Monitoring Well Log

Monitoring Well: BH-6/ MW-6

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

Depth, m	Symbol	Description	Elevation, m	Number	Type	Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80, 100)	Well data	Remarks
0		Ground Surface	23.1					
		Asphalt						
0.5				SS1		0		
1			22					Slight odours detected at 0.9 m bgs.
		Sand Brown coarse-grained sand with some pebbles and cobbles, dry.		SS2		57.2		<--- bentonite
1.5								Saturated soil.
				SS3		109		
2			21					<--- screen
				SS4		68.2		
		End of Borehole						
2.5								
3								

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2 inch split spoon

Drilling Date: Sept 23/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8

Monitoring Well Log

Monitoring Well: BH-5/ MW-5

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

SUBSURFACE PROFILE				SAMPLE		Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80, 100)	Well data	Remarks
Depth, m	Symbol	Description	Elevation, m	Number	Type			
0		Ground Surface	22.8					
		Asphalt						Slight odours detected.
0.5				SS1		0.5		<--- bentonite
			22					
1		***Sand*** Brown medium-grained sand with some pebbles and cobbles, dry.						<--- screen
				SS2		62.5		
1.5								Saturated soil.
			21	SS3		57.9		
2				SS4		148		
		End of Borehole						
2.5								
			20					
3								

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2 inch split spoon

Drilling Date: Sept 23/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8

Borehole Log

Borehole BH-4

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

SUBSURFACE PROFILE

Depth, m	Symbol	Description	Elevation, m	Sample Number	Sample Type	Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80)	Remarks
0		Ground Surface	23				
		Asphalt					No odours detected.
		Silty Sand Brown silty sand with trace pebbles and cobbles, dry.		SS1		0	
1				SS2		0	Humid soils (0.95 m bgs)
				SS3		0	Saturated soils (1.7 m bgs).
2		End of Borehole					EOH at 2.3 m bgs. No sign of contamination
3			20				

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2 inch split spoon

Drilling Date: Sept 22/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8

Borehole Log

Borehole BH-3

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

Depth, m	Symbol	Description	Elevation, m	Sample Number	Sample Type	Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80)	Remarks
0		Ground Surface	22.5				
		Asphalt					No odours detected.
		Silty Sand Brown silty sand with trace pebbles and cobbles, dry.		SS1		0	
							Complete refusal.
1		End of Borehole					
2							
			20				
3							

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2 inch split spoon

Drilling Date: Sept 22/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8

Borehole Log

Borehole BH-2

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

SUBSURFACE PROFILE								
Depth, m	Symbol	Description	Elevation, m	Sample Number	Sample Type	Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80)	Remarks
0		Ground Surface	22.6				
		Asphalt					No odours detected.
		Silty Sand Brown silty sand with trace pebbles and cobbles, dry.		SS1			
1				SS2			
				SS3			
2							Saturated soils (2.3 m bgs).
			20	SS4			
3		End of Borehole					Complete refusal.

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2inch split spoon

Drilling Date: Sept 22/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8

Monitoring Well Log

Monitoring Well: BH-1/ MW-1

Project: Main Apron, Ph III ESA, Iqaluit Airport

Project No.: 04-3730

Client: Transport Canada

Geoscientist: AG

DILLON CONSULTING

SUBSURFACE PROFILE				SAMPLE		Hydrocarbon Vapour parts per million (100, 200, 300, 400) / % LEL (20, 40, 60, 80, 100)	Well data	Remarks
Depth, m	Symbol	Description	Elevation, m	Number	Type			
0		Ground Surface	22.9					
		Asphalt						No odours detected.
0.5				SS1				
			22	SS2				<— bentonite
1		***Sand*** Brown medium-grained sand with some pebbles and cobbles, dry.						
1.5				SS3				
				SS4				<— screen
			21					Saturated soil (1.98 m bgs).
2				SS5				
		End of Borehole						
2.5								
			20					
3								

