

PROJECT: Esso Cardlock Bulk Plant

GD ELEV.: 98.981 m

HOLE No.: BH1

LOCATION: Regina, SK

TPC ELEV.: 99.750 m

DRILL: Auger

SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● %LEL	▲ ppm	100	200		
	SAND (FILL) - brown, medium grained, some silt, damp, loose, well sorted								
1	CLAY - brown, trace silt and sand, damp, stiff to very stiff								
	- less stiff, more moist at 2.4 m		5						
2									
	- mottled light and dark brown, organic at 3.0 m								
3									
	- fractures at 3.3 m	X	10						
4									
	- getting siltier with depth, stiffer at 4.3 m								
5		X	15						
	SILT - light brown, some clay, damp, very stiff to hard, low plasticity								
6									
	- mottled light and dark brown, very firm to stiff at 6.1 m	X	20						
7									
	- trace fine grained gravel, trace boulder at 7.3 m								
8		X	25						
	- silt layer (1 mm thick), very firm to stiff, damp at 7.9 m								
9									
	- moist at 9.7 m	X	30						

O'CONNOR ASSOCIATES



DATE: 89/06/27

JOB No.: 10-1202

LOGGED BY: JKL

DWG.No.: A-1

PROJECT: Esso Cardlock Bulk Plant	GD ELEV.: 98.981 m	HOLE No.: BH1
LOCATION: Regina, SK	TPC ELEV.: 99.750 m	DRILL: Auger
SAMPLE TYPE: <input type="checkbox"/> SHELBY <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> CORE <input type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> OTHER		

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations ● %LEL ▲ ppm ▲ 100 200 300 400 ● 20 40 60 80	N	OTHER TESTS
	Same as above					
-11	SAND - light brown, fine grained, silty, dry to damp, dense to medium dense	X	35	▲		
-12	SILT - brown, sandy, trace clay, damp, medium dense			▲		
-13	CLAY - brown, silty, damp, very stiff	X	40	▲		
-14	SAND - gray, fine grained, some silt, damp, medium dense			▲		
-15	SILT - light and dark brown mottled, some clay, damp, very stiff, low plasticity	X	45	▲		
-16	SAND - gray to black laminae, fine grained, dry to damp, medium dense			▲		
-17	SILT - olive brown, some sand and clay, trace gravel, stiff, damp	X	50	▲		
-18	SAND - olive gray, silty, fine grained, wet, medium dense - water at 16.1 m			▲		
-19	- brown, coarse grained, trace gravel, medium dense, water-bearing at 17.1 m CLAY - olive gray, some silt, sand and gravel, moist, very stiff to hard	X	55	▲		
	- boulder at 19.8 m			▲		▽ 89/07/13
			60	▲		
				▲		
			65	▲		

O'CONNOR ASSOCIATES	DATE: 89/06/27	JOB No.: 10-1202
	LOGGED BY: JKL	DWG. No.: A-1(a)

PROJECT: Esso Cardlock Bulk Plant	GD ELEV.: 98.981 m	HOLE No.: BH1
LOCATION: Regina, SK	TPC ELEV.: 99.750 m	DRILL: Auger
SAMPLE TYPE: <input type="checkbox"/> SHELBY <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> CORE <input type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> OTHER		

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations ● %LEL ▲ ppm ▲ 100 200 300 400 ● 20 40 60 80	N	OTHER TESTS
-21	- medium to coarse grained gravel, moist, boulder at 20.3 m.		70	▲		
-22	END OF HOLE AT 21.3 m. Monitoring piezometer installed from 17.4 m to 20.4 m. Borehole was sealed with Bentonite above piezometer.					
			-65			

O'CONNOR ASSOCIATES	DATE: 89/06/27	JOB No.: 10-1202
	LOGGED BY: JKL	DWG. No.: A-1(b)

