Appendix 2

Pump test data.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

STEPPED DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-0881	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:	H06-1179	SITE NAME:	Mashabela		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	50.50	DATUM LEVEL (magl):	0.10	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	7.50	CASING HEIGHT (magl):	0.20	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	45.00	CASING DEPTH (magl):		PUMP TYPE USED:	MONO 80

DISCHARGE RATE 1

DATE:	02-Sep-98		TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		0.20		1		
2		0.38		2		
3		0.56	0.51	3		
5		0.72		5		
7		0.75		7		
10		0.75		10		
15		0.75	0.51	15		
20		0.75		20		
30		0.75		30		
40		0.75	0.51	40		
50		0.76		50		
60		0.76		60		
70		0.76		70		
80		0.76	0.51	80		
90		0.76		90		
100		0.77		100		
110				110		
120				120		
				150		

DISCHARGE RATE 2

DATE:	02-Sep-98		TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		1.20		1		
2		1.45		2		
3		1.62	1.56	3		
5		1.74		5		
7		1.89		7		
10		2.06	1.56	10		
15		2.40	1.59	15		
20		2.45		20		
30		2.48		30		
40		2.48	1.58	40		
50		2.49		50		
60		2.49		60		
70		2.50		70		
80		2.50	1.57	80		
90		2.50		90		
100		2.50		100		
110				110		
120				120		
				150		

DISCHARGE RATE 3

DATE:	02-Sep-98		TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		3.10		1		
2		3.30		2		
3		3.58	3.04	3		
5		3.90		5		
7		4.22		7		
10		4.48	3.04	10		
15		4.98		15		
20		5.38	3.05	20		
30		5.60		30		
40		5.81		40		
50		5.83	3.06	50		
60		5.86		60		
70		5.90		70		
80		5.95	3.05	80		
90		5.96		90		
100		5.98		100		
110				110		
120				120		
				150		

DISCHARGE RATE 4

DATE:	02-Sep-98		TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		12.70		1		
2		19.95	4.73	2		
3		30.20		3		
5		34.10		5		
7		36.30	3.48	7		
10		36.30		10		
15		36.30		15		
20		36.30		20		
30		36.30		30		
40		36.30	3.53	40		
50		36.30	3.46	50		
60		36.30		60		
70		36.30	3.46	70		
80		36.30		80		
90		36.30		90		
100		36.30		100		
110				110		
120				120		
				150		

DISCHARGE RATE 5

DATE:			TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 6

DATE:	02-Sep-98		TIME:			
Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		30.34
2				2		21.16
3				3		14.32
5				5		7.98
7				7		5.10
10				10		3.57
15				15		3.25
20				20		2.97
30				30		2.93
40				40		2.59
50				50		2.30
60				60		2.12
70				70		1.95
80				80		1.84
90				90		1.78
100				100		1.62
110				110		1.64
120				120		1.50
				150		1.44
						1.33
						1.27

COMMENTS:

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CONSTANT DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-0881	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:	H06-1179	SITE NAME:	Mashabela		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	50.50	DATUM LEVEL (magl):	0.10	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	7.50	CASING HEIGHT (magl):	0.20	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	45.00	CASING DEPTH (magl):	0.00	PUMP TYPE USED:	MONO 80

TEST STARTED			TEST COMPLETED		DURATION (min):	
DATE:	02-Sep-98	TIME:	DATE:	TIME:	TOTAL TIME PUMPED (min):	
AVERAGE YIELD (l/s):	2.05					

DISCHARGE BOREHOLE

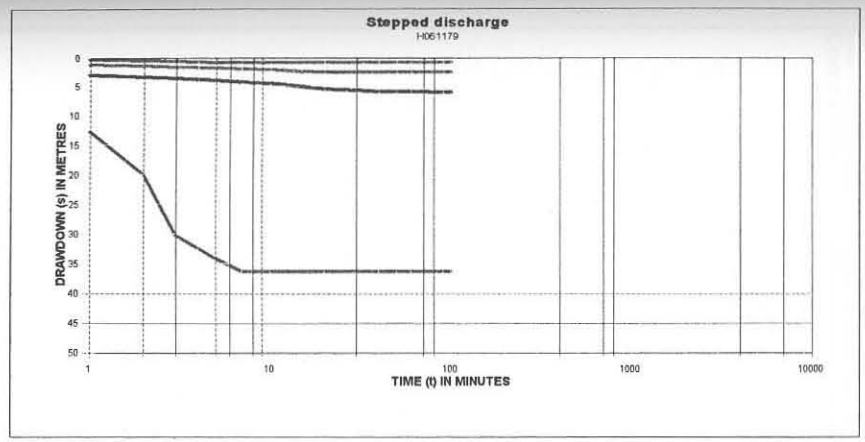
Time	Drawdown		Yield	Time	Recovery		
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)	t/t'
1		0.50		1		0.98	1441
2		1.05		2		0.90	721
3		1.58		3		0.85	481
5		2.00		5		0.84	289
7		2.47		7		0.84	206.71
10		2.89	2.02	10		0.82	145
15		3.10		15		0.78	97
20		3.23		20		0.74	73
30		3.33	2.07	30		0.70	49
40		3.45		40		0.65	37
60		3.47	2.05	60		0.61	25
90		3.58		90		0.54	17
120		3.63	2.04	120		0.50	13
150		3.67	2.09	150		0.46	10.6
180		3.68	2.06	180		0.43	9
210		3.71	2.05	210		0.40	7.8571
240		3.75	2.01	240		0.36	7
300		3.78	2.04	300		0.27	5.8
360		3.80	2.05	360		0.18	5
420		3.81	2.08	420		0.09	4.4286
480		3.82	2.02	480			
540		3.85		540			
600		3.88		600			
720		3.90	2.07	720			
840		3.93		840			
960		3.95	2.05	960			
1080		3.98		1080			
1200		4.03	2.04	1200			
1320		4.06		1320			
1440		4.10	2.07	1440			
1800				1800			
2280				2280			
2880				2880			