Drilled By: Sonic Soil Sampling

Drilling Method: Pionjar with 2 inch split spoon

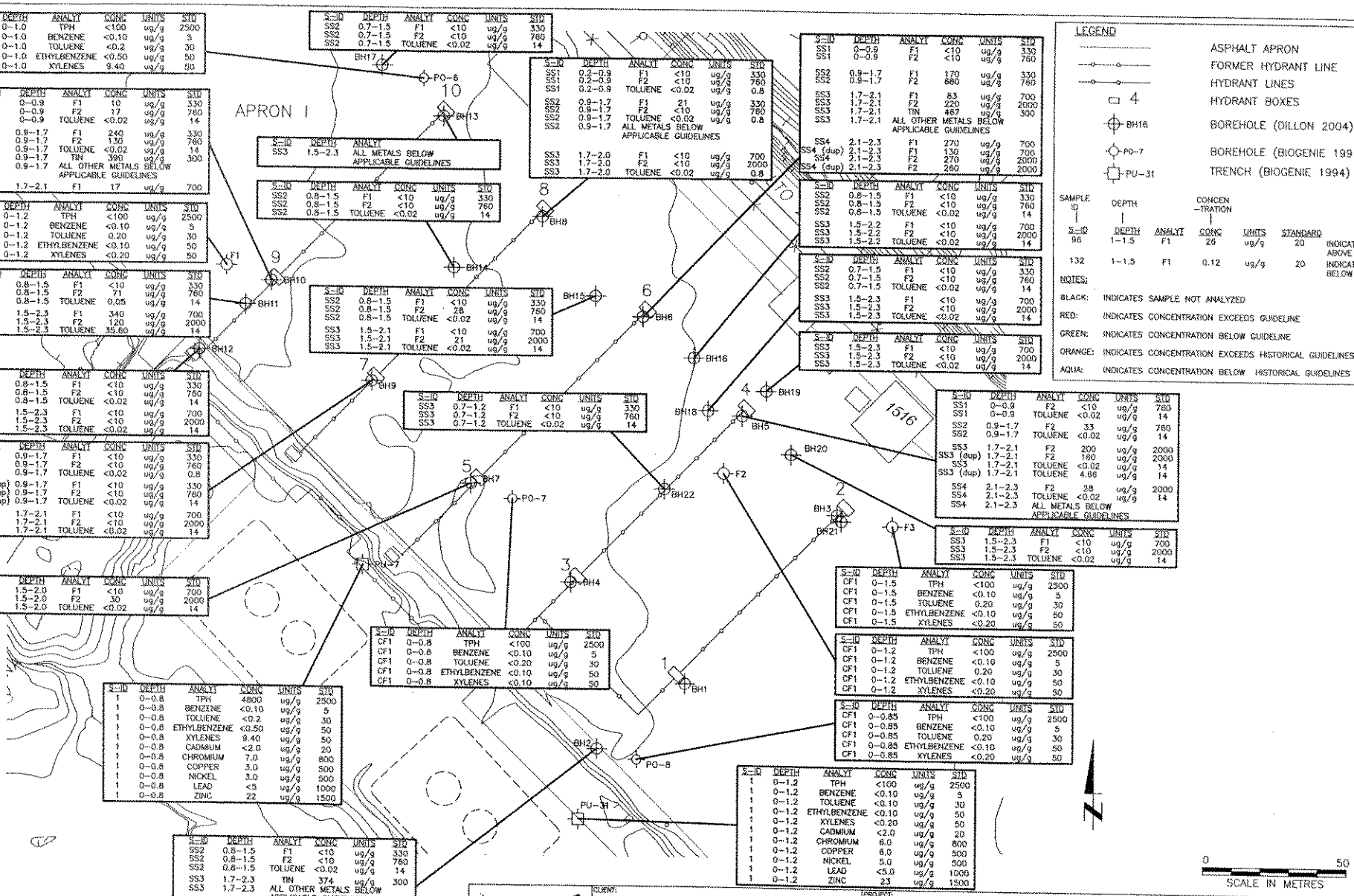
Drilling Date: Sept 22/04

Hole Size: 2 inch

Datum: Geodedic

Sheet: 1 of 1

Dillon Consulting Limited
130-10691 Shellbridge Way
Richmond, B.C.
V6X 2E8



S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-1.0	TPH	<100	ug/g	2500
CF1	0-1.0	BENZENE	<0.10	ug/g	5
CF1	0-1.0	TOLUENE	<0.2	ug/g	30
CF1	0-1.0	ETHYLBENZENE	<0.50	ug/g	50
CF1	0-1.0	XYLENES	9.40	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS1	0-0.9	F1	10	ug/g	330
SS1	0-0.9	F2	17	ug/g	760
SS1	0-0.9	TOLUENE	<0.02	ug/g	14
SS2	0.9-1.7	F1	240	ug/g	330
SS2	0.9-1.7	F2	130	ug/g	760
SS2	0.9-1.7	TOLUENE	<0.02	ug/g	14
SS2	0.9-1.7	TIN	390	ug/g	300
SS2	0.9-1.7	ALL OTHER METALS BELOW APPLICABLE GUIDELINES			
SS3	1.7-2.1	F1	17	ug/g	700

