

ENV BH m elev CAL v03.lbf



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engineering science technology

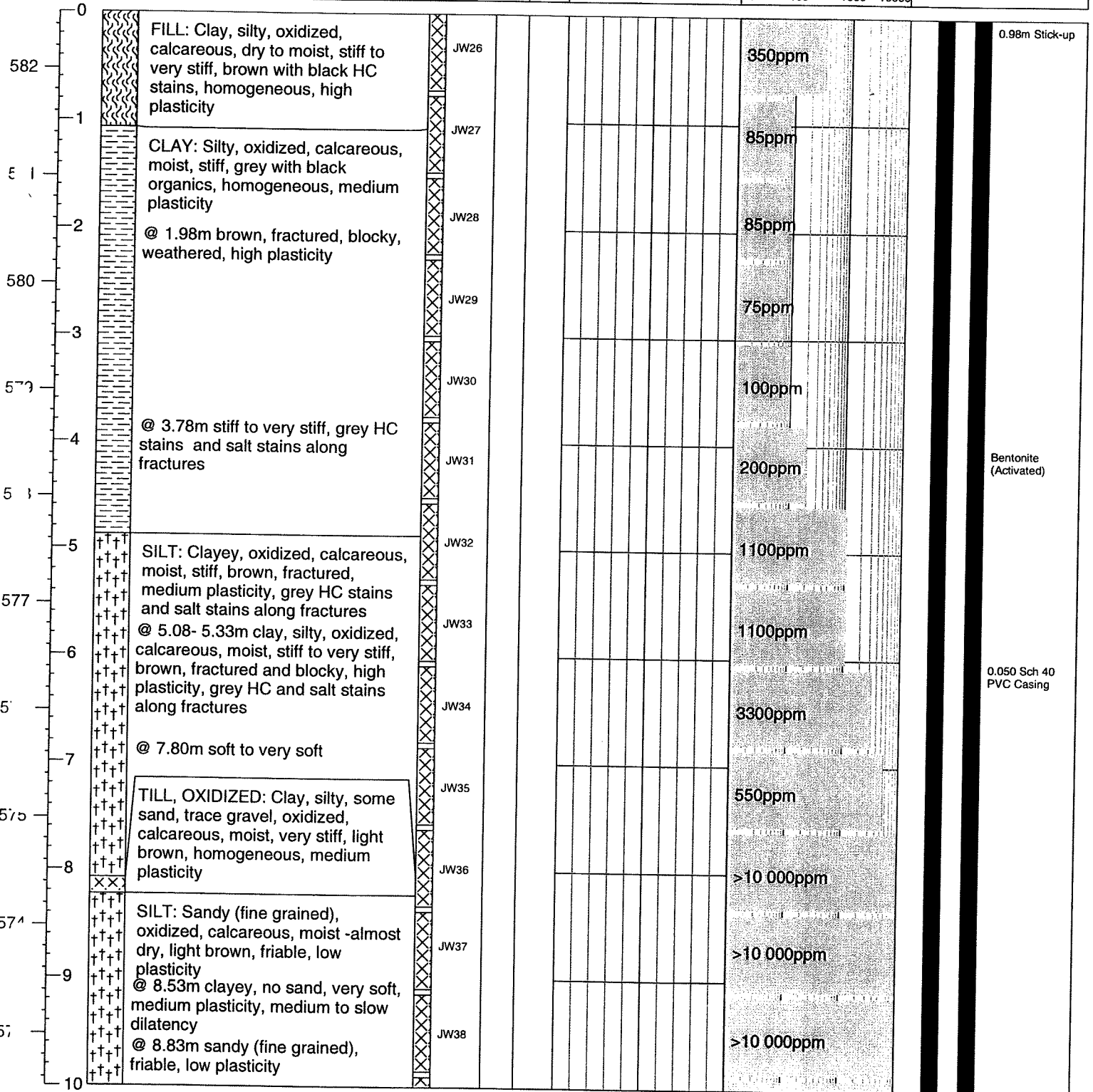
BORE HOLE LOG

Bore Hole: 301

Page: 1 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 23 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 582.52	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 583.50	Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm		



0.98m Stick-up

Bentonite (Activated)

