

APPENDIX 4
Borehole Logs

**CH2MHILL****RECORD OF MONITORING WELL: EHL-MW11-10**

LOCATION: Port Stanley

LOGGED BY: J.Gowing

GROUND ELEVATION: 175.55 masl

NORTHING: 4723381.1

PROJECT NUMBER: 428450

DRILLER: PROFILE Drilling

TOP OF PIPE: 176.362 masl

EASTING: 482664.9

DATE DRILLED: 2012 January 17

DRILLING METHOD: Power Probe VTR-9700

WATER ELEVATION: 174.892 masl

MOE WELL TAG#: A125371

SOIL VAPOUR INSTRUMENT: MiniRae 3000-1128724

CALIBRATED?: Yes

DEPTH (mbgs)	SAMPLES				SOIL DESCRIPTION	STRATA PLOT	WELL CONSTRUCTION DETAILS		ORGANIC VAPOUR READING (ppm)			
	Recovery (m)	TYPE	SPT (blows/15cm)	Parameters Analyzed			(masl) ELEV. DEPTH (mbgs)		12	24	36	48
1	.43	DPT1			SAND (FILL): Black, loose, moist, some gravel, trace clay and coal fragments.			Stick up casing sealed in cement				
								Bentonite seal				
	.43	DPT2		NH4 NO23 SO4 ICPMS PAH PHC TP-Color DUP (1040) (0.61-1.22m)	- Staining with strong odour. - Brown, sand content increasing, no coal.			No.2 Silica sand filter pack Machine slotted 2" SCH 40 PVC pipe, #10-slot well screen				73.1
2	.31	DPT3		NH4 NO23 SO4 ICPMS PAH PHC TP-Color (1040) (1.22-1.83m)	- Saturated. - Soil darker.							
	.31	DPT4										
	.49	DPT5										
3	.49	DPT6			SANDY CLAY TILL: Grey, fine sand and clay, saturated.		172.81 2.74					
							171.89 3.66					
4					End of borehole at 3.66 mbgs							
5					Notes: Water level as measured on February 29 - March 1, 2012							
6												
7												



CH2MHILL

RECORD OF MONITORING WELL: EHL-MW11-11

LOCATION: Port Stanley

LOGGED BY: J.Gowing

GROUND ELEVATION: 175.69 masl

NORTHING: 4723388.1

PROJECT NUMBER: 428450

DRILLER: PROFILE Drilling

TOP OF PIPE: 175.598 masl

EASTING: 482706.9

DATE DRILLED: 2012 January 17

DRILLING METHOD: Power Probe VTR-9700

WATER ELEVATION: 175.038 masl

MOE WELL TAG#: A125371

SOIL VAPOUR INSTRUMENT: MiniRae 3000-1128724

CALIBRATED?: Yes

DEPTH (mbgs)	SAMPLES				SOIL DESCRIPTION	STRATA PLOT	WELL CONSTRUCTION DETAILS		ORGANIC VAPOUR READING (ppm)			
	Recovery (m)	TYPE	SPT (blows/15cm)	Parameters Analyzed			(masl) ELEV. DEPTH (mbgs)		12	24	36	48
1	.37	DPT1			SAND (FILL): Black, loose, dry, some gravel, trace clay and coal fragments. - Staining with strong odour.			Flushmount casing sealed in cement				
	.37	DPT2		NH4 NO23 SO4 ICPMS PAH PCB PHC	- Brown, sand content increasing, no coal, saturated.			Bentonite seal				
	.49	DPT3		TP-Color CPH PHC Fraction (1345) (0.61-1.22m)	- Grey, fine, trace clay, loose.			No.2 Silica sand filter pack Machine slotted 2" SCH 40 PVC pipe, #10-slot well screen				
2	.49	DPT4		NH4 NO23 SO4 ICPMS PAH PCB PHC								
	.24	DPT5		TP-Color CPH Grain Size FOC (1345) (1.83-2.44m)	- Sand becoming coarser.							
3	.49	DPT6		NH4 NO23 SO4 ICPMS PAH PCB PHC								
				TP-Color (1345) (3.05-3.66m)	SANDY CLAY TILL: Grey, fine sand and clay, saturated.		172.34 3.35					
4					End of borehole at 3.66 mbgs		172.03 3.66					
					Notes: Water level as measured on February 29 - March 1, 2012							
5												
6												
7												