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-1.2	TPH	<100	ug/g	2500
CF1	0-1.2	BENZENE	<0.10	ug/g	5
CF1	0-1.2	TOLUENE	0.20	ug/g	30
CF1	0-1.2	ETHYLBENZENE	<0.10	ug/g	50
CF1	0-1.2	XYLENES	<0.20	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.8-1.5	F1	<10	ug/g	330
SS2	0.8-1.5	F2	71	ug/g	760
SS2	0.8-1.5	TOLUENE	0.05	ug/g	14
SS3	1.5-2.3	F1	340	ug/g	700
SS3	1.5-2.3	F2	120	ug/g	2000
SS3	1.5-2.3	TOLUENE	35.60	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.8-1.5	F1	<10	ug/g	330
SS2	0.8-1.5	F2	<10	ug/g	760
SS2	0.8-1.5	TOLUENE	<0.02	ug/g	14
SS3	1.5-2.3	F1	<10	ug/g	700
SS3	1.5-2.3	F2	<10	ug/g	2000
SS3	1.5-2.3	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.9-1.7	F1	<10	ug/g	330
SS2	0.9-1.7	F2	<10	ug/g	760
SS2	0.9-1.7	TOLUENE	<0.02	ug/g	0.8
SS2 (dup)	0.9-1.7	F1	<10	ug/g	330
SS2 (dup)	0.9-1.7	F2	<10	ug/g	760
SS2 (dup)	0.9-1.7	TOLUENE	<0.02	ug/g	14
SS3	1.7-2.1	F1	<10	ug/g	700
SS3	1.7-2.1	F2	<10	ug/g	2000
SS3	1.7-2.1	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS3	1.5-2.0	F1	<10	ug/g	700
SS3	1.5-2.0	F2	30	ug/g	2000
SS3	1.5-2.0	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
1	0-0.8	TPH	4800	ug/g	2500
1	0-0.8	BENZENE	<0.10	ug/g	5
1	0-0.8	TOLUENE	<0.2	ug/g	30
1	0-0.8	ETHYLBENZENE	<0.50	ug/g	50
1	0-0.8	XYLENES	9.40	ug/g	50
1	0-0.8	CADMIUM	<2.0	ug/g	20
1	0-0.8	CHROMIUM	7.0	ug/g	800
1	0-0.8	COPPER	3.0	ug/g	500
1	0-0.8	NICKEL	3.0	ug/g	500
1	0-0.8	LEAD	<5	ug/g	1000
1	0-0.8	ZINC	22	ug/g	1500

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.8-1.5	F1	<10	ug/g	330
SS2	0.8-1.5	F2	<10	ug/g	760
SS2	0.8-1.5	TOLUENE	<0.02	ug/g	14
SS3	1.7-2.3	TIN	374	ug/g	300
SS3	1.7-2.3	ALL OTHER METALS BELOW APPLICABLE GUIDELINES			
SS4	2.3-2.9	ALL METALS BELOW APPLICABLE GUIDELINES			

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.7-1.5	F1	<10	ug/g	330
SS2	0.7-1.5	F2	<10	ug/g	760
SS2	0.7-1.5	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS3	1.5-2.3	ALL METALS BELOW APPLICABLE GUIDELINES			

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS1	0.2-0.9	F1	<10	ug/g	330
SS1	0.2-0.9	F2	<10	ug/g	760
SS1	0.2-0.9	TOLUENE	<0.02	ug/g	0.8
SS2	0.9-1.7	F1	21	ug/g	330
SS2	0.9-1.7	F2	<10	ug/g	760
SS2	0.9-1.7	TOLUENE	<0.02	ug/g	0.8
SS2	0.9-1.7	ALL METALS BELOW APPLICABLE GUIDELINES			
SS3	1.7-2.0	F1	<10	ug/g	700
SS3	1.7-2.0	F2	<10	ug/g	2000
SS3	1.7-2.0	TOLUENE	<0.02	ug/g	0.8

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS1	0-0.9	F1	<10	ug/g	330
SS1	0-0.9	F2	<10	ug/g	760
SS2	0.9-1.7	F1	170	ug/g	330
SS2	0.9-1.7	F2	680	ug/g	760
SS3	1.7-2.1	F1	83	ug/g	700
SS3	1.7-2.1	F2	220	ug/g	2000
SS3	1.7-2.1	TIN	487	ug/g	300
SS3	1.7-2.1	ALL OTHER METALS BELOW APPLICABLE GUIDELINES			
SS4	2.1-2.3	F1	270	ug/g	700
SS4 (dup)	2.1-2.3	F1	130	ug/g	700
SS4	2.1-2.3	F2	270	ug/g	2000
SS4 (dup)	2.1-2.3	F2	260	ug/g	2000