0.050 Sch 40 PVC Casing

Env. BH m elev. CAL. v03.04



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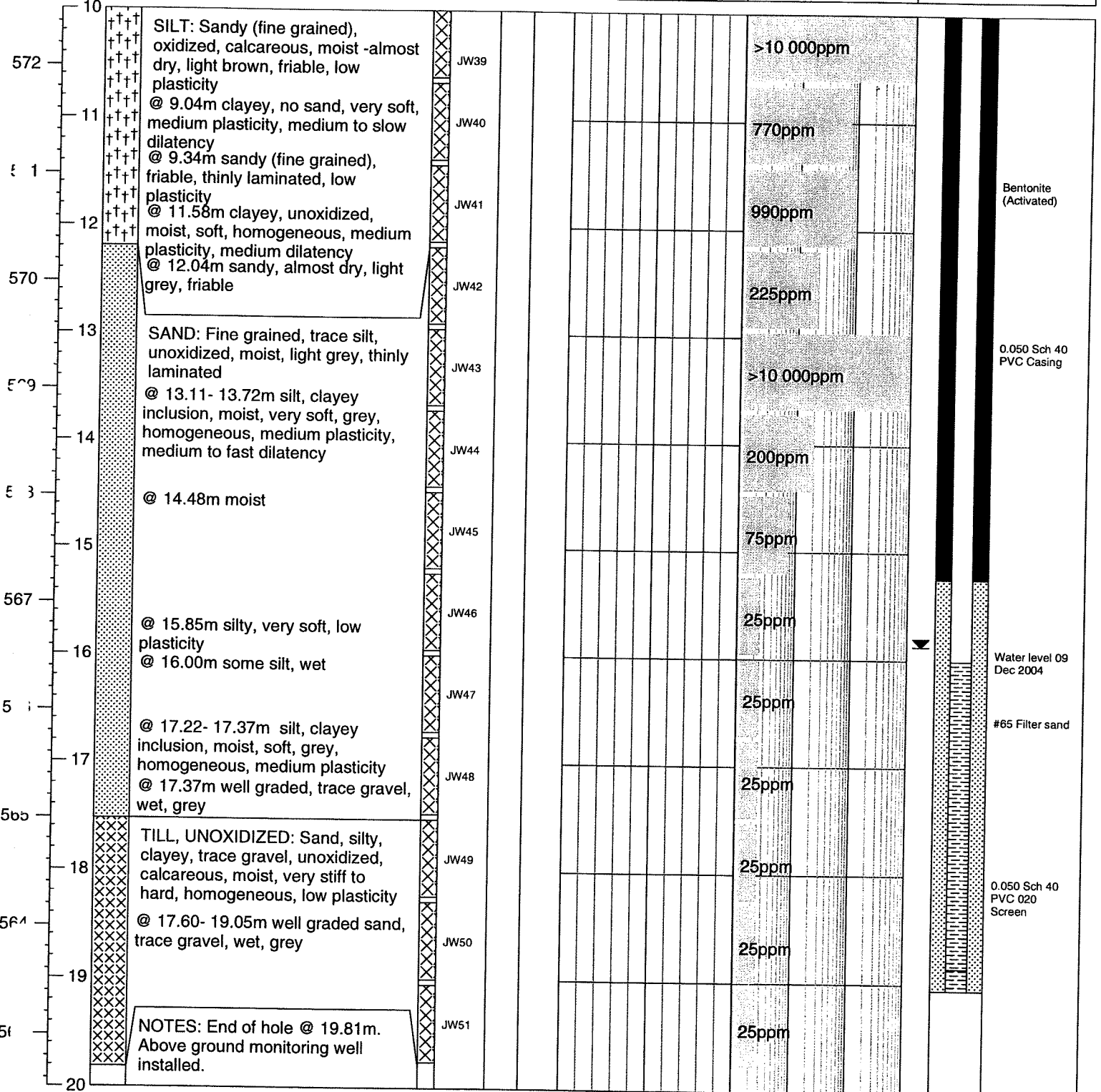
BORE HOLE LOG

Bore Hole: **301**

Page: 2 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 23 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 582.52	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 583.50	Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm		