PROJECT: Esso Cardlock Bulk Plant

GD ELEV.: 100.021 m

HOLE No.: BH2

LOCATION: Regina, SK

TPC ELEV.: 99.961 m

DRILL: Auger

SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● % LEL	▲ ppm	100	200		
	ASPHALT								
	SAND AND GRAVEL (FILL) - light brown, damp								
1	CLAY - olive brown, some silt, trace sand, damp, stiff, plastic								
2	- black staining, noticeable petroleum odour at 1.2 m - trace sand at 1.7 m	X	5						
3	- mottled light and dark patches, fractures at 3.2 m - softer, more moist at 3.6 m	X	10						
4	- mottled light brown, some silt, moist, black organic inclusions, oxides								
5	SILT - olive brown, some clay, trace sand, firm to stiff, moist	X	15						
6	- laminated at 6.1 m	X	20						
7	END OF HOLE AT 6.7 m. Monitoring piezometer installed to 6.7 m.								▽ 89/07/13
8									
9									

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DATE: 89/06/27

JOB No.: 10-1202

LOGGED BY: JKL

DWG.No.: A-2

PROJECT: Esso Cardlock Bulk Plant

GD ELEV.: 100.127 m

HOLE No.: BH3

LOCATION: Regina, SK

TPC ELEV.: 100.040 m

DRILL: Auger

SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				%LEL		ppm			
				▲ 100	● 20	▲ 200	● 40		
				▲ 300	● 60	▲ 400	● 80		
1	ASPHALT								
	SAND AND GRAVEL (FILL) - olive brown, damp, loose, medium dense								
2	CLAY - olive brown, trace silt in nuggets, stiff, damp, medium plastic	X	5						
	- black staining, noticeable petroleum odour at 1.0 m								
	- trace gravel, sand partings at 1.7 m								
3	- organics, oxide staining, nuggety, damp at 3.3 m	X	10						
4									
5	- trace gravel, silt lense, damp, oxidized, laminae at 5.0 m	X	15						
6	SILT - olive brown, some clay, trace sand, damp	X	20						
	- uniform silt at 6.1 m to 6.5 m								
7	END OF HOLE AT 6.7 m.								
	Monitoring piezometer installed to 6.7 m.								
8									
9									

▽ 89/07/13

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DATE: 89/06/27

JOB No.: 10-1202

LOGGED BY: JKL

DWG.No.: A-3

PROJECT: Esso Cardlock Bulk Plant	GD ELEV.: 100.197 m	HOLE No.: BH4
LOCATION: Regina, SK	TPC ELEV.: 100.133 m	DRILL: Auger
SAMPLE TYPE: <input checked="" type="checkbox"/> SHELBY <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> CORE <input type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> OTHER		

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations ● %LEL ▲ ppm	N	OTHER TESTS
				▲ 100 200 300 400 ● 20 40 60 80		
	ASPHALT					
	SAND AND GRAVEL (FILL) - brown, damp, medium dense					
1	CLAY - olive brown, trace silt, damp, medium plastic					
	- black staining, noticeable petroleum odour at 1.0 m					
2		X	5	▲		
		X		▲		
3		X	10	▲		
		X		▲		
4		X	15	▲		
		X		▲		
5		X	20	▲		
	SILT - olive brown, some clay, firm to stiff, low plasticity	X		▲		
6		X	25	▲		
	END OF HOLE AT 6.7 m.					
	Monitoring piezometer installed to 6.7 m.					
7						
8						
9						

▽ 89/07/13

O'CONNOR ASSOCIATES	DATE: 89/06/27	JOB No.: 10-1202
	LOGGED BY: JKL	DWG.No.: A-4

PROJECT: Esso Cardlock Bulk Plant	GD ELEV.: 100.097 m	HOLE No.: BH5
LOCATION: Regina, SK	TPC ELEV.: 100.009 m	DRILL: Auger
SAMPLE TYPE: <input checked="" type="checkbox"/> SHELBY <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> CORE <input type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> OTHER		

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● %LEL	▲ ppm	100	200		
	ASPHALT								
	SAND AND GRAVEL (FILL) - light brown, damp								
1	CLAY - olive brown, some silt inclusions, damp, stiff to hard								
2	- black staining, noticeable petroleum odour at 1.0 m	X	5						
	- sand layer (2 cm thick) at 1.7 m								
3		X	10						
4									
5	- silt lenses, oxide staining at 4.9 m	X	15						
	SILT - olive brown, some clay, firm to stiff, low plasticity								
6		X	20						
7	END OF HOLE AT 6.7 m. Monitoring piezometer installed to 6.7 m.								▽ 89/07/13
8									
9									