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.8-1.5	F1	<10	ug/g	330
SS2	0.8-1.5	F2	<10	ug/g	760
SS2	0.8-1.5	TOLUENE	<0.02	ug/g	14
SS3	1.5-2.2	F1	<10	ug/g	700
SS3	1.5-2.2	F2	<10	ug/g	2000
SS3	1.5-2.2	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS2	0.7-1.5	F1	<10	ug/g	330
SS2	0.7-1.5	F2	<10	ug/g	760
SS2	0.7-1.5	TOLUENE	<0.02	ug/g	14
SS3	1.5-2.3	F1	<10	ug/g	700
SS3	1.5-2.3	F2	<10	ug/g	2000
SS3	1.5-2.3	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS3	1.5-2.3	F1	<10	ug/g	700
SS3	1.5-2.3	F2	<10	ug/g	2000
SS3	1.5-2.3	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS1	0-0.9	F2	<10	ug/g	760
SS1	0-0.9	TOLUENE	<0.02	ug/g	14
SS2	0.9-1.7	F2	33	ug/g	760
SS2	0.9-1.7	TOLUENE	<0.02	ug/g	14
SS3	1.7-2.1	F2	200	ug/g	2000
SS3 (dup)	1.7-2.1	F2	160	ug/g	2000
SS3	1.7-2.1	TOLUENE	<0.02	ug/g	14
SS3 (dup)	1.7-2.1	TOLUENE	4.86	ug/g	14
SS4	2.1-2.3	F2	28	ug/g	2000
SS4	2.1-2.3	TOLUENE	<0.02	ug/g	14
SS4	2.1-2.3	ALL METALS BELOW APPLICABLE GUIDELINES			

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
SS3	1.5-2.3	F1	<10	ug/g	700
SS3	1.5-2.3	F2	<10	ug/g	2000
SS3	1.5-2.3	TOLUENE	<0.02	ug/g	14

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-1.5	TPH	<100	ug/g	2500
CF1	0-1.5	BENZENE	<0.10	ug/g	5
CF1	0-1.5	TOLUENE	0.20	ug/g	30
CF1	0-1.5	ETHYLBENZENE	<0.10	ug/g	50
CF1	0-1.5	XYLENES	<0.20	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-0.8	TPH	<100	ug/g	2500
CF1	0-0.8	BENZENE	<0.10	ug/g	5
CF1	0-0.8	TOLUENE	<0.20	ug/g	30
CF1	0-0.8	ETHYLBENZENE	<0.10	ug/g	50
CF1	0-0.8	XYLENES	<0.10	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-1.2	TPH	<100	ug/g	2500
CF1	0-1.2	BENZENE	<0.10	ug/g	5
CF1	0-1.2	TOLUENE	0.20	ug/g	30
CF1	0-1.2	ETHYLBENZENE	<0.10	ug/g	50
CF1	0-1.2	XYLENES	<0.20	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
CF1	0-0.85	TPH	<100	ug/g	2500
CF1	0-0.85	BENZENE	<0.10	ug/g	5
CF1	0-0.85	TOLUENE	0.20	ug/g	30
CF1	0-0.85	ETHYLBENZENE	<0.10	ug/g	50
CF1	0-0.85	XYLENES	<0.20	ug/g	50

S-ID	DEPTH	ANALYT	CONC	UNITS	STD
1	0-1.2	TPH	<100	ug/g	2500
1	0-1.2	BENZENE	<0.10	ug/g	5
1	0-1.2	TOLUENE	<0.10	ug/g	30
1	0-1.2	ETHYLBENZENE	<0.10	ug/g	50
1	0-1.2	XYLENES	<0.20	ug/g	50
1	0-1.2	CADMIUM	<2.0	ug/g	20
1	0-1.2	CHROMIUM	8.0	ug/g	800
1	0-1.2	COPPER	8.0	ug/g	500
1	0-1.2	NICKEL	5.0	ug/g	500
1	0-1.2	LEAD	<5.0	ug/g	1000
1	0-1.2	ZINC	23	ug/g	1500

LEGEND

- ASPHALT APRON
- FORMER HYDRANT LINE
- HYDRANT LINES
- 4 HYDRANT BOXES
- BH16 BOREHOLE (DILLON 2004)
- PO-7 BOREHOLE (BIOGENIE 1994)
- PU-31 TRENCH (BIOGENIE 1994)

SAMPLE ID | DEPTH | CONCEN-TRATION

S-ID	DEPTH	ANALYT	CONC	UNITS	STANDARD	
96	1-1.5	F1	26	ug/g	20	INDICATES CONCENTRATION ABOVE STANDARD
132	1-1.5	F1	0.12	ug/g	20	INDICATES CONCENTRATION BELOW STANDARD

NOTES:

BLACK: INDICATES SAMPLE NOT ANALYZED

RED: INDICATES CONCENTRATION EXCEEDS GUIDELINE

GREEN: INDICATES CONCENTRATION BELOW GUIDELINE

ORANGE: INDICATES CONCENTRATION EXCEEDS HISTORICAL GUIDELINES

AQUA: INDICATES CONCENTRATION BELOW HISTORICAL GUIDELINES

DILLON CONSULTING

CLIENT: TRANSPORT CANADA

PROJECT: ENVIRONMENTAL SITE ASSESSMENT IQALUIT AIRPORT APRON I

TITLE: 1994/2004 SOIL ASSESSMENT PROGRAMS

DILLON PROJECT NUMBER: 04-3730

DILLON FIGURE NUMBER: 3

SCALE: 1:1250

DATE: FEBRUARY 2005

REVISION: -

FINAL

BIOGÉNIE Inc
ENVIRONNENT SPECIALISTS
350 rue Franquet, suite 10 Ste-Foy, Québec G1P 3P3
Tel. : (418) 653-4422 Fax. : (418) 653-3563

BOREHOLE LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: F-3
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Forages de Montréal
OPERATOR: Philippe Fornes
TYPE OF TUBING: ---

STARTED ON: 14-08-94
SLOTTED PIPE Ø : 50mm
DRILL TYPE: Tripod
METHOD (SOIL): Cable tool
DRILLING FLUID: ---

ENDED ON: 14-08-94
TUBING Ø : 50mm
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E. Giroux

LEVELLING			MONITORING WELL		SAMPLE						GEOLOGY		OBSERVATIONS
DEPTH (meters)	ELEVATION (meters)	WATER TABLE	WELL DESIGN	NOTES	SAMPLE STATE	SAMPLE TYPE AND NUMBER	RECOVERY %	SPT	ANALYSED PARAMETERS	VOLATILE HYDROCARBON RECORD (PPM)	STRATIGRAPHY	SOIL/ROCK DESCRIPTION	ODOUR / VISUAL (O W I P NE SC SA)
0.00	24.16											Asphalt	
0.20	23.96					CF-1	80					Fill: gravelly sand, brown, dry	
1.50	22.66											Permafrost 1.50 metre	

STATE OF SAMPLE:
INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 24.16 metres
WATER TABLE LEVEL:
_____ HOUR(s) AFTER DIGGING: _____

BIOGÉNIE Inc
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BOREHOLE LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: PO-6
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Forages de Montréal
OPERATOR: Philippe Fornes
TYPE OF TUBING: ---

STARTED ON: 13-08-94
SLOTTED PIPE Ø : 50mm
DRILL TYPE: Tripod
METHOD (SOIL): Cable tool
DRILLING FLUID: ---

ENDED ON: 13-08-94
TUBING Ø : 50mm
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E. Giroux

LEVELLING: DEPTH (meters)	LEVELLING: ELEVATION (meters)	LEVELLING: WATER TABLE	MONITORING WELL: WELL DESIGN	MONITORING WELL: NOTES	SAMPLE: SAMPLE STATE	SAMPLE: SAMPLE TYPE AND NUMBER	SAMPLE: RECOVERY %	SAMPLE: SPT	SAMPLE: ANALYSED PARAMETERS	SAMPLE: VOLATILE HYDROCARBON RECORD (PPM)	GEOLOGY: STRATIGRAPHY	GEOLOGY: SOIL/ROCK DESCRIPTION	OBSERVATIONS: ODOUR O	ODOUR W	ODOUR I	ODOUR P	VISUAL NE	VISUAL SC	VISUAL SA
0.00	24.09											Asphalt							
				PVC TUBING, 50mm, SLOTTED OPENING 10 MILS		CF-1	100					Fill: coarse sand, with gravel, brown, moist							
0.90	23.19																		
1.00	23.09											Permafrost 1.00 metre							

STATE OF SAMPLE: INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 24.09 metres
WATER TABLE LEVEL:
24,sec HOUR(s) AFTER DIGGING: 23.19

BIOGÉNIE Inc
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BOREHOLE LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: PO-7
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Forages de Montréal
OPERATOR: Philippe Fornes
TYPE OF TUBING: ---

STARTED ON: 13-08-94
SLOTTED PIPE Ø : 50mm
DRILL TYPE: Tripod
METHOD (SOIL): Cable tool
DRILLING FLUID: ---

ENDED ON: 13-08-94
TUBING Ø : 50mm
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E. Giroux

LEVELLING			MONITORING WELL		SAMPLE						GEOLOGY		OBSERVATIONS
DEPTH (meters)	ELEVATION (meters)	WATER TABLE	WELL DESIGN	NOTES	SAMPLE STATE	SAMPLE TYPE AND NUMBER	RECOVERY %	SPT	ANALYSED PARAMETERS	VOLATILE HYDROCARBON RECORD (PPM)	STRATIGRAPHY	SOIL/ROCK DESCRIPTION	ODOUR / VISUAL
0.00	24.10											Asphalt	
				PVC TUBING, 50mm, SLOTTED OPENING 10 MILS		CF-1	100					Fill: coarse gravelly sand, brown, moist	
0.80	23.30											Permafrost 0.80 metre	