Elev BH m elev CAL v03.td



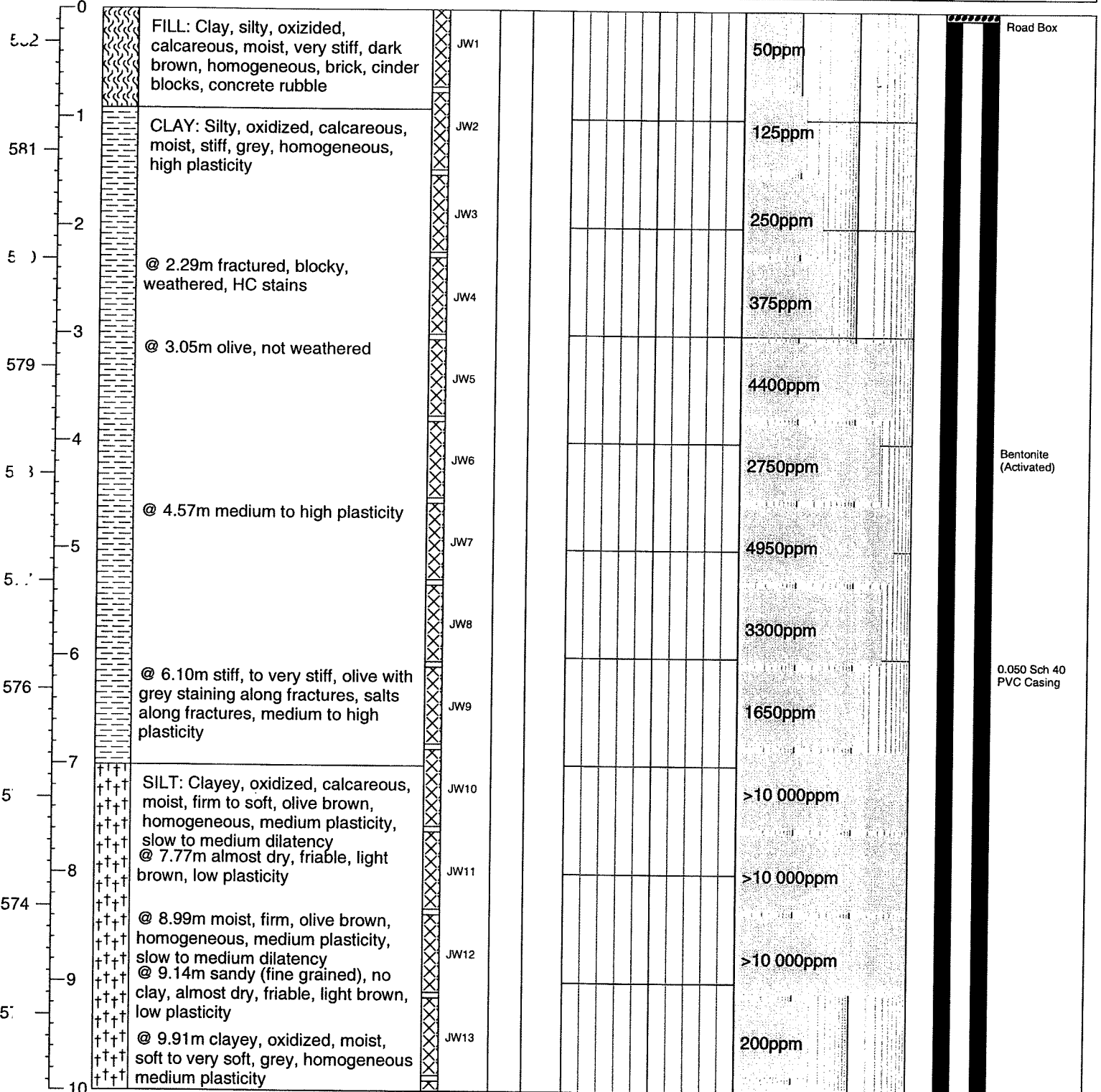
BORE HOLE LOG

Bore Hole: **302**

Page: 1 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 22 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 582.31	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 582.20	Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	ppm		



Road Box

Bentonite (Activated)

0.050 Sch 40 PVC Casing

Env BH m elev CAL v03.lrf



BORE HOLE LOG

Bore Hole: 302

Page: 2 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 22 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 582.31	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 582.20	Logged by: JDW

Elev (m) Depth (m)	Symbol	Soil Description	Sample Type No. SPT 'N' USC	Moisture Content percent			Headspace Vapour ppm	Monitor Well Construction Detail			
				Plastic Limit ▲	Natural Moisture ●	Liquid Limit ◆					
10				0	50	100	100	1000	10000		
5.2	†††	SILT: Clayey, oxidized, calcareous, moist, firm to soft, olive brown, homogeneous, medium plasticity, slow to medium dilatancy	JW14				400ppm				
11	†††	@ 10.06m sandy (fine grained), no clay, friable, light greyish white, thinly laminated, low plasticity	JW15				260ppm				
571	†††	@ 11.13m clayey, moist, very soft, grey, medium plasticity, medium to fast dilatancy	JW16				230ppm				
12	†††	@ 11.43- 12.27m sand inclusion, fine grained, trace silt, oxidized, moist- almost dry, friable, light grey, thinly laminated, non-plastic	JW17				340ppm				
5)	†††	@ 12.27m sandy (fine grained), moist-almost dry, friable, light grey, homogeneous, low plasticity	JW18				50ppm				
569	†††	@ 12.70m clayey, trace sand, moist, very soft, grey, medium plasticity, fast dilatancy	JW19				45ppm				
14	†††	SAND: Fine grained, trace silt, oxidized, moist- almost dry, friable, light grey, homogeneous, non-plastic	JW20				25ppm				
5)	†††	@ 13.72m moist	JW21				25ppm				
15	†††	@ 14.63m some silt, unoxidized, moist, very soft, grey, fast dilatancy	JW22				25ppm				
50	†††	@ 15.24- 15.85m silt inclusion, clayey, unoxidized, calcareous, moist, firm, grey, thinly laminated, low to medium plasticity	JW23				30ppm				
16	†††	@ 15.85m trace silt	JW24				70ppm				
566	†††	@ 16.46m fine to coarse grained sand, trace gravel, trace silt, wet	JW25				25ppm				
17	†††	@ 16.76m well graded, no silt, wet									
51	†††	TILL, UNOXIDIZED: Sand, some silt, some clay, trace gravel, unoxidized, calcareous, moist, hard, grey, homogeneous, low plasticity									
18	†††										
564	†††										
19	†††	NOTES: End of hole @ 19.05m. Flush mount monitoring well installed.									
20											

Bentonite (Activated)
 0.050 Sch 40 PVC Casing
 Water level 09 Dec 2004
 # 65 Filter Sand
 0.050 Sch 40 PVC 020 Screen
 Slough