O'CONNOR ASSOCIATES 	DATE: 89/06/27	JOB No.: 10-1202
	LOGGED BY: JKL	DWG.No.: A-5

PROJECT: Esso Cardlock Bulk Plant **GD ELEV.:** 99.823 m **HOLE No.:** BH6
LOCATION: Regina, SK **TPC ELEV.:** 99.754 m **DRILL:** Auger
SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● %LEL	▲ ppm	100	200		
0	SAND (FILL) - light brown, some gravel, damp, loose								
1	CLAY - olive brown, trace silt inclusions, very stiff, medium to high plastic								
2	- black streaks at 1.0 m								
3	- fractured below 3.0 m								
4									
5									
6	SILT - olive brown, clayey, damp to dry, very stiff								
7	END OF HOLE AT 6.7 m. Monitoring piezometer installed to 6.7 m.								
8									
9									

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DATE: 89/06/27 **JOB No.:** 10-1202
LOGGED BY: JKL **DWG.No.:** A-6

PROJECT: Esso Cardlock Bulk Plant

GD ELEV.: 98.957 m

HOLE No.: BH7

LOCATION: Regina, SK

TPC ELEV.: 98.894 m

DRILL: Auger

SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● %LEL	▲ ppm	▲ 100	● 200		
	CONCRETE								
-1	SAND AND GRAVEL (FILL) - gray, loose - water, noticeable petroleum odour at 1.0 m	X	5						▽ 89/07/13
-2	CLAY (FILL) - olive brown, disturbed, mixed with sand and gravel								
-3	SAND (FILL)								
-3	CLAY - olive brown, nuggety, oxides	X	10						
-4	END OF HOLE AT 4.0 m. Monitoring piezometer installed to 3.6 m.		15						
-5									
-6			20						
-7									
-8			25						
-9			30						

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DATE: 89/06/27

JOB No.: 10-1202

LOGGED BY: JKL

DWG.No.: A-7

PROJECT: Esso Cardlock Bulk Plant

GD ELEV.: 100.031 m

HOLE No.: BH8

LOCATION: Regina, SK

TPC ELEV.: 99.929 m

DRILL: Auger

SAMPLE TYPE: SHELBY SPLIT SPOON CORE DISTURBED NO RECOVERY OTHER

METRES	SOIL DESCRIPTION	SAMPLE TYPE	FEET	Vapour Concentrations				N	OTHER TESTS
				● %LEL	▲ ppm	100	200		
0	TOPSOIL								
0.5	SAND AND GRAVEL - medium grained, wet, gray and black stained, noticeable petroleum odour								
1.5	CLAY - olive brown, stiff to very stiff, moist, nuggety								
2.5		X	5						
3.2	- moist at 3.2 m								
4.5		X	10						
5.5	SILT - olive brown, fine grained, some sand, moist								
6.7	END OF HOLE AT 6.7 m. Monitoring piezometer installed to 3.6 m.								
6.7		X	15						
7.5									
8.5		X	20						
9.5									
10.5									
11.5									
12.5									
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30.5									