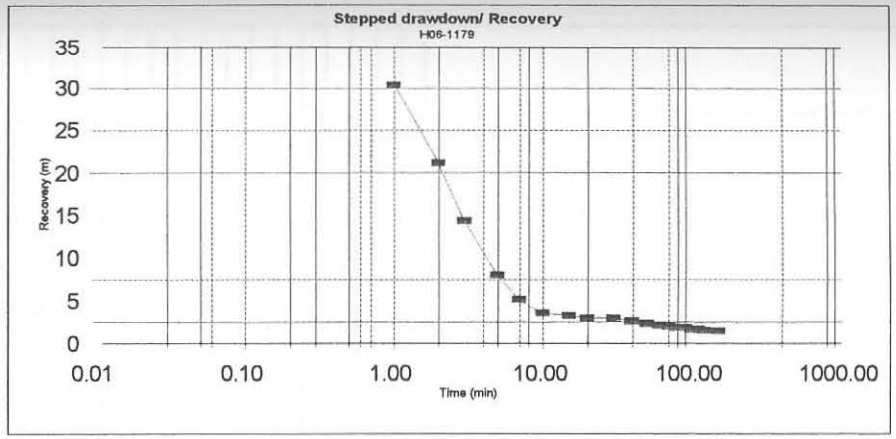
OBSERVATION BOREHOLES

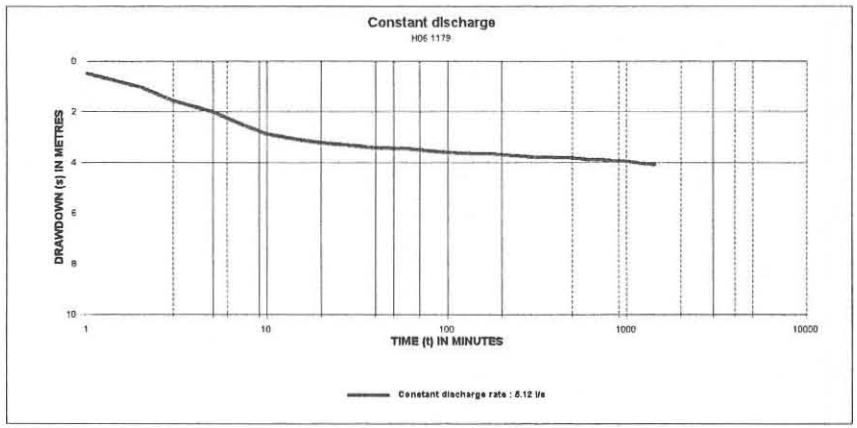
BOREHOLE 1			BOREHOLE 2				BOREHOLE 3		
No.:	H06-1178		No.:	H06-1180			No.:		
Distance (m):		5.6	Distance (m):		7.6		Distance:		
Time	Drawdown		Time	Drawdown			Time		
(min)	(m)	Rec	(min)	mbdl	(m)	Rec	(min)	mbdl	(m)
1	0.20	0.98	1		0.10	0.92	1		
2	0.31	0.92	2		0.21	0.87	2		
3	0.42	0.86	3		0.30	0.85	3		
5	0.52	0.80	5		0.40	0.80	5		
7	0.61	0.77	7		0.51	0.78	7		
10	0.70	0.75	10		0.63	0.75	10		
15	0.80	0.69	15		0.70	0.70	15		
20	0.83	0.64	20		0.73	0.67	20		
30	0.87	0.61	30		0.85	0.60	30		
40	0.92	0.57	40		0.85	0.65	40		
60	0.95	0.54	60		0.85	0.50	60		
90	1.00	0.45	90		0.89	0.46	90		
120	1.05	0.40	120		0.94	0.42	120		
150	1.08	0.37	150		0.96	0.38	150		
180	1.10	0.34	180		0.98	0.35	180		
210	1.12	0.30	210		1.00	0.32	210		
240	1.15	0.27	240		1.04	0.28	240		
300	1.16	0.19	300		1.05	0.21	300		
360	1.17	0.10	360		1.08	0.12	360		
420	1.20	0.06	420		1.09	0.07	420		
480	1.22		480		1.10		480		
540	1.23		540		1.13		540		
600	1.26		600		1.15		600		
720	1.29		720		1.18		720		
840	1.31		840		1.20		840		
960	1.33		960		1.23		960		
1080	1.35		1080		1.24		1080		
1200	1.37		1200		1.26		1200		
1320	1.39		1320		1.28		1320		
1440	1.41		1440		1.30		1440		
1800			1800				1800		
2280			2280				2280		
2880			2880				2880		

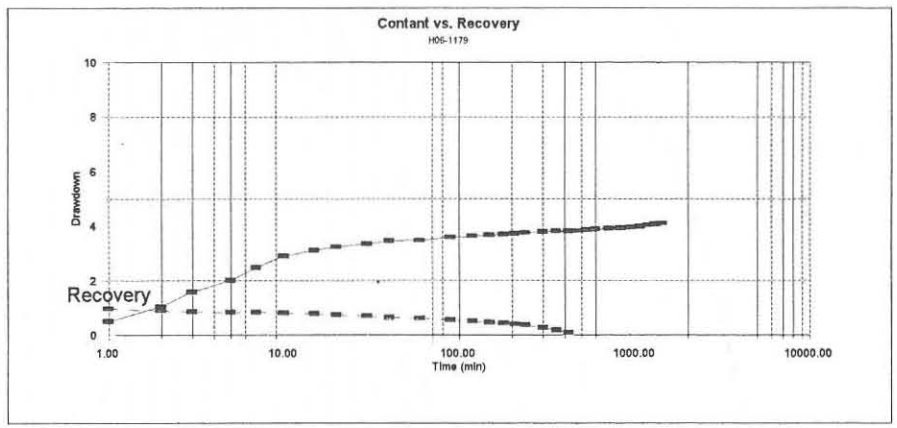
COMMENTS:

BOR ENUI 0881



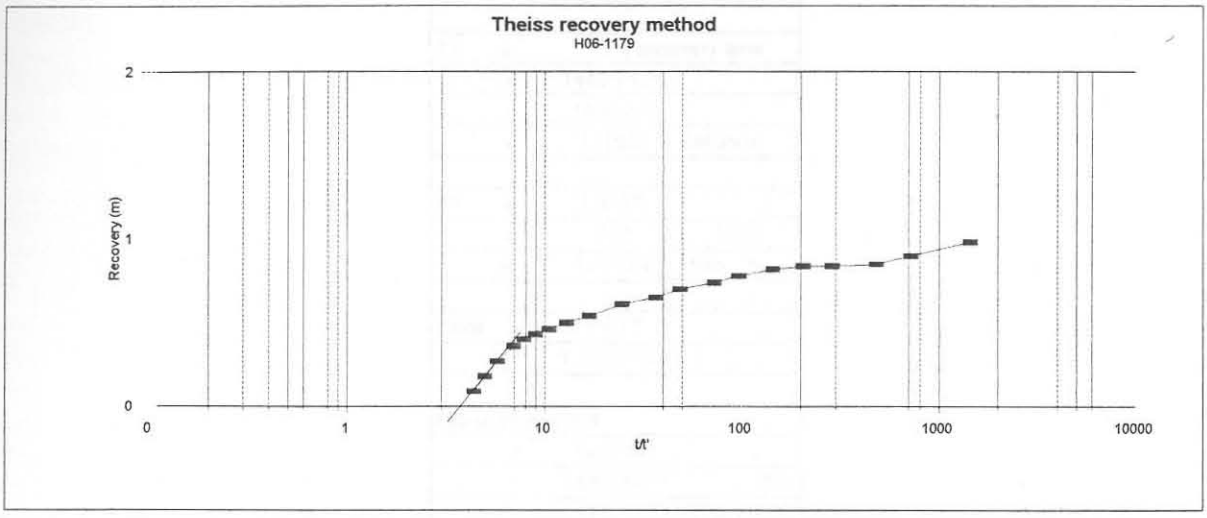






Comments:

ER: H06-0881



Pump cycle	=	1440	min	
Yield	=	2.05	l/s	
t/t"	=	3.8	(Graph)	
Recovery period	=	1440 /	t/t"	
		1440 /	3.80	
			378.95 min	
Pumping period	=	1440 -	378.95	
			1061.05 min	
Litres pumped	=	1.31E+05	L	
Pump yield @ 24 hrs		1.51	L/s	
Factor of safety	=	0.75		
Operating yield	=	**1.13**	**L/s for 24hrs**	

Comments: Good recovery. A factor of safety was taken at 0.75, allowing for unknown influences.