STATE OF SAMPLE: INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 24.10 metres
WATER TABLE LEVEL:
24,sec HOUR(s) AFTER DIGGING: ---

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BOREHOLE LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: PO-8
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Forages de Montréal
OPERATOR: Philippe Fornes
TYPE OF TUBING: ---

STARTED ON: 13-08-94
SLOTTED PIPE Ø : 50mm
DRILL TYPE: Tripod
METHOD (SOIL): Cable tool
DRILLING FLUID: ---

ENDED ON: 13-08-94
TUBING Ø : 50mm
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E. Giroux

LEVELLING			MONITORING WELL		SAMPLE						GEOLOGY		OBSERVATIONS	
DEPTH (meters)	ELEVATION (meters)	WATER TABLE	WELL DESIGN	NOTES	SAMPLE STATE	SAMPLE TYPE AND NUMBER	RECOVERY %	SPT	ANALYSED PARAMETERS	VOLATILE HYDROCARBON RECORD (PPM)	STRATIGRAPHY	SOIL/ROCK DESCRIPTION	ODOUR	VISUAL
0.00	24.17											Asphalt		
				PVC TUBING, 50mm, SLOTTED OPENING 10 MILS		CF-1	100					Fill: gravelly sand, brown, dry		
0.85	23.32											Permafrost 0.85 metre		

STATE OF SAMPLE:
INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 24.17 metres
WATER TABLE LEVEL:
24,sec HOUR(s) AFTER DIGGING:

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TRENCH LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: PU-7
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Rock Lessard Inc.
OPERATOR: ---
TYPE OF TUBING: ---

STARTED ON: 15-08-94
SLOTTED PIPE Ø : ---
DRILL TYPE: Backhoe
METHOD (SOIL): ---
DRILLING FLUID: ---

ENDED ON: 15-08-94
TUBING Ø : ---
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E.Giroux

LEVELLING			MONITORING WELL		SAMPLE					GEOLOGY		OBSERVATIONS
DEPTH (meters)	ELEVATION (meters)	WATER TABLE	WELL DESIGN	NOTES	SAMPLE STATE	SAMPLE TYPE AND NUMBER	RECOVERY %	ANALYSED PARAMETERS	VOLATILE HYDROCARBON RECORD (PPM)	STRATIGRAPHY	SOIL/ROCK DESCRIPTION	ODOUR (D, W, I, P) / VISUAL (NE, SC, SA)
0.00	22.56										Fill: coarse sand with gravel, black, moist	
				PVC TUBING, 50mm, SLOTTED OPENING 10 MILS		PU-7-1						
0.90	21.66	▽										
1.40	21.16										Permafrost 1.40 metre, iridescent water surface	

STATE OF SAMPLE:
INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 22.56 metres
WATER TABLE LEVEL:
-- HOUR(s) AFTER DIGGING: 21.66

BIOGÉNIE Inc
ENVIRONNENT SPECIALISTS
Tel. : (418) 653-4422 Fax. : (418) 653-3563

TRENCH LOG

CONFIDENTIAL AND PRIVILEGED DOCUMENT

TRENCH #: PU-31
SHEET: 1 OF 1
FILE #: 947

PROJECT: TRANSPORT CANADA
LOCATION: IQALUIT AIRPORT, NORTHWEST TERRITORIES
CONTRACTOR: Rock Lessard Inc.
OPERATOR: ---
TYPE OF TUBING: ---

STARTED ON: 15-08-94
SLOTTED PIPE Ø : ---
DRILL TYPE: Backhoe
METHOD (SOIL): ---
DRILLING FLUID: ---

ENDED ON: 15-08-94
TUBING Ø : ---
CORE SAMPLER Ø : ---
METHOD (ROCK): ---
DONE BY: E.Giroux

LEVELLING: DEPTH (metres)	LEVELLING: ELEVATION (metres)	LEVELLING: WATER TABLE	MONITORING WELL: WELL DESIGN	MONITORING WELL: NOTES	SAMPLE: SAMPLE STATE	SAMPLE: SAMPLE TYPE AND NUMBER	SAMPLE: RECOVERY %	SAMPLE: ANALYSED PARAMETERS	SAMPLE: VOLATILE HYDROCARBON RECORD (PPM)	GEOLOGY: STRATIGRAPHY	GEOLOGY: SOIL/ROCK DESCRIPTION	OBSERVATIONS: ODOUR	OBSERVATIONS: VISUAL
0.00	22.04										Peaty soil, black		
0.40	21.64	▽		PVC TUBING, 50mm, SLOTTED OPENING 10 MILS		PU-31-1					Fill: gravelly sand, brown, moist		
1.20	20.84										Permafrost 1.20 metre		