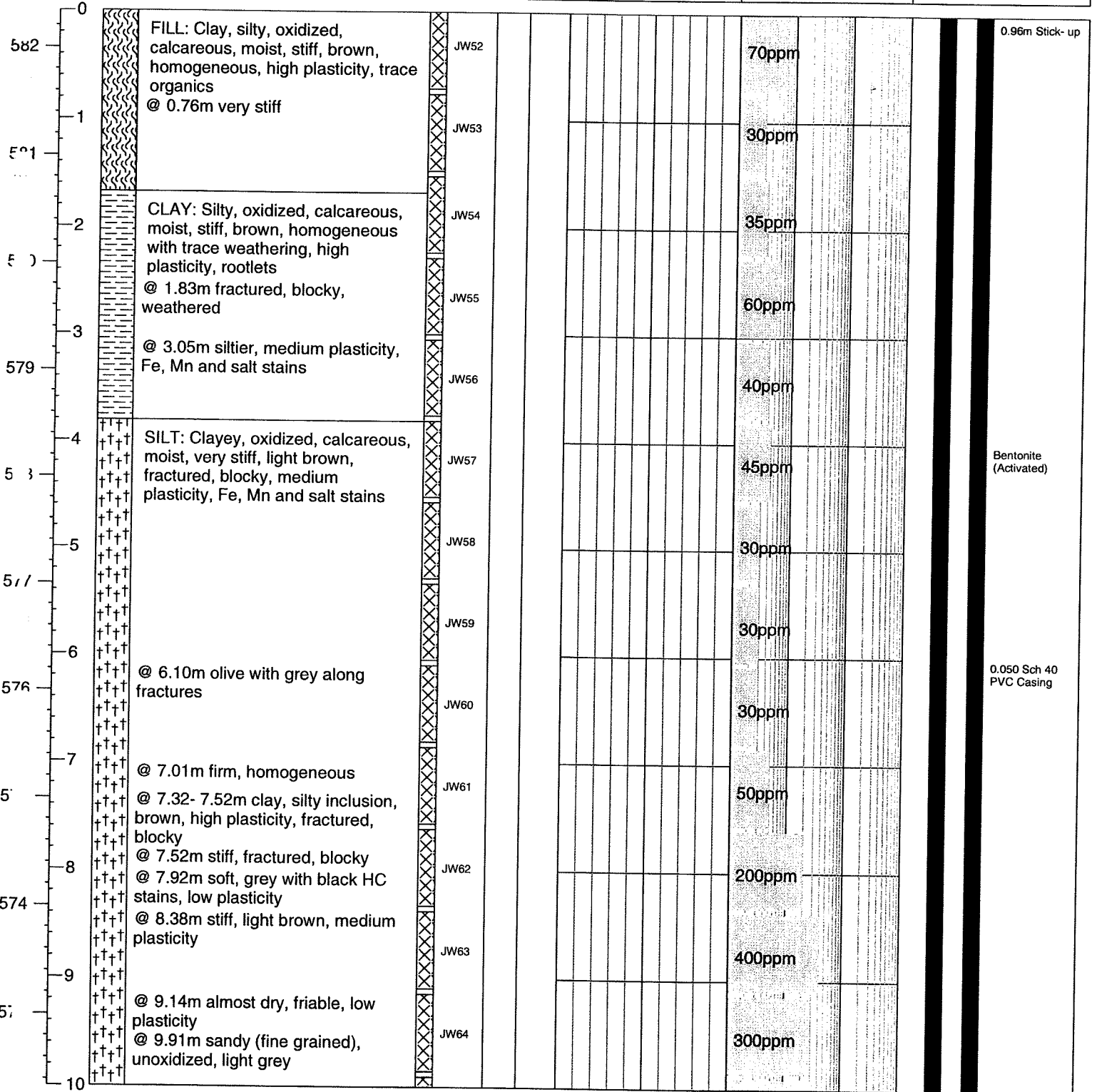
BORE HOLE LOG

Bore Hole: 303

Page: 1 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 24 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 582.34	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 583.30	Logged by: JDW

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour		Monitor Well Construction Detail
			Type	No.	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	ppm	



0.96m Stick-up

Bentonite (Activated)

0.050 Sch 40 PVC Casing



BORE HOLE LOG

Bore Hole: **303**

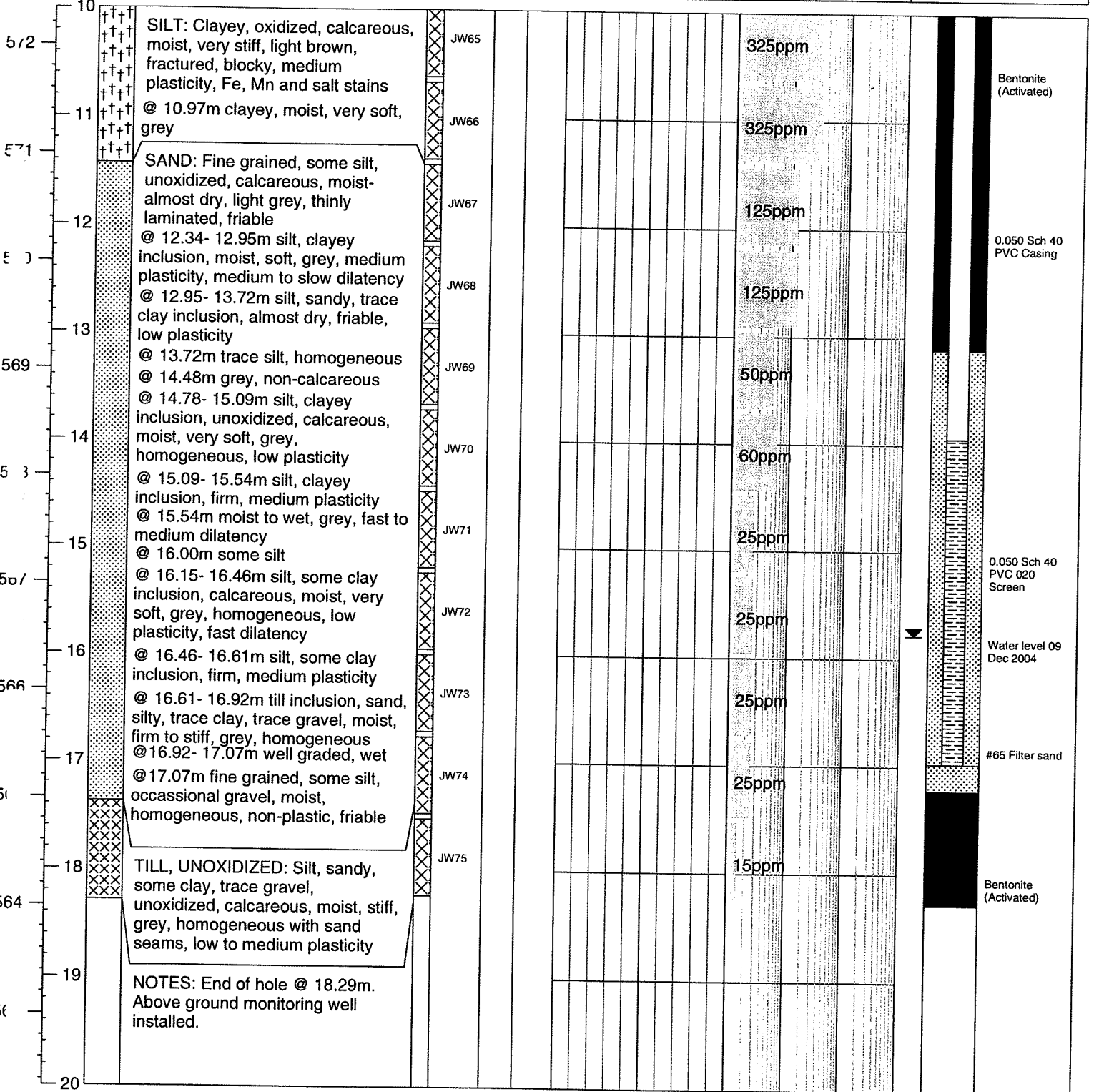
Page: 2 of 2

Client: Imperial Oil Ltd.
Project: Environmental Investigation
Location: Regina, SK
Project No.: R3667

