MR - CET avec Recouvrement Final
*****

```

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

```

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 8
THICKNESS = 15.00 CM
POROSITY = 0.4630 VOL/VOL
FIELD CAPACITY = 0.2320 VOL/VOL
WILTING POINT = 0.1160 VOL/VOL
INITIAL SOIL WATER CONTENT = 0.4600 VOL/VOL
EFFECTIVE SAT. HYD. COND. = 0.369999994000E-03 CM/SEC

```

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 5

THICKNESS	=	45.00	CM
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.1310	VOL/VOL
WILTING POINT	=	0.0580	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4479	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC
SLOPE	=	2.50	PERCENT
DRAINAGE LENGTH	=	200.0	METERS

LAYER 3

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.10	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	2.50	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	2.50	HOLES/HECTARE
FML PLACEMENT QUALITY	=	3	- GOOD

LAYER 4

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 5

THICKNESS	=	30.00	CM
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.1310	VOL/VOL
WILTING POINT	=	0.0580	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1819	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 5

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	1500.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 6

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0462	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 7

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	36.0	METERS

LAYER 9

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 10

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 8 WITH A FAIR STAND OF GRASS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 200. METERS.

SCS RUNOFF CURVE NUMBER	=	78.40	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	9.189	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.230	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	2.030	CM
INITIAL SNOW WATER	=	7.027	CM
INITIAL WATER IN LAYER MATERIALS	=	473.273	CM
TOTAL INITIAL WATER	=	480.300	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
CARIBOU MAINE

STATION LATITUDE	=	48.25 DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	140
END OF GROWING SEASON (JULIAN DATE)	=	272
EVAPORATIVE ZONE DEPTH	=	20.0 CM
AVERAGE ANNUAL WIND SPEED	=	12.70 KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CARIBOU MAINE
AND STATION LATITUDE = 48.25 DEGREES

AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	75.54 89.70	73.52 76.45	56.16 83.22	42.91 82.75	72.25 73.26	73.63 82.62
STD. DEVIATIONS	20.26 27.13	25.77 29.76	33.01 35.37	16.42 29.30	28.66 23.93	25.32 29.04
RUNOFF						
TOTALS	0.000 1.855	0.000 0.381	102.401 4.819	191.714 16.277	5.811 39.138	0.114 5.267
STD. DEVIATIONS	0.000 8.176	0.000 1.648	82.460 13.680	99.410 22.492	8.800 23.759	0.315 16.158
EVAPOTRANSPIRATION						
TOTALS	6.973 78.093	6.250 68.363	8.462 55.462	12.155 33.419	78.995 14.016	73.170 8.059
STD. DEVIATIONS	0.980 21.546	1.053 25.585	1.975 12.913	10.618 4.802	16.838 5.191	26.991 1.186
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	2.4763 2.7170	2.1599 2.7076	2.2695 2.7817	2.1616 3.0196	2.8184 3.0388	2.6724 2.6561
STD. DEVIATIONS	0.0916 0.1748	0.0883 0.2342	0.0849 0.2495	0.1342 0.3267	0.1367 0.2932	0.1808 0.1659
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	3.0452 3.3170	2.6737 3.3295	2.8281 3.4702	2.7042 3.8803	3.4535 4.0177	3.2697 3.2945
STD. DEVIATIONS	0.0962 0.2280	0.0959 0.3234	0.0898 0.3673	0.1477 0.5532	0.1907 0.5223	0.2572 0.2589
LATERAL DRAINAGE COLLECTED FROM LAYER 6						
TOTALS	3.6908 2.9373	3.2704 3.1349	3.3606 3.1440	3.0507 3.2439	2.9809 3.2108	2.6891 3.5436
STD. DEVIATIONS	0.9548 0.2679	0.8313 0.1890	0.8281 0.1856	0.7363 0.2262	0.6808 0.2308	0.4435 0.3498

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

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 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

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	37.0076	35.4203	33.9161	33.4464	42.8729	41.7906
	40.9039	41.0890	44.7826	49.0324	52.9503	40.5892
STD. DEVIATIONS	1.3689	1.3142	1.2686	2.1729	2.7447	3.8269
	3.2802	4.6534	5.4650	7.9721	7.7813	3.7266

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	1.2408	1.2059	1.1297	1.0598	1.0021	0.9341
	0.9875	1.0539	1.0922	1.0905	1.1154	1.1913
STD. DEVIATIONS	0.3210	0.3062	0.2784	0.2558	0.2289	0.1541
	0.0901	0.0635	0.0645	0.0760	0.0802	0.1176

DAILY AVERAGE HEAD ON TOP OF 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

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

	MM		CU. METERS	PERCENT
PRECIPITATION	882.04	(93.825)	8820.4	100.00
RUNOFF	367.777	(74.4412)	3677.77	41.696
EVAPOTRANSPIRATION	443.417	(48.4199)	4434.17	50.272
LATERAL DRAINAGE COLLECTED FROM LAYER 2	31.47884	(1.40074)	314.788	3.56889
PERCOLATION/LEAKAGE THROUGH LAYER 3	39.28342	(2.02872)	392.834	4.45373
AVERAGE HEAD ON TOP OF LAYER 3	411.501	(24.660)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	38.25692	(5.19386)	382.569	4.33735
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00046	(0.00006)	0.005	0.00005
AVERAGE HEAD ON TOP OF LAYER 7	10.919	(1.489)		
LATERAL DRAINAGE COLLECTED FROM LAYER 8	0.00045	(0.00006)	0.005	0.00005