PORTSTANLEY MW 371326PORTSTANLEY-MW.GPJ 431079 WALLACE.GDT 12-12-13

**CH2MHILL****RECORD OF MONITORING WELL: EHL-MW11-12**

LOCATION: Port Stanley

LOGGED BY: J.Gowing

GROUND ELEVATION: 175.69 masl

NORTHING: 4723388.1

PROJECT NUMBER: 428450

DRILLER: PROFILE Drilling

TOP OF PIPE: 175.609 masl

EASTING: 482706.9

DATE DRILLED: 2012 January 17

DRILLING METHOD: Power Probe VTR-9700

WATER ELEVATION: 175.349 masl

MOE WELL TAG#: A125371

SOIL VAPOUR INSTRUMENT: MiniRae 3000-1128724

CALIBRATED?: Yes

DEPTH (mbgs)	SAMPLES				SOIL DESCRIPTION	STRATA PLOT	WELL CONSTRUCTION DETAILS		⊕ ORGANIC VAPOUR READING (ppm)						
	Recovery (m)	TYPE	SPT (blows/15cm)	Parameters Analyzed			(masl) ELEV. DEPTH (mbgs)		12	24	36	48			
1					-See EHL-MW11-11 for Stratigraphy.			Flushmount casing sealed in cement							
2								Bentonite seal ▼							
3															
4	.49	DPT7			SANDY CLAY TILL: Grey, fine sand and clay, saturated.		172.34 3.35	No.2 Silica sand filter pack		1.4					
	.49	DPT8						Machine slotted 2" SCH 40 PVC pipe, #10-slot well screen		1.2					
5	.49	DPT9			End of borehole at 5.49 mbgs		170.20 5.49			1					
6					Notes: Water level as measured on February 29 - March 1, 2012										
7															

PORTSTANLEY MW 371326PORTSTANLEY-MW.GPJ 431079 - WALLACE.GDT 12-12-19

**CH2MHILL**

SHEET 1 OF 1

RECORD OF BOREHOLE: BH1

LOCATION: Port Stanley

PROJECT NUMBER: 334234

DRILLER: Atcost Soil Drilling

DATE DRILLED: 6 September 2005

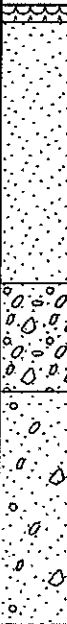

BORING METHOD: Truck mounted CME 85

TOP OF PIPE: 100.155 mAMS

LOGGED BY: C.E

GROUND ELEVATION: 100.29 mAMS

DATUM: Temporary Bench Mark

DEPTH (mbgs)	SAMPLES			SOIL DESCRIPTION	STRATA PLOT	(mbs) ELEV. DEPTH (mbgs)	WELL INSTALLATION		ORGANIC VAPOUR READINGS PID (ppm)			
	RECOVERY (in.)	TYPE	BLOWS/0.15 m						2	3	300	400
1	6"	SS-1	10 12 11 5	Topsoil: with grass/organics, dry Sand: with silt and gravel, grey, dry		100.19 0.10		Flushmount protective well casing in a cement seal Bentonite pellet seal #3 Silica sand pack 2" diameter Sch. 40, No. 10 slot, flush threaded PVC well screen.				
	9"	SS-2	4 3 4 9									
	10"	SS-3	3 4 5 5	Sand and Gravel: coarse, strong hydrocarbon odour, wet		99.64 1.65						
	3"	SS-4	2 2 2 3	Gravel: with sand, rounded pebbles (<1cm), strong hydrocarbon odour, wet		99.00 2.29						
	15"	SS-5	3 5 7 9			99.63 3.66						
4				End of Borehole at 3.66 mbgs								
5												
6												
7												

CH2M HILL Canada Limited

3WELL-NEST 334234.GPJ CG&S GDT 14/10/05

**CH2MHILL**

SHEET 1 OF 1

RECORD OF BOREHOLE: BH3

LOCATION: Port Stanley

PROJECT NUMBER: 334234

DRILLER: Atcost Soil Drilling

DATE DRILLED: 6 September 2005

BORING METHOD: Truck mounted CME 85

TOP OF PIPE: 100.21 mAMS

LOGGED BY: C.E.

GROUND ELEVATION: 100.305 mAMS

DATUM: Temporary Bench Mark

DEPTH (mbgs)	SAMPLES			SOIL DESCRIPTION	STRATA PLOT	(near) ELEV. DEPTH (mbgs)	WELL INSTALLATION	ORGANIC VAPOUR READINGS PID (ppm)			
	RECOVERY (in.)	TYPE	BLOWS/0.15 m					2	3	300	400
1	16"	SS-1	13 27 39 15	Gravelly Sand: coarse, light brown and grey, dry			 Flushmount protective well casing in a cement seal Bentonite pellet seal #3 Silica sand pack 2" diameter Sch. 40, No. 10 slot, flush threaded PVC well screen.				
	12"	SS-2	8 24 34 39								
	16"	SS-3	8 12 13 11	-brown, moist Sandy Gravel: Greyish brown, wet							
2	9"	SS-4	7 7 7 7	-grey, hydrocarbon odour, wet		89.59 1.72					
3	22"	SS-5	1 2 4 4	Gravel: with sand, wet		97.26 3.05					
				Sand: fine with sil, grey/brown, wet		96.93 3.38					
				Sand: with wood, strong hydrocarbon odour		96.76 3.55					
				End of Borehole at 3.66 mbgs		96.65 3.66					
4											
5											
6											
7											

CH2M HILL Canada Limited