STATE OF SAMPLE: INTACT DISTURBED LOST CORE SAMPLE

TYPE OF SAMPLE:
CF — SPLIT SPOON SAMPLER
TM — THIN WALL SAMPLER
CR — CORE SAMPLER

OBSERVATIONS
O — ODORLESS
W — WEAK
I — INTERMIDIATE
P — PERSISTENT
NE — NON-EXISTANT
SC — SCATTERED
SA — SATURATED

▽ = WATER TABLE
** = FIELD DUPLICATE
* = ANALYSED SAMPLE

SURFACE PROTECTION: ---
SURFACE SEAL: ---
SEAL DEPTH: ---
SLOTTED PIPE LENGTH: ---
TUBING LENGTH: ---

GROUND LEVEL:
REFERENCE LEVEL: 0.00 metre
BEDROCK LEVEL: ---
GROUD LEVEL: 22.04 metres
WATER TABLE LEVEL:
-- HOUR(s) AFTER DIGGING: 21.64

LAYFIELD

Geomembranes - Arctic Liner

Arctic Liner® is a carefully formulated alloy for hydrocarbon containment that combines chemical resistance with ease of installation.

Arctic Liner® has been Layfield's best selling secondary containment liner material for over 10 years. This proprietary oil resistant alloy is well suited to secondary containment of combustible liquids and some fuels. Arctic Liner® is also excellent for soil remediation work and for separation of soils at contaminated sites.

Arctic Liner® is used as a secondary containment liner in chemically compatible installations. Arctic Liner® is excellent for the containment of combustible liquids and many oilfield chemicals.

The name Arctic Liner® refers to the material's ease of installation in remote sites (such as the Canadian Arctic). Arctic Liner® installation and repair can be described to local contractors with a minimum of training, often over the phone, so that installation and repairs can be carried out anywhere.

Arctic Liner® is one of the most versatile materials available, with both supported and unsupported versions extending the versatility to almost any application.

7 Jan 2002	Arctic Liner® Minimum Material Properties			
Style	**ASTM Unsupported Materials (U)**	**Arctic Liner® 30 (U)**	**ASTM Supported Materials (S)**	**Arctic Liner® 38 (S)**
Thickness (Nominal)	D1593	30 mil 0.75 mm	D1593	38 mil 0.95 mm
Thickness Minimum	D1593	28.5 mil 0.72 mm	D1593	36 mil 0.91 mm
Tensile Strength (MD)	D882	57 ppi 10 N/mm	D751	180 lbs 800 N
Elongation	D882	500 %	D751	25 %
Modulus at 100%	D882	18 ppi 3.2 N/mm		
Tear Strength (MD)	D1004	6 lbs 26.7 N	D751	22 lbs 98 N
Low Temperature	D1790	-22°F -30°C	D2136	-22°F -30°C
Dimensional Stability	D1204 Max Change	5 %	D1204	2.5 %
Water Extraction	D3083	0.25 %	D3083	1.5 %
Volatile Loss	D1203 (A)	1.0 %	D1203	2.0 %

7 Jan 2002	Arctic Liner® Minimum Shop Seam Strengths			
Style	**ASTM Unsupported Materials (U)**	**Arctic Liner® 30 (U)**	**ASTM Supported Materials (S)**	**Arctic Liner® 38 (S)**
Heat Bonded Seam Strength	D4545 25.4 mm (1") Strip	37 ppi 6.5 N/mm	D4545 25.4 mm (1") Strip	100 ppi 17.5 N/mm
Heat Bonded Peel Adhesion Strength	D4545 25.4 mm (1") Strip	FTB 19 ppi[1] 3.3 N/mm[1]	D4545 25.4 mm (1") Strip	FTB 20 ppi[1] 3.5 N/mm
Note[1]: Typical Value				

7 Jan 2002	Arctic Liner® Minimum Field Seam Strengths			
Style	**ASTM Unsupported Materials (U)**	**Arctic Liner® 30 (U)**	**ASTM Supported Materials (S)**	**Arctic Liner® 38 (S)**
Heat Bonded Seam Strength	D6392 25.4 mm (1") Strip	Solvent 28 ppi 5.0 N/mm	D6392 25.4 mm (1") Strip	80 ppi 14 N/mm
Heat Bonded Peel Adhesion Strength	D6392 25.4 mm (1") Strip	AD-BRK 10 ppi 1.7 N/mm	D6392 25.4 mm (1") Strip	FTB 15 ppi 2.6 N/mm