Northing: -
Easting: -
Ground Elev.: 582.34
Top Casing Elev.: 583.30

Date: 24 November 2004
Equipment: Canterra 250
Method: Hollow Stem
Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour		Monitor Well Construction Detail
				Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	

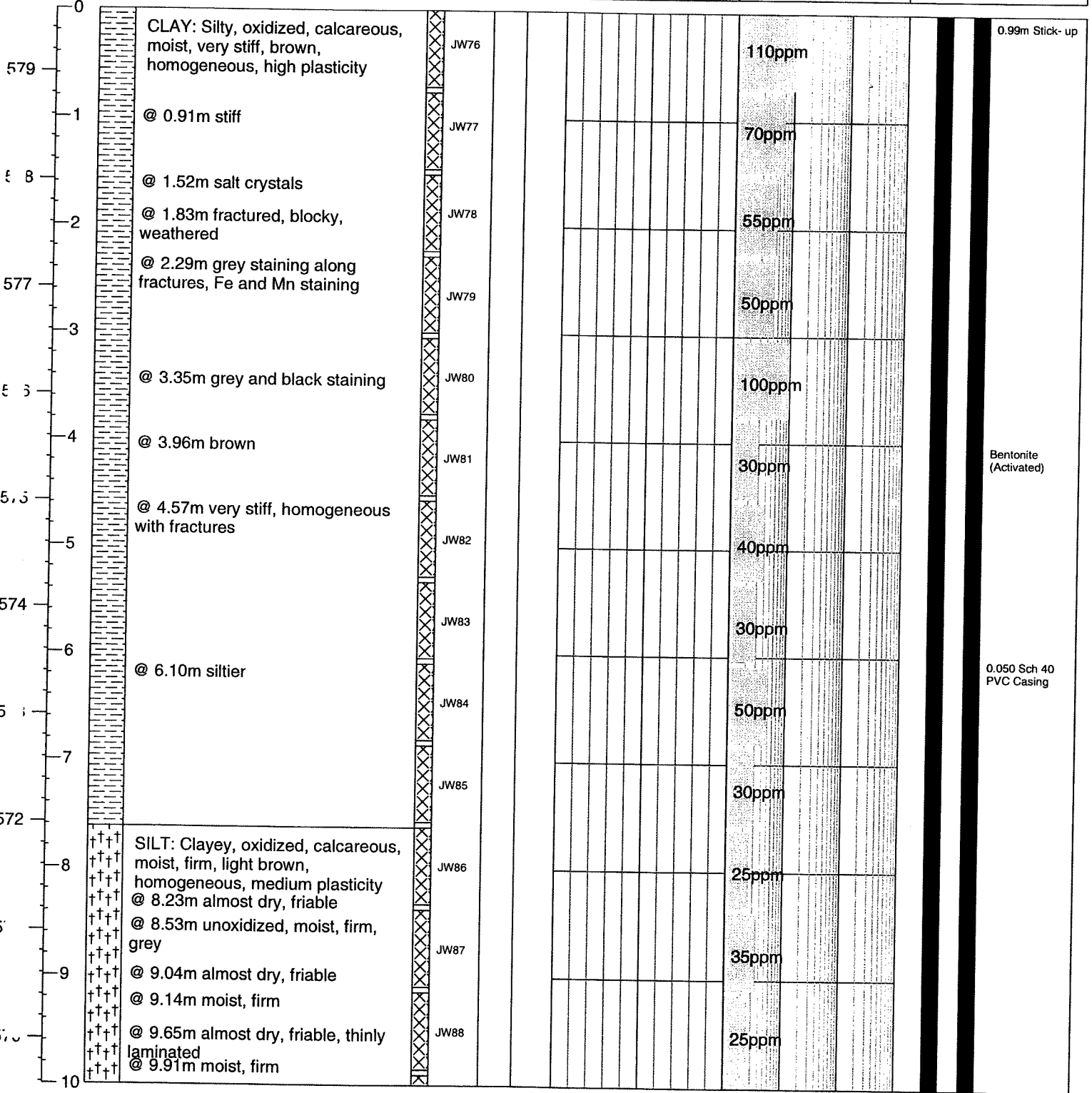




BORE HOLE LOG

Client: Imperial Oil Ltd.	Northing: -	Date: 25 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 579.58	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 580.57	Logged by: JDW

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				



0.99m Stick-up

Bentonite (Activated)

0.050 Sch 40 PVC Casing



BORE HOLE LOG

Bore Hole: **304**

Page: 2 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 25 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: 579.58	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.: 580.57	Logged by: JDW