PERCOLATION/LEAKAGE THROUGH LAYER 10	0.00001	(0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 9	0.000	(0.000)		
CHANGE IN WATER STORAGE	1.104	(1.9187)	11.04	0.125

PEAK DAILY VALUES FOR YEARS	1 THROUGH 20	
	(MM)	(CU. METERS)
PRECIPITATION	53.30	533.000
RUNOFF	102.739	1027.3928
DRAINAGE COLLECTED FROM LAYER 2	0.10911	1.09112
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.149681	1.49681
AVERAGE HEAD ON TOP OF LAYER 3	599.995	
MAXIMUM HEAD ON TOP OF LAYER 3	888.958	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	51.7 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.14546	1.45460
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000002	0.00002
AVERAGE HEAD ON TOP OF LAYER 7	15.159	
MAXIMUM HEAD ON TOP OF LAYER 7	27.335	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	3.5 METERS	
DRAINAGE COLLECTED FROM LAYER 8	0.00000	0.00002
PERCOLATION/LEAKAGE THROUGH LAYER 10	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 9	0.000	
MAXIMUM HEAD ON TOP OF LAYER 9	0.062	
LOCATION OF MAXIMUM HEAD IN LAYER 8 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4615
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.1015

*** 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.

FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(CM)	(VOL/VOL)
1	6.9400	0.4627
2	19.9872	0.4442
3	0.0000	0.0000
4	5.6525	0.1884
5	438.0000	0.2920
6	4.1643	0.0833
7	0.0000	0.0000
8	0.0060	0.0100
9	0.0000	0.0000
10	0.4500	0.7500
SNOW WATER	7.308	

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS	=	150.00	CM
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2250	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 19

THICKNESS	=	100.00	CM
POROSITY	=	0.1680	VOL/VOL
FIELD CAPACITY	=	0.0730	VOL/VOL
WILTING POINT	=	0.0190	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0730	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	50.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0300	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	37.5	METERS

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 6

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 34

THICKNESS	=	0.60	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	33.0000000000	CM/SEC
SLOPE	=	2.00	PERCENT
DRAINAGE LENGTH	=	37.5	METERS

LAYER 7

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.60	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 5 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND A SLOPE LENGTH OF 50. METERS.

SCS RUNOFF CURVE NUMBER	=	84.10	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.500	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.140	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.160	CM
INITIAL SNOW WATER	=	3.650	CM
INITIAL WATER IN LAYER MATERIALS	=	45.506	CM
TOTAL INITIAL WATER	=	49.156	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CARIBOU MAINE

STATION LATITUDE	=	48.25	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	140	
END OF GROWING SEASON (JULIAN DATE)	=	272	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	12.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	75.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	79.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
67.0	57.8	60.9	63.5	81.5	76.9
85.7	85.2	80.2	85.6	73.5	81.1

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-11.7	-10.1	-4.2	2.7	9.6	15.4
18.2	16.9	11.9	6.1	-0.3	-7.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
 COEFFICIENTS FOR CARIBOU MAINE
 AND STATION LATITUDE = 48.25 DEGREES

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

	MM	CU. METERS	PERCENT
PRECIPITATION	915.96 (71.942)	9159.6	100.00
RUNOFF	285.235 (99.6676)	2852.35	31.141
EVAPOTRANSPIRATION	407.406 (21.9185)	4074.06	44.479
LATERAL DRAINAGE COLLECTED FROM LAYER 4	186.29651 (79.78307)	1862.965	20.33893
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.00233 (0.00100)	0.023	0.00025
AVERAGE HEAD ON TOP OF LAYER 5	55.143 (23.680)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00232 (0.00099)	0.023	0.00025
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.00001 (0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000 (0.000)		
CHANGE IN WATER STORAGE	37.020 (4.4781)	370.20	4.042

PEAK DAILY VALUES FOR YEARS	1 THROUGH 5	
	(MM)	(CU. METERS)
PRECIPITATION	41.70	417.000
RUNOFF	92.965	929.6508
DRAINAGE COLLECTED FROM LAYER 4	2.59817	25.98172
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.000031	0.00031
AVERAGE HEAD ON TOP OF LAYER 5	268.773	
MAXIMUM HEAD ON TOP OF LAYER 5	331.304	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	15.5 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.00003	0.00031
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	
MAXIMUM HEAD ON TOP OF LAYER 7	0.274	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.0 METERS	
SNOW WATER	396.72	3967.2095
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4018
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0580

*** 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.

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(CM)	(VOL/VOL)
1	4.4119	0.2206
2	43.7999	0.2920
3	7.3000	0.0730
4	8.0483	0.1610
5	0.0000	0.0000
6	0.0060	0.0100
7	0.0000	0.0000
8	0.4500	0.7500
SNOW WATER	3.650	