7 Jan 2002	Layfield Geomembrane Rating Guide for Arctic Liner ®										
	Backfilled			**Exposed**				**Installation**			
Style	Interface Friction	Resistance to Backfilling	Resistance to Settlement	UV Light Resistance	Low Temp. Resistance	Mech. Damage Resistance	Dimensional Stability	Ease of Mech. Attachment	Detail Weldability	Installation Survivability	Cold Weather Weldability
AL 30® (U)	A	B	A	B	M	M	M	A	A	A	A
AL 38® (S)	M	M	M	A	B	B	B	A	A	M	A

Ratings: **A** best choice for this application; **B** good choice for this application; **M** may be suitable for this application, please contact Layfield.
Ratings are based on material physical properties interpolated by Layfield. Please see our Rating Guide Tech Note.

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LAYFIELD

Geomembranes - Enviro Liner

Enviro Liner® is a cost effective, fully UV stablized, low temperature lining material that can be easily fabricated and installed in many exposed applications.

Enviro Liner®is a proprietary polyolefin material designed for chemical reistance and flexibility. Enviro Liner® remains flexible at low temperatures and is ideal for small exposed liners.

The flexibility of Enviro Liner® allows Layfield to prefabricate large panels of liner in our plant. Often, entire ponds can be lined in one piece, speeding construction and minimizing field work. Enviro Liner® is ideally suited to cold temperature installations and is flexible in temperatures that would damage other lining materials.

Enviro Liner® has excellent chemical resistance and can be used for secondary containment in a variety of applications. Enviro Liner® is also used in water containment, canal, and most other liner applications. Enviro Liner® should be used in applications where detail welding is kept to a minimum.

7 Jan 2002	Enviro Liner® Minimum Material Properties			
Style	**ASTM**	**Enviro Liner® 20 (U)**	**Enviro Liner® 30 (U)**	**Enviro Liner® 40 (U)**
Thickness (Nominal)	D1593	20 mil 0.5 mm	30 mil 0.75 mm	40 mil 1.0 mm
Density	D792	0.938	0.938	0.938
Tensile Strength at Break	D638	76 ppi 13 N/mm	114 ppi 20 N/mm	152 ppi 26 N/mm
Elongation	D638	800%	800%	800%
Tear Resistance	D1004	11 lbs 49 N	16 lbs 71 N	22 lbs 98 N
Low Temperature Impact Resistance	D746	-69°F -56°C	-69°F -56°C	-69°F -56°C
Dimensional Stability	D1204 Max Chng	1.5%	1.5%	1.5%
Puncture Resistance		36 lbs 160 N	54 lbs 240 N	72 lbs 320 N

7 Jan 2002	Enviro Liner® Minimum Shop Seam Strengths			
Style	**ASTM**	**Enviro Liner® 20 (U)**	**Enviro Liner® 30 (U)**	**Enviro Liner® 40 (U)**
Heat Bonded Seam Strength	D4545 25.4 mm (1") Strip	37 ppi 6.5 N/mm	50 ppi 8.8 N/mm	70 ppi 12.2 N/mm
Heat Bonded Peel Adhesion Strength	D4545 25.4 mm (1") Strip	FTB 30 ppi 5.3 N/mm	FTB 45 ppi 7.9 N/mm	FTB 60 ppi 10.5 N/mm

7 Jan 2002	Enviro Liner® Minimum Field Seam Strengths			
Style	**ASTM**	**Enviro Liner® 20 (U)**	**Enviro Liner® 30 (U)**	**Enviro Liner® 40 (U)**
Heat Bonded Seam Strength	D6392 25.4 mm (1") Strip	30 ppi 5.3 N/mm	45 ppi 7.9 N/mm	60 ppi 10.5 N/mm
Heat Bonded Peel Adhesion Strength	D6392 25.4 mm (1") Strip	FTB 26 ppi 4.6 N/mm	FTB 40 ppi 7.0 N/mm	FTB 53 ppi 9.3 N/mm

7 Jan 2002	Layfield Geomembrane Rating Guide for Enviro Liner®										
	Backfilled			**Exposed**				**Installation**			
Style	Interface Friction	Resistance to Backfilling	Resistance to Settlement	UV Light Resistance	Low Temp. Resistance	Mech. Damage Resistance	Dimensional Stability	Ease of Mech. Attachment	Detail Weldability	Installation Survivability	Cold Weather Weldability
EL® 20	M	M	B	B	A	M	M	B	M	B	B
EL® 30	M	B	B	B	A	B	B	B	B	B	B

Ratings: A best choice for this application; B good choice for this application; M may be suitable for this application, please contact Layfield.
Ratings are based on material physical properties interpolated by Layfield. Please see our Rating Guide Tech Note.

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