RULE of THUMB			
Bh no.		H06 1179	
TT	=	PT + recovery time	
	=	1440 + 420	
	=	1860 min	
	=	111600	seconds
TV	=	L/s*TP	
	=	2.05	1440
	=	177120	litres
Yield	=	TV/TT	
		1.58709677	l/s
Production yield			
	=	Yield *FS	
	=	1.58709677	70%
	=	1.19032258	l/s @ 24hrs

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STEPPED DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-1043	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	124.00	DATUM LEVEL (magl):	0.05	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	3.25	CASING HEIGHT (magl):	0.23	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	45.00	CASING DEPTH (magl):		PUMP TYPE USED:	MONO 80

DISCHARGE RATE 1

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		1.00		1		
2		2.46		2		
3		3.80		3		
5		5.20	1.08	5		
7		5.65		7		
10		5.75		10		
15		5.95		15		
20		6.04	1.08	20		
30		6.12		30		
40		6.22		40		
50		6.32		50		
60		6.44	1.11	60		
70		6.51		70		
80		6.58		80		
90		6.67		90		
100		6.75		100		
110				110		
120				120		
				150		

DISCHARGE RATE 2

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		7.95		1		
2		9.90		2		
3		10.80	2.22	3		
5		12.43		5		
7		13.38		7		
10		14.08	2.15	10		
15		14.60		15		
20		14.77		20		
30		14.98	2.19	30		
40		15.17		40		
50		15.19		50		
60		15.37	2.21	60		
70		15.45		70		
80		15.50		80		
90		15.55	2.19	90		
100		15.64		100		
110				110		
120				120		
				150		

DISCHARGE RATE 3

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		17.20		1		
2		19.87		2		
3		23.45	3.07	3		
5		24.38		5		
7		24.65		7		
10		24.89		10		
15		25.12	3.06	15		
20		25.58		20		
30		26.00	3.09	30		
40		26.25		40		
50		26.37		50		
60		26.47	3.04	60		
70		26.56		70		
80		26.63		80		
90		26.66	3.07	90		
100		26.70		100		
110				110		
120				120		
				150		

DISCHARGE RATE 4

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		29.00		1		
2		31.00	4.10	2		
3		34.64		3		
5		38.00	3.86	5		
7		40.50	3.66	7		
10		40.50	3.60	10		
15		40.50	3.53	15		
20		40.50	3.46	20		
30		40.50	3.47	30		
40		40.50		40		
50		40.50		50		
60		40.50		60		
70		40.50		70		
80		40.50		80		
90		40.50		90		
100		40.50		100		
110				110		
120				120		
				150		

DISCHARGE RATE 5

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 6

DATE: 02-Sep-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		7.300
2				2		1.500
3				3		1.220
5				5		0.990
7				7		0.900
10				10		0.780
15				15		0.670
20				20		0.560
30				30		0.480
40				40		0.370
50				50		0.280
60				60		0.190
70				70		0.110
80				80		0.070
90				90		0.040
100				100		0.040
110				110		0.020
120				120		0.020
				150		0.001

COMMENTS:

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YUNIBESITHI YA PRETORIA

CONSTANT DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-1043	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	124.00	DATUM LEVEL (magl):	0.05	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	3.25	CASING HEIGHT (magl):	0.23	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	45.00	CASING DEPTH (magl):	0.00	PUMP TYPE USED:	MONO 80

TEST STARTED				TEST COMPLETED				DURATION (min):	
DATE:	02-Sep-98	TIME:		DATE:		TIME:		TOTAL TIME PUMPED (min):	
AVERAGE YIELD (l/s):	1.89								

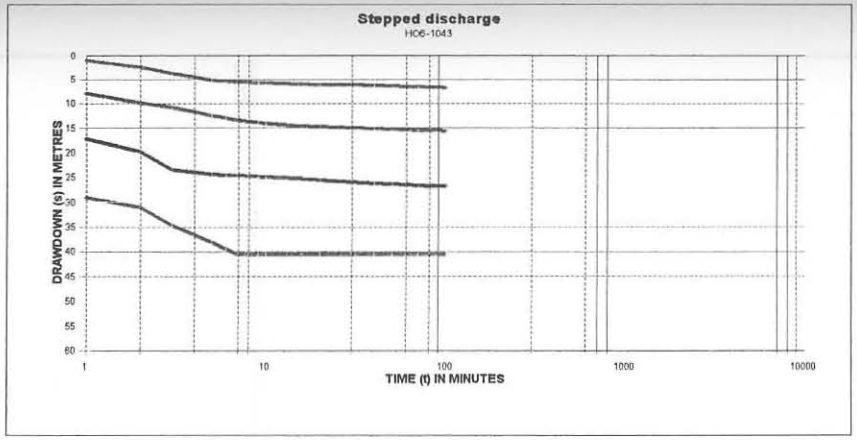
DISCHARGE BOREHOLE

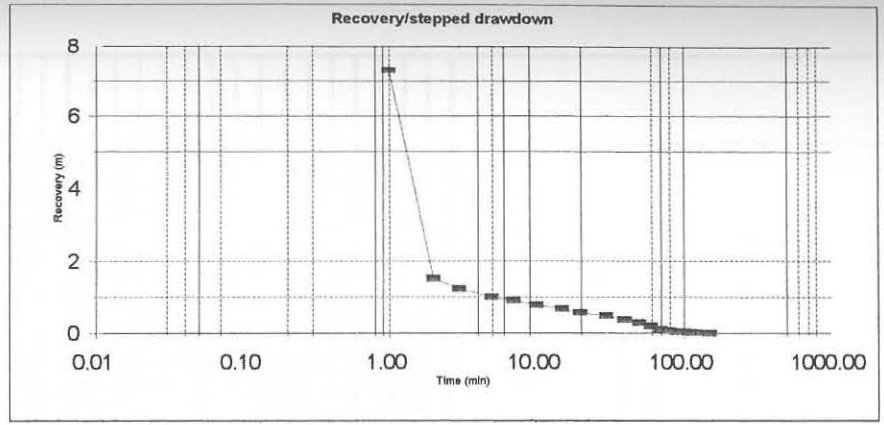
Time	Drawdown		Yield	Time	Recovery		
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)	t/t'
1		2.23		1		13.40	1441
2		4.18		2		9.60	721
3		6.35		3		7.45	481
5		8.87	1.86	5		5.86	289
7		10.48		7		5.20	206.71
10		12.89		10		4.96	145
15		13.58	1.87	15		4.75	97
20		14.00		20		4.60	73
30		14.33	1.89	30		4.32	49
40		14.80		40		4.27	37
60		15.14	1.88	60		4.14	25
90		15.35		90		4.07	17
120		15.43	1.92	120		3.72	13
150		15.53		150		3.60	10.6
180		15.65	1.93	180		3.49	9
210		15.80		210		3.38	7.8571
240		16.08	1.90	240		3.30	7
300		16.40	1.87	300		3.18	5.8
360		16.80	1.89	360		3.06	5
420		16.90	1.88	420		2.98	4.4286
480		17.00	1.89	480		2.90	4
540		17.13	1.87	540		2.89	3.6667
600		17.24	1.92	600		2.87	3.4
720		17.38	1.89	720		2.85	3
840		17.45	1.88	840		2.82	2.7143
960		17.56	1.89	960		2.80	2.5
1080		17.62		1080		2.80	2.3333
1200		17.70		1200		2.79	2.2
1320		17.76	1.90	1320		2.79	2.0909
1440		17.81	1.89	1440		2.78	2
1800				1800		2.78	1.8
2280				2280		2.77	1.6316
2880				2880			