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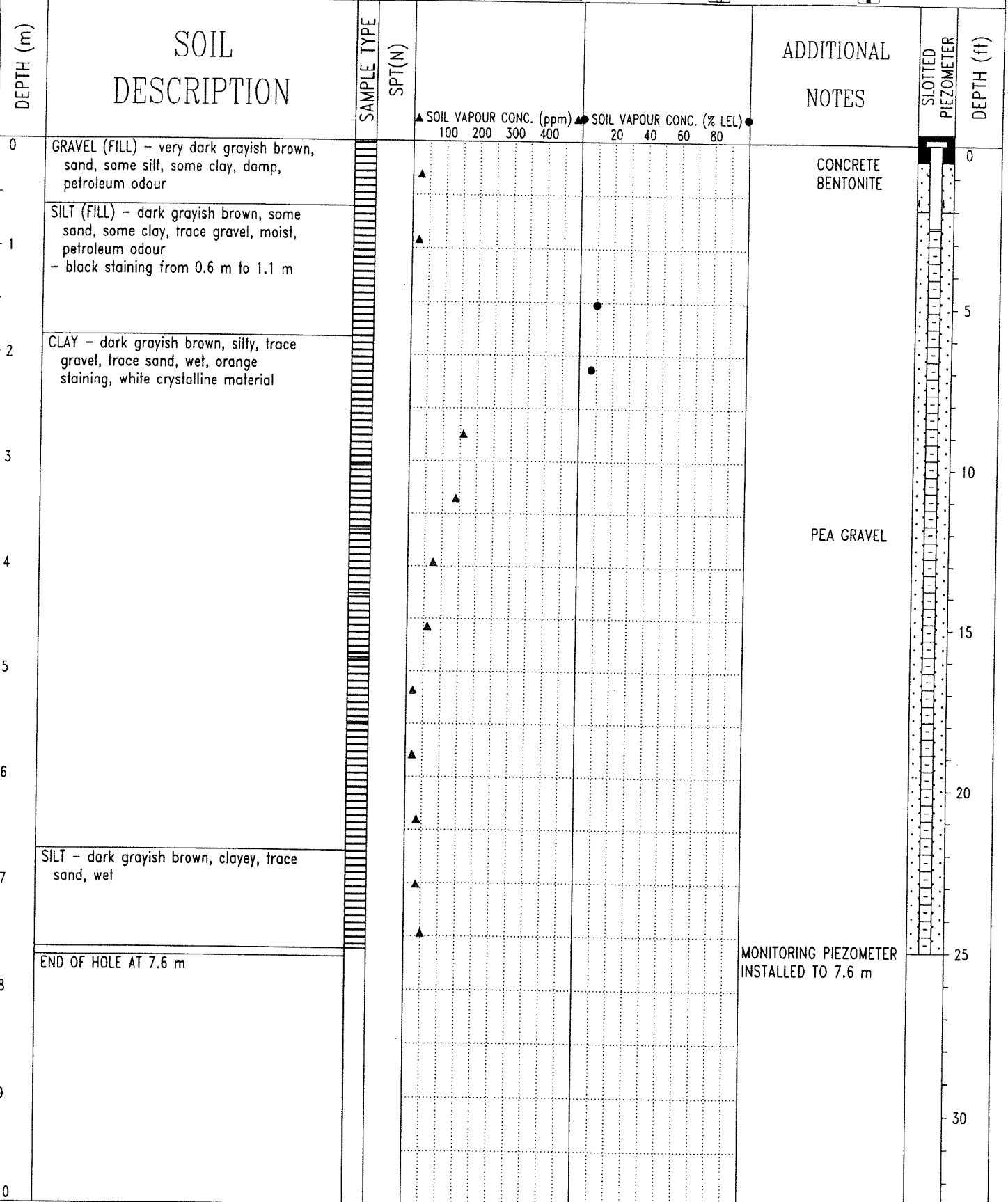
DATE: 89/06/27