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm		Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit ▲	Natural Moisture ●	Liquid Limit ◆	100	
10										
569		SILT: Clayey, oxidized, calcareous, moist, firm, light brown, homogeneous, medium plasticity @ 10.21- 10.67m sand lense, fine grained, silty, unoxidized,	JW89						25ppm	
11		calcareous, moist- almost dry, friable, light grey, thinly laminated @ 10.67m sandy (fine grained), trace clay, moist- almost dry, friable, grey, homogeneous, low plasticity	JW90						30ppm	
5		@ 11.58m some clay, moist, firm @ 12.04m clayey, no sand, medium plasticity	JW91						50ppm	
567		@ 12.19m almost dry, friable, low plasticity	JW92						25ppm	
13		@ 12.65m moist	JW93						25ppm	
5		@ 12.95m medium plasticity	JW93						25ppm	
14		@ 13.41m almost dry, friable, low plasticity	JW93						25ppm	
14		SAND: Fine grained, unoxidized, non-calcareous, moist- almost dry, light grey, non-plastic	JW94						30ppm	
5		SILT: Some clay, unoxidized, calcareous, moist, firm, grey, homogeneous, low plasticity, slow to medium dilatency	JW95						10ppm	
564		@ 15.24m sandy (fine grained), no clay, medium dilatency	JW96						35ppm	
16		SAND: Fine to coarse grained, trace gravel, unoxidized, non-calcareous, wet, grey, non-plastic	JW97						30ppm	
5		TILL, UNOXIDIZED: Silt, sandy, some clay, trace gravel, unoxidized, calcareous, moist, very stiff to hard, grey, homogeneous, low plasticity	JW98						30ppm	
562		@ 16.92- 16.94m fine grained sand inclusion	JW98						30ppm	
18		NOTES: End of hole @ 17.48m. Above ground monitoring well installed.								
19										
56										
20										

Bentonite (Activated)

0.050 Sch 40 PVC Casing

0.050 Sch 40 PVC 020 Screen

Water level 09 Dec 2004

#65 Filter sand



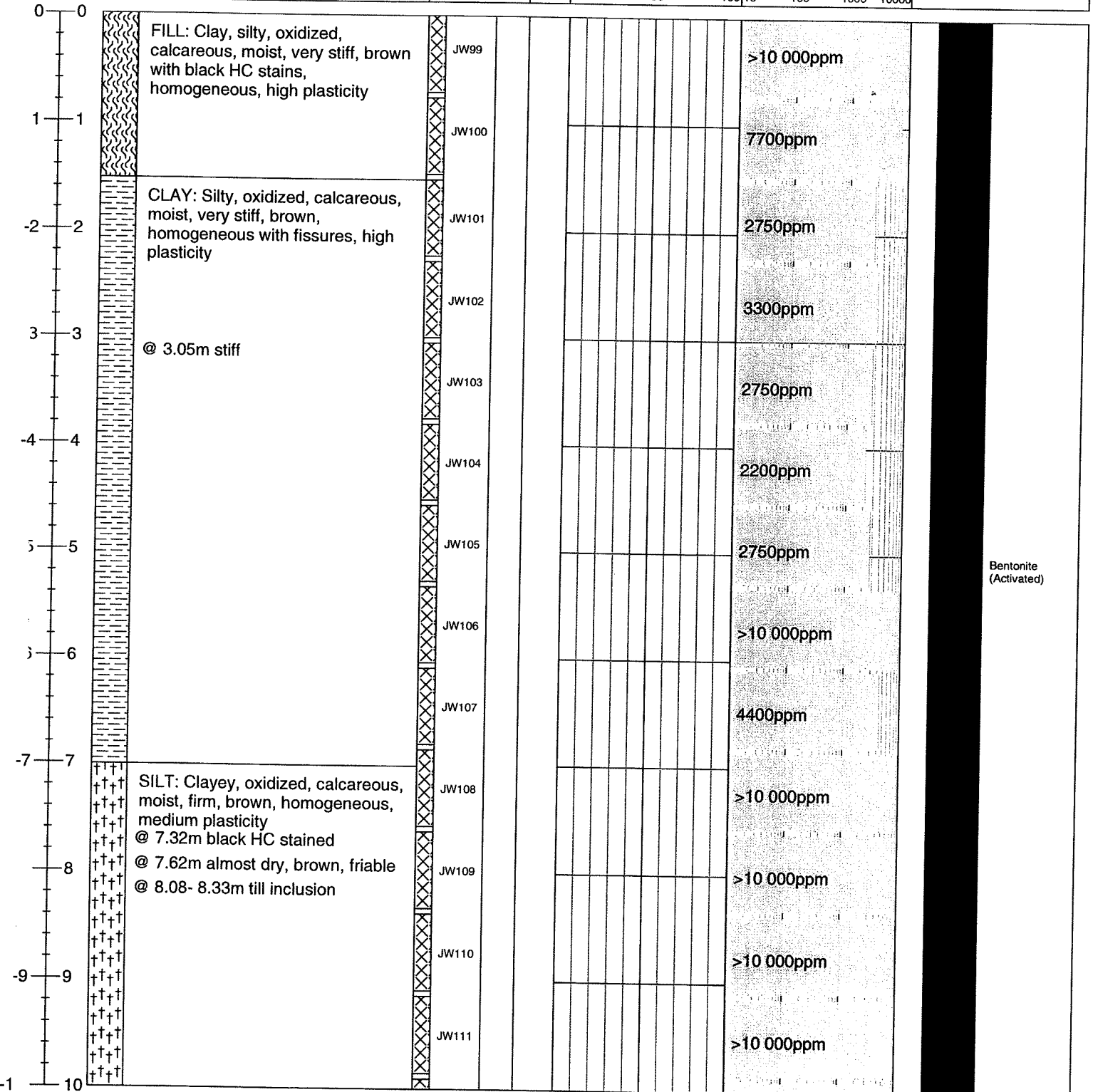
BORE HOLE LOG

Bore Hole: 305

Page: 1 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 26 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.: -	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.:	Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm	Monitor Well Construction Detail
				Type	No.	SPT 'N'	USC	Plastic Limit ▲		



Bentonite (Activated)