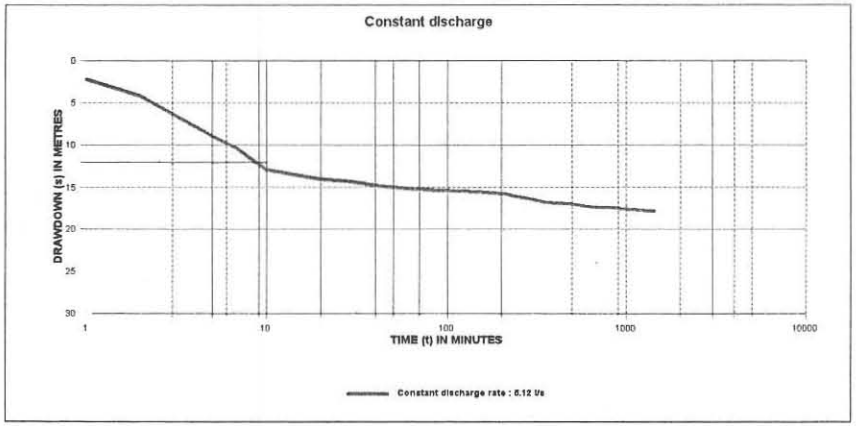
OBSERVATION BOREHOLES

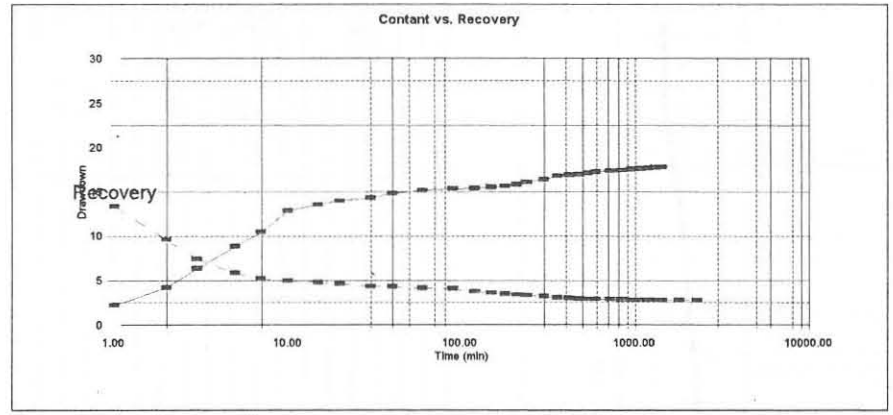
BOREHOLE 1			BOREHOLE 2			BOREHOLE 3		
No.:			No.:			No.:		
Distance (m):			Distance (m):			Distance:		
Time	Drawdown		Time	Drawdown		Time	Drawdown	
(min)	mbdl	(m)	(min)	mbdl	(m)	(min)	mbdl	(m)
1			1			1		
2			2			2		
3			3			3		
5			5			5		
7			7			7		
10			10			10		
15			15			15		
20			20			20		
30			30			30		
40			40			40		
60			60			60		
90			90			90		
120			120			120		
150			150			150		
180			180			180		
210			210			210		
240			240			240		
300			300			300		
360			360			360		
420			420			420		
480			480			480		
540			540			540		
600			600			600		
720			720			720		
840			840			840		
960			960			960		
1080			1080			1080		
1200			1200			1200		
1320			1320			1320		
1440			1440			1440		
1800			1800			1800		
2280			2280			2280		
2880			2880			2880		

COMMENTS:



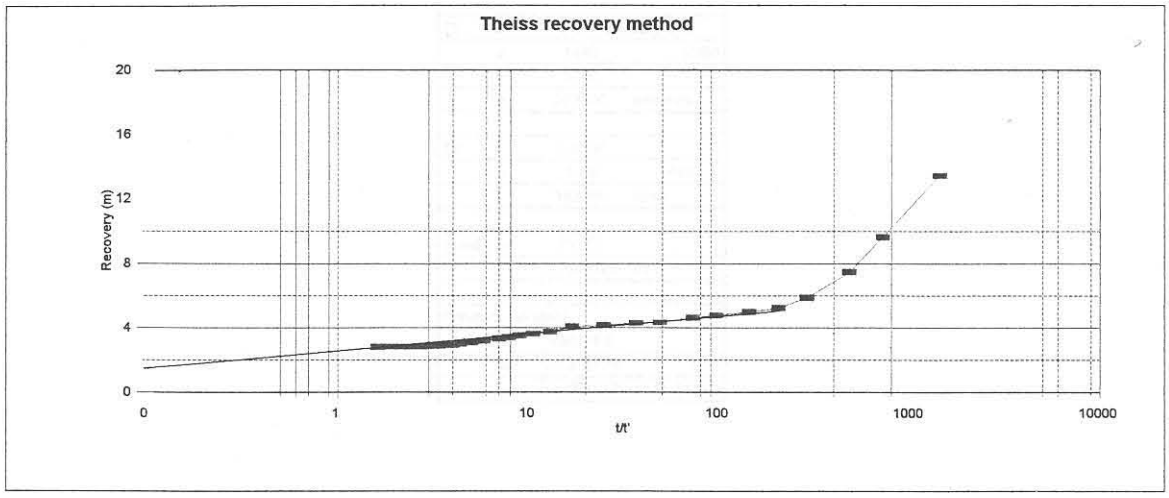






Comments:

MBER: H06-1043



	Pump cycle	=	1440 min	
	Yield	=	1.89 l/s	
	t/t"	=	0 (Graph)	
	Recovery period	=	1440 / t/t"	
			1440 / 0.00	
			ERR min	
	Pumping period	=	1440 - ERR	
			ERR min	
	Litres pumped	=	ERR L	
	Pump yield @ 24 hrs		ERR L/s	
	Factor of safety	=	0.75	
	Operating yield	=	**ERR**	**L/s for 24 hrs**

Comments: Bad recovery.

Comments:

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RULE of THUMB			
Bh no.		H06 0882DJA	
TT	=	PT + recovery time	
	=	1440	2280
	=	3720	
	=	223200	seconds
TV	=	L/s*TP	
	=	1.89	1440
	=	163296	litres
Yield	=	TV/TT	
		0.7316129	l/s
Production yield			
	=	Yield *FS	
	=	0.7316129	70%
	=	0.54870968	l/s @ 24hrs

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STEPPED DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06 1043	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	Research	PUMP INLET DIAMETER (mm):	100
BOREHOLE DEPTH (mbdl):	126.00	DATUM LEVEL (magl):	0.26	EXISTING PUMP:	no
STATIC WATER LEVEL (mbdl):	3.58	CASING HEIGHT (magl):	0.24	CONTRACTOR:	AB pumps
DEPTH OF PUMP (mbdl):	68.00	CASING DEPTH (magl):	12.00	PUMP TYPE USED:	BP40

DISCHARGE RATE 1

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		1.19		1		
2		1.80		2		
3		3.97		3		
5		5.46		5		
7		6.45		7		
10		6.29	1.02	10		
15		6.05		15		
20		6.09		20		
30		6.23		30		
40		6.31		40		
50		6.43		50		
60		6.55		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 2

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		7.98		1		
2		9.10		2		
3		10.12		3		
5		12.02	2.17	5		
7		13.16		7		
10		13.95		10		
15		14.41		15		
20		14.73		20		
30		14.81		30		
40		14.90		40		
50		15.04		50		
60		15.20		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 3

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		16.77		1		
2		18.07		2		
3		19.23		3		
5		22.63		5		
7		27.34		7		
10		32.03	4.00	10		
15		35.13		15		
20		35.13		20		
30		36.34		30		
40		37.29		40		
50		37.74		50		
60		38.85		60		
70		39.84		70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 4