JOB No.: 10-1202

LOGGED BY: JKL

DWG.No.: A-8

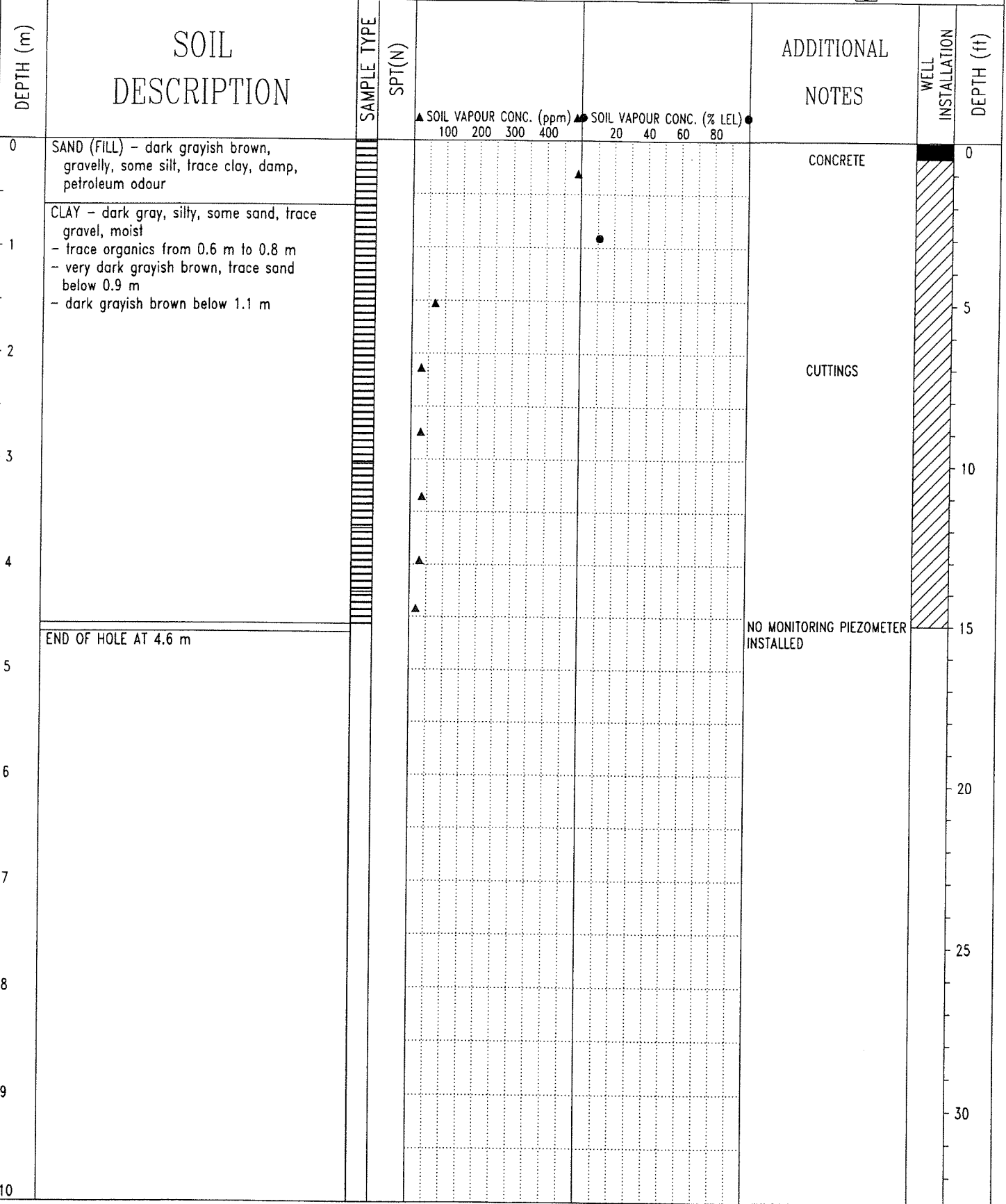
PROJECT: ESSO BULK	TPC: N/A	BOREHOLE NO: BH9
LOCATION: REGINA, SASKATCHEWAN	GRADE: N/A	JOB NO: 10-1202.1N
CLIENT: IMPERIAL OIL	COMPLETION DATE: 96/09/14	DRILL: AUGER
SAMPLE TYPE <input type="checkbox"/> OTHER	<input checked="" type="checkbox"/> SHELBY TUBE	<input checked="" type="checkbox"/> SPLIT SPOON
	<input type="checkbox"/> CORE	<input type="checkbox"/> DISTURBED
		<input type="checkbox"/> NO RECOVERY



O'CONNOR ASSOCIATES ENVIRONMENTAL INC.
Calgary, Alberta

LOGGED BY: MBW
REVIEWED BY: MBW
DRAWING NO: A-1

PROJECT: ESSO BULK	TPC: N/A	BOREHOLE NO: BH10
LOCATION: REGINA, SASKATCHEWAN	GRADE: N/A	JOB NO: 10-1202.1N
CLIENT: IMPERIAL OIL	COMPLETION DATE: 96/09/14	DRILL: AUGER
SAMPLE TYPE <input checked="" type="checkbox"/> OTHER	<input checked="" type="checkbox"/> SHELBY TUBE	<input checked="" type="checkbox"/> SPLIT SPOON
	<input type="checkbox"/> CORE	<input type="checkbox"/> DISTURBED
		<input type="checkbox"/> NO RECOVERY



O'CONNOR ASSOCIATES ENVIRONMENTAL INC.
Calgary, Alberta

LOGGED BY: MBW
REVIEWED BY: MBW
DRAWING NO: A-2