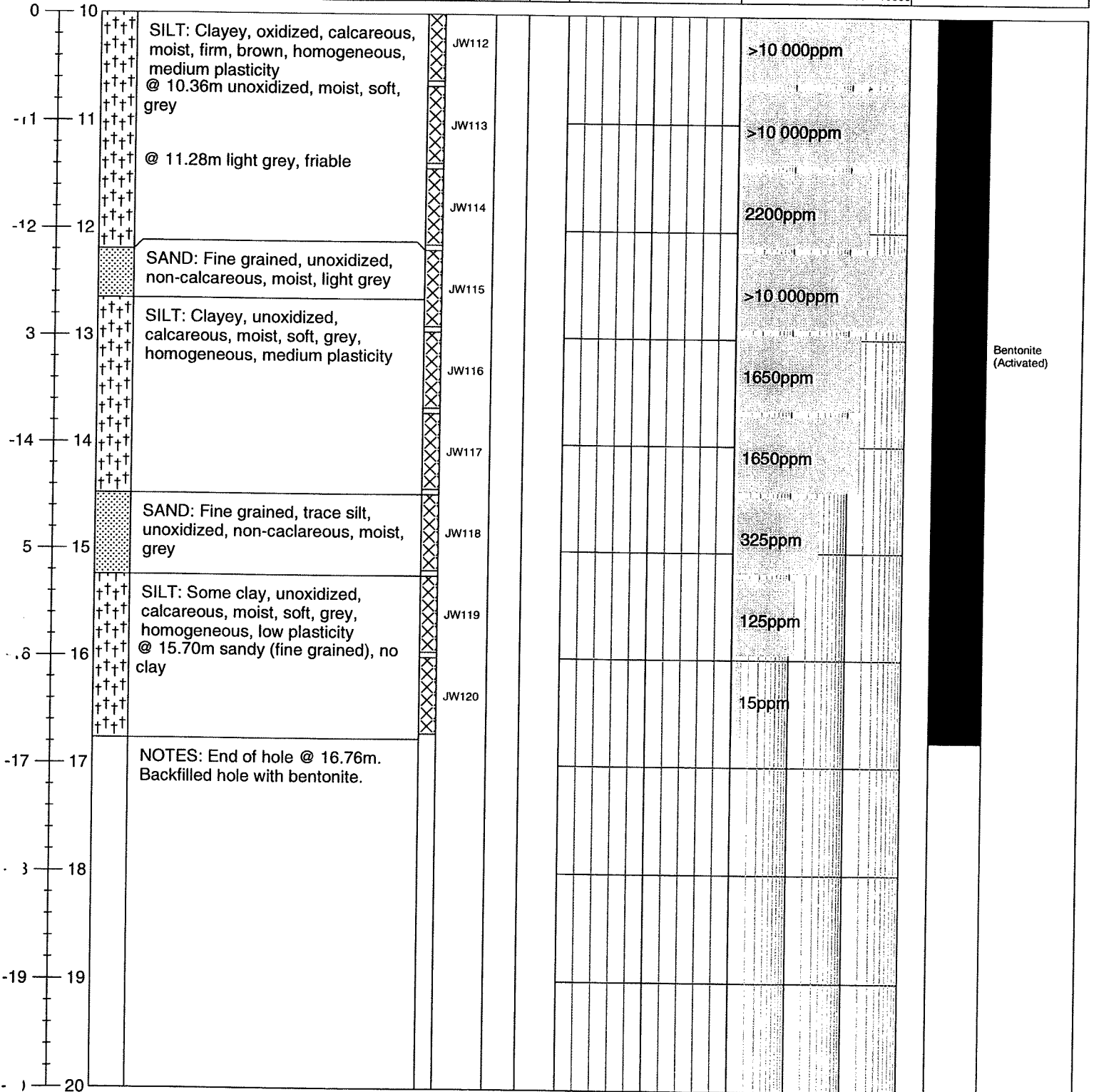
BORE HOLE LOG

Bore Hole: 305

Page: 2 of 2

Client: Imperial Oil Ltd.	Northing: -	Date: 26 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Canterra 250
Location: Regina, SK	Ground Elev.:	Method: Hollow Stem
Project No.: R3667	Top Casing Elev.:	Logged by: JDW

Elev (m)	Depth (m)	Symbol	Soil Description	Sample Type	No.	SPT 'N'	USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
								Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				



Bentonite (Activated)



BORE HOLE LOG

Bore Hole: 306

Page: 1 of 1

Client: Imperial Oil Ltd.	Northing: -	Date Drilled: 19 Nov 2004
Project: Environmental Investigation	Easting: -	Drill: Hand auger
Location: Regina, SK	Ground Elev.: -	Drilling Method: Hand auger
Project No.: R3667	Top Casing Elev.: -	Logged by: GMK/EW

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N	USC	Plastic Limit	Natural Moisture	Liquid Limit	ppm		

0		CLAY: Silty, oxidized, calcareous, moist, stiff, brown with grey mottling											
1			EW1@4										
2			EW1@8										
3		NOTES: End of hole @ 2.74m. Hole backfilled with bentonite.											
4													
5													
6													
7													
8													
9													
10													

Bentonite (Activated)

145ppm

125ppm



TEST PIT LOG

Test Pit: 103
Page: 1 of 1

Client: Imperial Oil Ltd.	Northing: -	Date: 17 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Track Hoe
Location: Regina, SK	Ground Elev.: -	Method: Test Pit
Project No.: R3667	Top Casing Elev.: -	Logged by: GMK/EW

Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						

0		TOPSOIL													
		CLAY: Olive brown, firm, moist													
1			TH3@2'							20					
2			TH3@4'							40					
3			TH3@6'							45					
4			TH3@8'							35					
5			TH3@10'							45					
6			TH3@12'							40					
7			TH3@14'							20					
8															
9															
10															

NOTES: End of hole at 4.57 m.