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 5

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 6

DATE: 16-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		30.230
2				2		22.280
3				3		16.030
5				5		8.630
7				7		4.980
10				10		3.090
15				15		2.360
20				20		2.200
30				30		1.950
40				40		1.750
50				60		1.550
60				90		1.290
70				120		1.100
80				150		1.040
90				180		0.960
100				210		0.880
110				240		0.800
120				300		0.770
				360		
				420		
				480		
				540		
				600		

COMMENTS:

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CONSTANT DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06 1043	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	Research	PUMP INLET DIAMETER (mm):	100
BOREHOLE DEPTH (mbdl):	126.00	DATUM LEVEL (magl):	0.26	EXISTING PUMP:	no
STATIC WATER LEVEL (mbdl):	4.18	CASING HEIGHT (magl):	0.24	CONTRACTOR:	AB pumps
DEPTH OF PUMP (mbdl):	68.00	CASING DEPTH (magl):	12.00	PUMP TYPE USED:	BP40

TEST STARTED				TEST COMPLETED		DURATION (min):	
DATE:	17-Feb-99	TIME:	15h00	DATE:		TIME:		TOTAL TIME PUMPED (min):	
AVERAGE YIELD (l/s):	3.01	S.W.L.:	4.18				

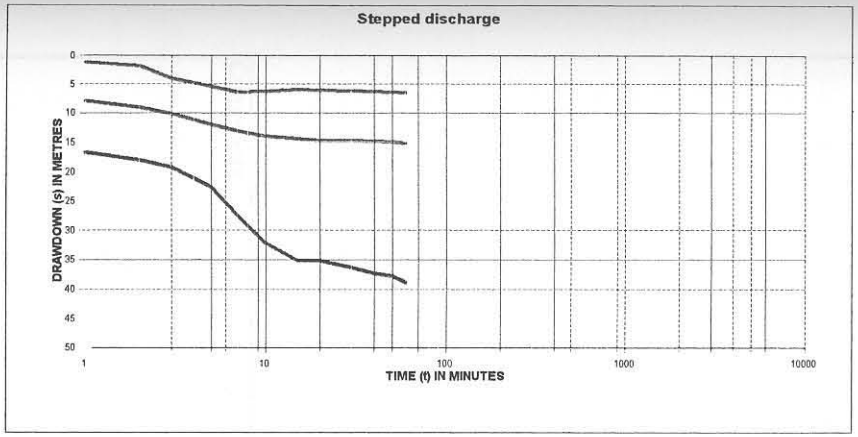
DISCHARGE BOREHOLE

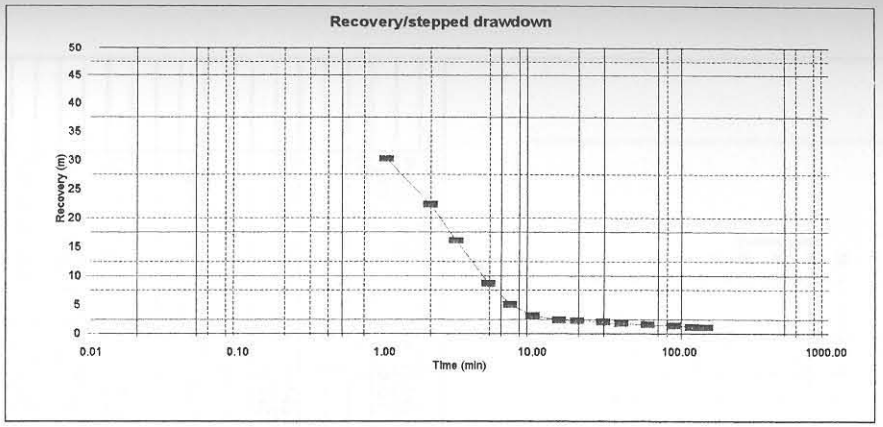
Time	Drawdown		Yield	Time	Recovery		
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)	t/t'
1		4.79		1		27.66	4321
2		11.18		2		21.75	2161
3		13.98		3		17.95	1441
5		18.31		5		13.37	865
7		20.44	3.04	7		11.47	618.14
10		22.31		10		10.65	433
15		23.68		15		10.41	289
20		24.19		20		10.13	217
30		24.71		30		9.85	145
40		25.03		40		9.69	109
60		25.38		60		9.33	73
90		25.70		90		9.12	49
120		25.85		120		8.83	37
150		25.94		150		8.66	29.8
180		26.08		180		8.50	25
210		26.30		210		8.38	21.571
240		26.50		240		8.25	19
300		26.85		300		8.13	15.4
360		27.12		360		8.02	13
420		27.38		420		7.91	11.286
480		27.64		480		7.80	10
540		27.90		540		7.69	9
600		28.16		600		7.58	8.2
720		28.42		720		7.47	7
840		28.73		840		7.36	6.1429
960		29.17		960		7.25	5.5
1080		30.18	3.02	1080		7.09	5
1200		32.50		1200		7.03	4.6
1320		33.10		1320		6.97	4.2727
1440		33.20		1440		6.91	4
1560		33.24		1560		6.82	3.7692
1680		33.26		1680		6.79	3.5714
1800		33.30		1800		6.76	3.4
1920		33.51		1920		6.73	3.25
2040		33.72		2040		6.69	3.1176
2160		34.89	3.04	2160		6.67	3
2280		35.97		2280		6.64	2.8947
2400		37.12		2400		6.6	2.8
2520		38.64		2520		6.57	2.7143
2640		41.09		2640		6.55	2.6364
2760		41.97		2760		6.52	2.5652
2880		42.62	3.02	2880		6.49	2.5
3000		42.89		3000		6.45	2.44
3120		43.1		3120		6.39	2.3846
3240		43.29		3240		6.27	2.3333
3360		43.37		3360		6.17	2.2857
3480		43.51		3480		6.15	2.2414
3600		43.69	3.01	3600		6.05	2.2
3720		43.85		3720		5.85	2.1613
3840		43.97		3840		5.76	2.125
3960		44.2		3960		5.69	2.0909
4080		44.49		4080		5.62	2.0588
4200		44.57		4200		5.57	2.0286
4320		44.68		4320		5.53	2
5040				5040		5.4	1.8571
5760				5760		5.33	1.75
7200				7200		5..24	1.6
10080				10080		5.08	1.4286

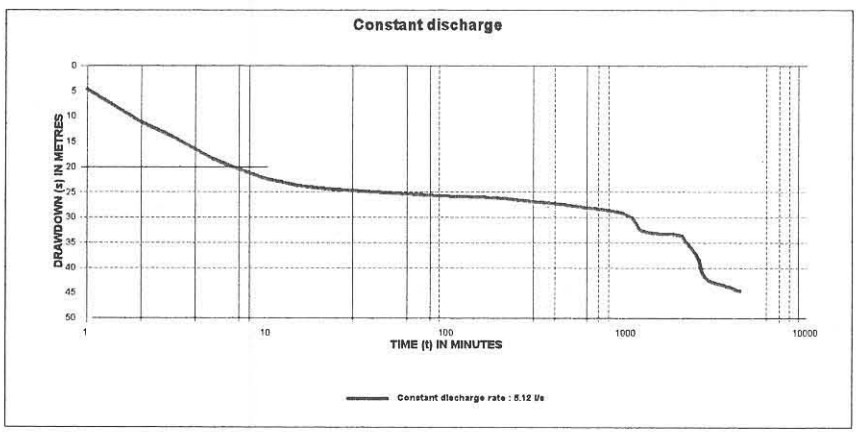
OBSERVATION BOREHOLES

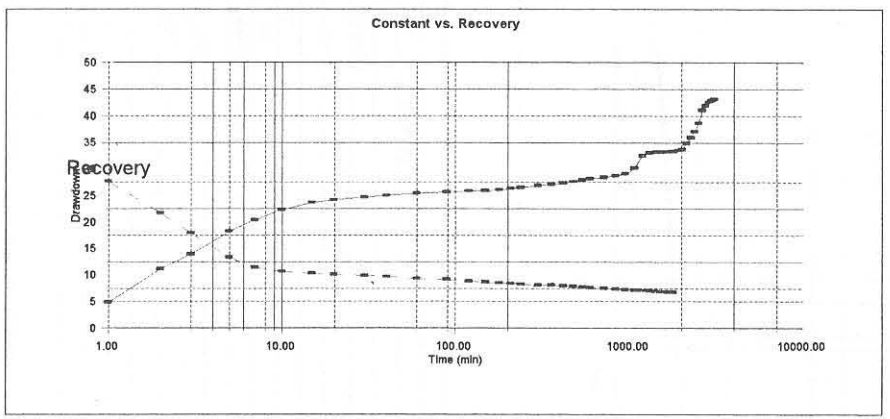
BOREHOLE 1			S.W.L.	BOREHOLE 2			S.W.L.	BOREHOLE 3			S.W.L
No.: H06 1081				No.: H06 1080				No.: H06 1042			
Distance (m): 25				Distance (m): 100				Distance: 180			
Time	Drawdown		Rec	Time	Drawdown		Rec	Time	Drawdown		Rec
(min)	mbdl	(m)	(m)	(min)	mbdl	(m)	(m)	(min)	mbdl	(m)	(m)	(min)	mbdl	(m)	(m)
1		0.00	5.04	1		0.00	10.18	1		0.00	0.02
2		0.01	5.04	2		0.00	10.1	2		0.00	0.02
3		0.02	5.04	3		0.00	10.02	3		0.00	0.02
5		0.03	5.04	5		0.00	9.94	5		0.00	0.02
7		0.04	5.04	7		0.01	9.86	7		0.00	0.02
10		0.04	5.04	10		0.03	9.78	10		0.00	0.02
15		0.05	5.04	15		0.05	9.7	15		0.00	0.02
20		0.05	5.04	20		0.10	9.66	20		0.00	0.02
30		0.06	5.04	30		0.17	9.56	30		0.00	0.02
40		0.08	5.04	40		0.21	9.42	40		0.00	0.02
60		0.11	5.04	60		0.33	9.25	60		0.00	0.02
90		0.16	5.04	90		0.76	8.1	90		0.01	0.02
120		0.22	5.04	120		1.05	8.35	120		0.01	0.02
150		0.28	5.04	150		1.33	8.29	150		0.01	0.02
180		0.33	5.04	180		1.46	8.09	180		0.01	0.02
210		0.39	5.04	210		1.70	7.97	210		0.01	0.02
240		0.48	5.04	240		1.94	7.85	240		0.01	0.02
300		0.57	5.04	300		2.18	7.73	300		0.01	0.02
360		0.66	5.04	360		2.48	7.61	360		0.01	0.01
420		0.75	5.04	420		2.66	7.49	420		0.01	0.01
480		0.84	5.04	480		2.90	7.37	480		0.01	0.01
540		0.93	5.04	540		3.14	7.25	540		0.01	0.01
600		1.02	5.04	600		3.38	7.13	600		0.01	0.01
720		1.11	5.08	720		3.62	7.01	720		0.01	0.01
840		1.22	5.11	840		3.86	6.88	840		0.01	0.01
960		1.24	5.19	960		3.90	6.79	960		0.01	0.01
1080		1.30	5.25	1080		4.18	6.65	1080		0.01	0.01
1200		1.37	5.31	1200		4.70	6.61	1200		0.01	0.01
1320		1.44	5.38	1320		5.11	6.57	1320		0.02	0.01
1440		1.50	5.43	1440		5.31	6.53	1440		0.02	0.01
1560		1.63	5.49	1560		5.51	6.49	1560		0.02	0
1680		1.74	5.55	1680		5.73	6.45	1680		0.02	0
1800		1.85	5.61	1800		5.95	6.41	1800		0.02	
1920		1.96	5.66	1920		6.17	6.37	1920		0.02	
2040		2.07	5.73	2040		6.39	6.33	2040		0.02	
2160		2.18	5.79	2160		6.61	6.29	2160		0.02	
2280		2.29	5.85	2280		6.83	6.25	2280		0.02	
2400		2.35	5.92	2400		6.86	6.21	2400		0.02	
2520		2.46	5.98	2520		7.14	6.17	2520		0.02	
2640		2.6	6.03	2640		7.31	6.13	2640		0.02	
2760		2.78	6.09	2760		7.93	6.09	2760		0.02	
2880		2.97	6.15	2880		8.34	6.05	2880		0.02	
3000		3.09	6.21	3000		8.59	5.93	3000		0.02	
3120		3.34	6.27	3120		8.73	5.83	3120		0.02	
3240		3.59	6.29	3240		8.95	5.79	3240		0.02	
3360		3.84	6.28	3360		9.2	5.64	3360		0.02	
3480		4.09	6.28	3480		9.39	5.57	3480		0.02	
3600		4.35	6.28	3600		9.53	5.51	3600		0.02	
3720		4.46	6.26	3720		9.65	5.42	3720		0.02	
3840		4.52	6.15	3840		9.73	5.31	3840		0.02	
3960		4.65	6.1	3960		9.87	5.23	3960		0.02	
4080		4.71	6.06	4080		9.93	5.15	4080		0.02	
4200		4.8	6.04	4200		10.07	5.02	4200		0.02	
4320		5.04	6.04	4320		10.18	5	4320		0.02	
5040			0.42	5040			4.82	5040			
5760			0.42	5760			4.77	5760			
7200				7200				7200			
10080				10080				10080			

BOREHOLE NUMBER: HOS 1043



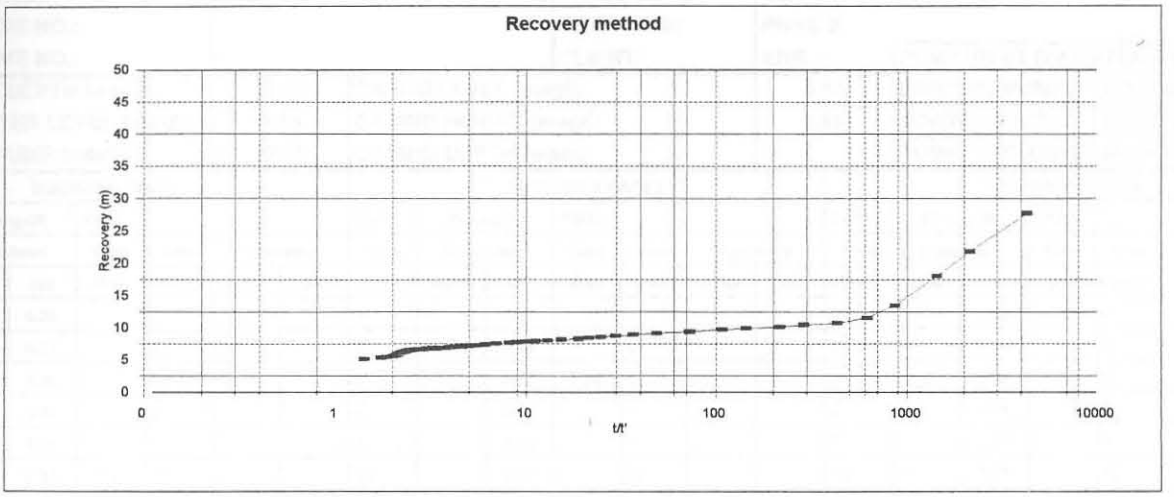






Comments:

MBER: H06 1043



	Pump cycle =	1440	min	(24hrs)
	Yield =	3.01	l/s	
	t/t" =	1	(Graph)	
	Recovery period =	1440 /	t/t"	
		1440 /	1.00	
			1440.00 min	
	Pumping period =	1440 -	1440.00	
			0.00 min	
	Litres pumped =	0.00E+00	L	
	Pump yield @ 24 hrs	0.00	L/s	
	Factor of safety =	0.75		
	Operating yield =	**0.00**	**L/s for 24 hrs**	

Comments:

Comments:

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STEPPED DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-0882	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	27.30	DATUM LEVEL (magl):	0.07	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	2.35	CASING HEIGHT (magl):	0.20	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	27.00	CASING DEPTH (magl):		PUMP TYPE USED:	MONO 80

DISCHARGE RATE 1

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		0.28		1		
2		0.32		2		
3		0.36		3		
5		0.38		5		
7		0.38		7		
10		0.38	1.11	10		
15		0.39		15		
20		0.39		20		
30		0.40	1.11	30		
40		0.40		40		
50		0.40		50		
60		0.40		60		
70		0.41	1.10	70		
80		0.41		80		
90		0.42		90		
100		0.42		100		
110				110		
120				120		
				150		

DISCHARGE RATE 2

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		0.61		1		
2		0.68		2		
3		0.82	2.50	3		
5		0.90		5		
7		0.93		7		
10		0.96		10		
15		1.00	2.53	15		
20		1.02		20		
30		1.04		30		
40		1.05		40		
50		1.06		50		
60		1.07	2.52	60		
70		1.09		70		
80		1.10		80		
90		1.10	2.53	90		
100		1.11		100		
110				110		
120				120		
				150		

DISCHARGE RATE 3

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		1.60		1		
2		1.80		2		
3		1.92	5.11	3		
5		2.14		5		
7		2.22		7		
10		2.37		10		
15		2.42		15		
20		2.46		20		
30		2.48	5.10	30		
40		2.50		40		
50		2.52		50		
60		2.56	5.07	60		
70		2.60		70		
80		2.61		80		
90		2.62	5.09	90		
100		2.62		100		
110				110		
120				120		
				150		

DISCHARGE RATE 4

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		6.85		1		
2		11.71	12.68	2		
3		15.05		3		
5		18.70		5		
7		23.00	9.54	7		
10		23.00	9.52	10		
15		23.00	9.34	15		
20		23.00	9.36	20		
30		23.00	9.36	30		
40		23.00		40		
50		23.00		50		
60		23.00		60		
70		23.00		70		
80		23.00		80		
90		23.00		90		
100		23.00		100		
110				110		
120				120		
				150		

DISCHARGE RATE 5

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 6

DATE: 25-Aug-98 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		7.300
2				2		1.500
3				3		1.220
5				5		0.990
7				7		0.900
10				10		0.780
15				15		0.670
20				20		0.560
30				30		0.480
40				40		0.370
50				50		0.280
60				60		0.190
70				70		0.110
80				80		0.070
90				90		0.040
100				100		0.040
110				110		0.020
120				120		0.020
				150		0.001

COMMENTS:

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CONSTANT DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06-0882	PROJECT:	SOUTHERN DISTRICT		
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	ERR	PUMP INLET DIAMETER (mm):	170
BOREHOLE DEPTH (mbdl):	27.30	DATUM LEVEL (magl):	0.07	EXISTING PUMP:	NO PUMP
STATIC WATER LEVEL (mbdl):	2.35	CASING HEIGHT (magl):	0.20	CONTRACTOR:	RAMOTSE
DEPTH OF PUMP (mbdl):	27.00	CASING DEPTH (magl):	0.00	PUMP TYPE USED:	MONO 80

TEST STARTED		TEST COMPLETED		DURATION (min):	
DATE: 25-Aug-98	TIME:	DATE:	TIME:	TOTAL TIME PUMPED (min):	
AVERAGE YIELD (l/s):	5.12				

DISCHARGE BOREHOLE

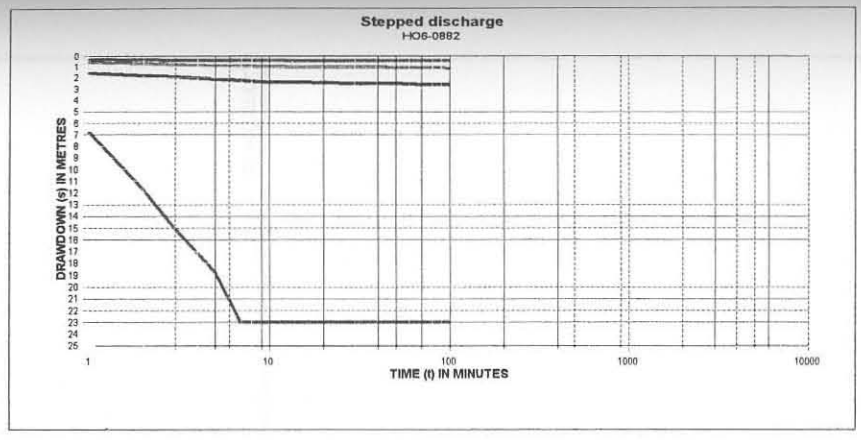
Time	Drawdown		Yield	Time	Recovery		
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)	t/t'
1		0.76		1		2.13	1441
2		1.00	5.10	2		1.96	721
3		1.27		3		1.91	481
5		1.50		5		1.84	289
7		1.72		7		1.79	206.71
10		1.93		10		1.75	145
15		2.25	5.10	15		1.65	97
20		2.40		20		1.63	73
30		2.65		30		1.54	49
40		2.75		40		1.49	37
60		2.81	5.10	60		1.42	25
90		2.87	5.10	90		1.34	17
120		2.93	5.14	120		1.27	13
150		2.96	5.12	150		1.21	10.6
180		3.00	5.13	180		1.17	9
210		3.05		210		1.13	7.8571
240		3.11	5.11	240		1.08	7
300		3.20		300		1.01	5.8
360		3.28	5.12	360		0.98	5
420		3.40	5.16	420		0.92	4.4286
480		3.49	5.12	480		0.88	4
540		3.57	5.10	540		0.86	3.6667
600		3.63		600		0.84	3.4
720		3.67	5.12	720		0.78	3
840		3.74	5.14	840		0.73	2.7143
960		3.78	5.10	960		0.69	2.5
1080		3.83	5.18	1080		0.65	2.3333
1200		3.89		1200		0.63	2.2
1320		3.95	5.12	1320		0.59	2.0909
1440		4.00	5.13	1440		0.56	2
1800				1800		0.52	1.8
2280				2280		0.47	1.6316
2880				2880		0.47	1.5