Backfilled with cuttings



TEST PIT LOG

Client: Imperial Oil Ltd.	Northing: -	Date: 17 November 2004
Project: Environmental Investigation	Easting: -	Equipment: Track Hoe
Location: Regina, SK	Ground Elev.: -	Method: Test Pit
Project No.: R3667	Top Casing Elev.: -	Logged by: GMK/EW

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit ▲	Natural Moisture ●	Liquid Limit ◆	10	100	1000	

0		TOPSOIL												
		CLAY: Dark olive brown, firm, damp	TH5@2'											
1			TH5@4'							45				Backfilled with cuttings
2			TH5@6'							30				
3			TH5@8'							45				
4			TH5@10'							45				
5			TH5@12'							35				
6			TH5@14'							35				
7														
8														
9														
10														

NOTES: End of hole at 4.27 m.

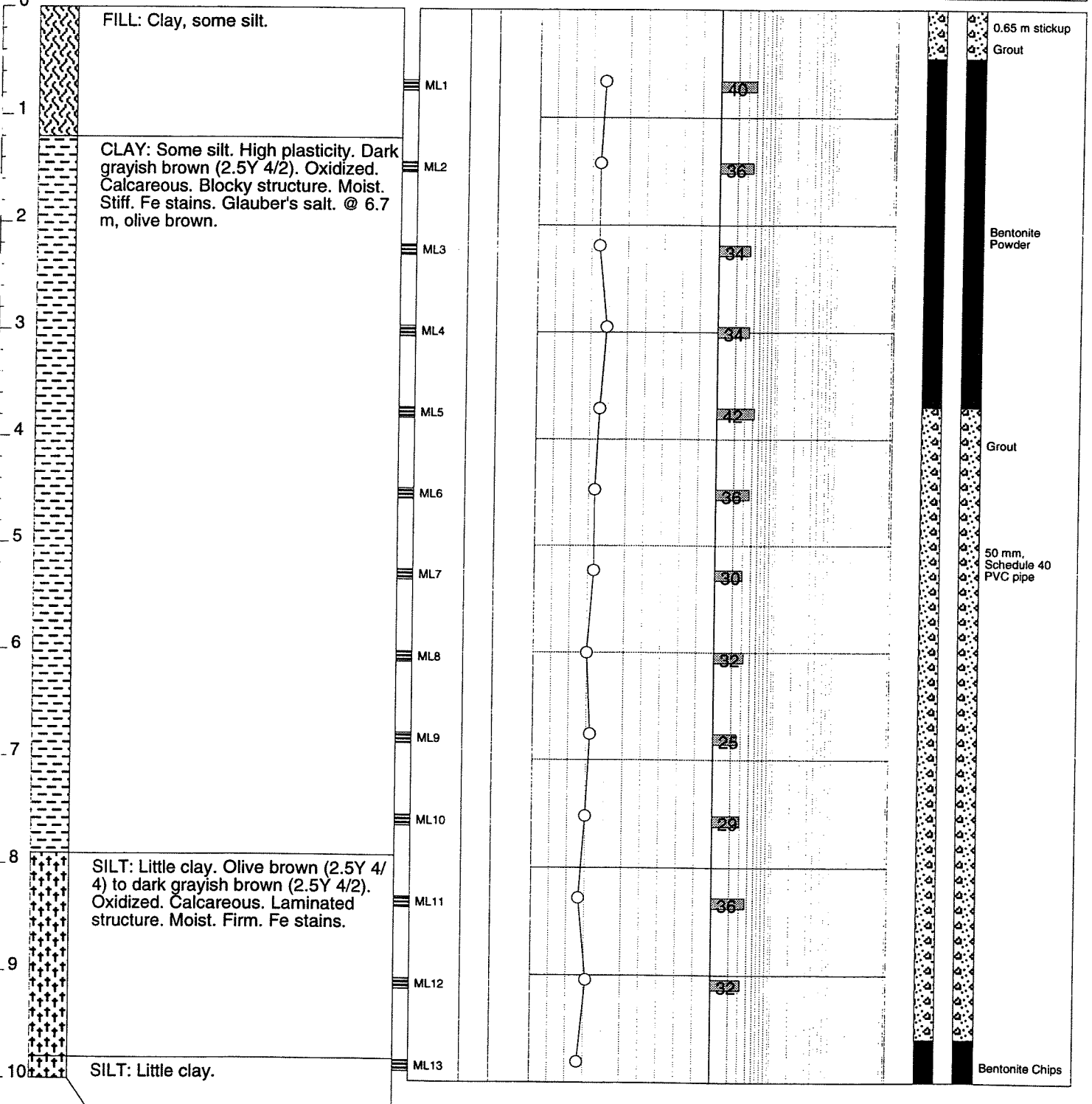


Client: Imperial Oil Limited
Project: Groundwater Monitoring
Location: ESSO Terminal Regina
Project No: R1885

Northing: -
Easting: -
Ground Elev.: 582.85 m
Top Casing Elev.: 583.50 m

Date Drilled: October 19, 1994
Drill: Brat 22
Drilling Method: Hollow Stem Auger
Logged by: MXL

Table with 5 main columns: Depth (m), Soil Description, Sample, Moisture Content, Headspace Vapour, and Monitor Well Construction Detail.





Client: Imperial Oil Limited
 Project: Groundwater Monitoring
 Location: ESSO Terminal Regina
 Project No: R1885

Northing: -
 Easting: -
 Ground Elev.: 582.85 m
 Top Casing Elev.: 583.50 m

Date Drilled: October 19, 1994
 Drill: Brat 22
 Drilling Method: Hollow Stem Auger
 Logged by: MXL

Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture ○	Liquid Limit ◇	10	100	1000	10000	