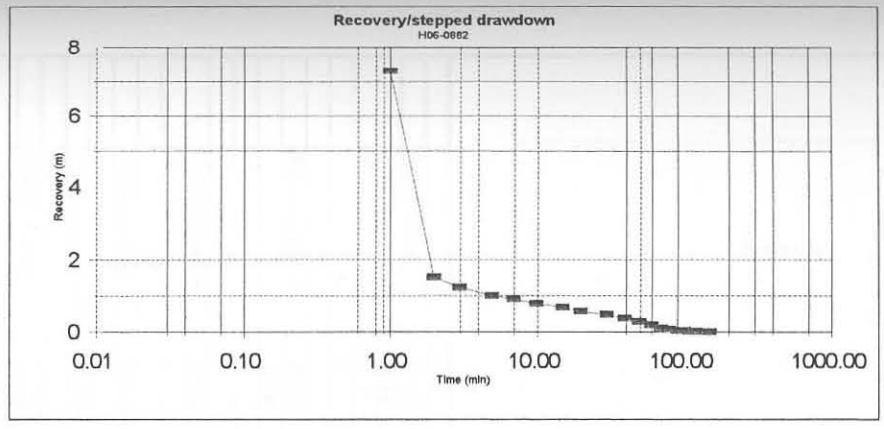
OBSERVATION BOREHOLES

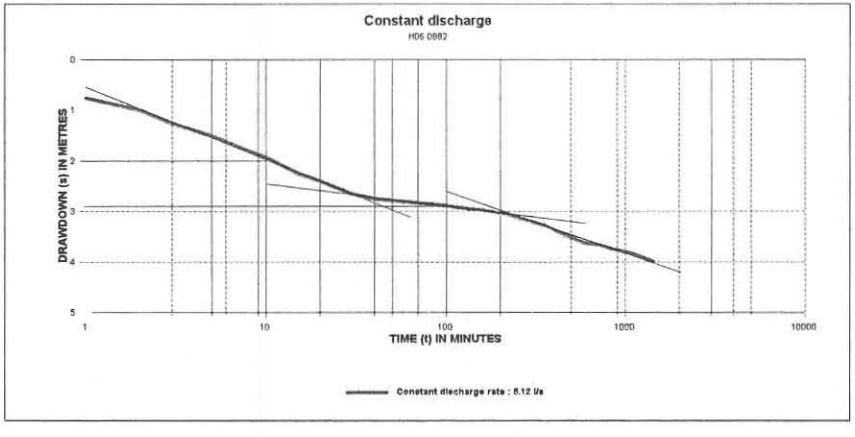
BOREHOLE 1			BOREHOLE 2			BOREHOLE 3		
No.:			No.:			No.:		
Distance (m):			Distance (m):			Distance:		
Time	Drawdown		Time	Drawdown		Time	Drawdown	
(min)	mbdl	(m)	(min)	mbdl	(m)	(min)	mbdl	(m)
1			1			1		
2			2			2		
3			3			3		
5			5			5		
7			7			7		
10			10			10		
15			15			15		
20			20			20		
30			30			30		
40			40			40		
60			60			60		
90			90			90		
120			120			120		
150			150			150		
180			180			180		
210			210			210		
240			240			240		
300			300			300		
360			360			360		
420			420			420		
480			480			480		
540			540			540		
600			600			600		
720			720			720		
840			840			840		
960			960			960		
1080			1080			1080		
1200			1200			1200		
1320			1320			1320		
1440			1440			1440		
1800			1800			1800		
2280			2280			2280		
2880			2880			2880		

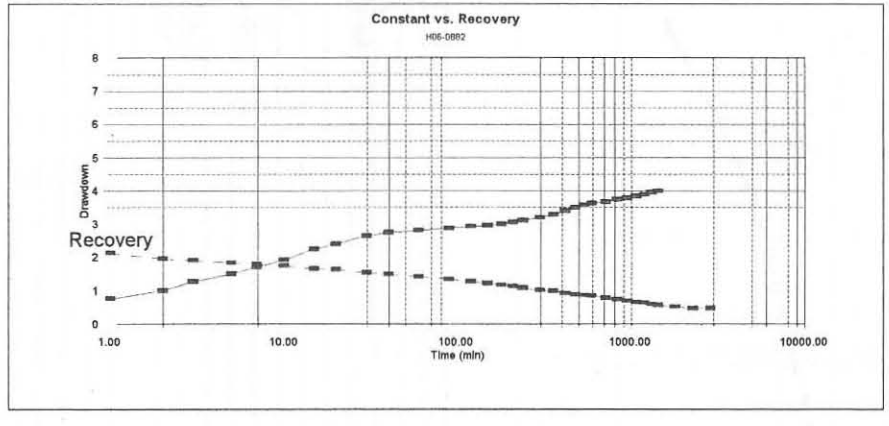
COMMENTS:

BOREHOLE NUMBER: H06-0882









Comments:

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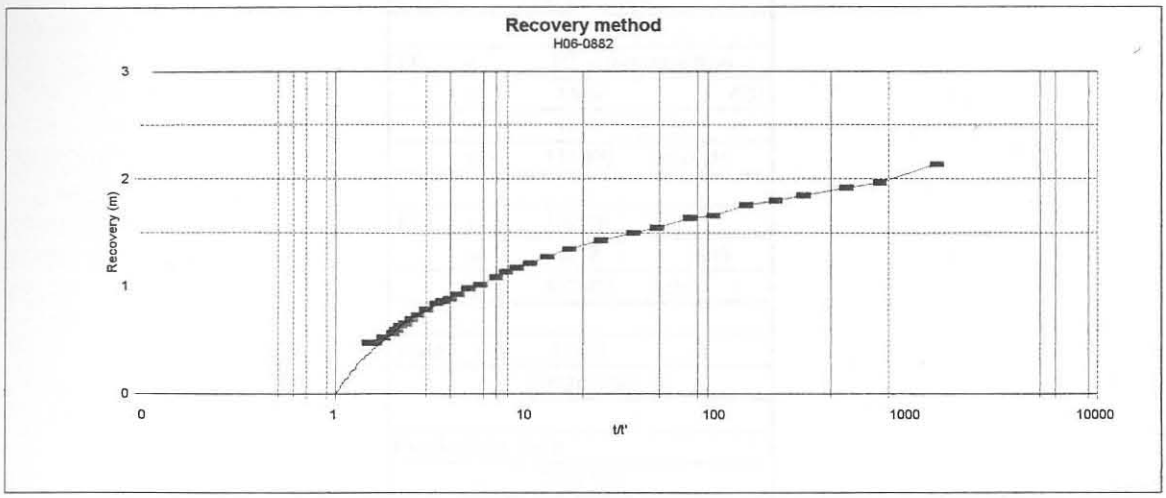
MBER: H06-0882



	Pump cycle	=	1440	min
	Yield	=	5.12	l/s
	t/t"	=	1.1	(Graph)
	Recovery period	=	1440 /	t/t"
			1440 /	1.10
				1309.09 min
	Pumping period	=	1440 -	1309.09
				130.91 min
	Litres pumped	=	4.02E+04	L
	Pump yield @ 24 hrs		0.47	L/s
	Factor of safety	=	0.75	
	Operating yield	=	**0.35**	**L/s for 24 hrs**

Comments: Bad recovery.

Comments:

RULE of THUMB			
Bh no.		H06 0882DJA	
TT	=	PT + recovery time	
	=	1440	420
	=	1860	
	=	111600	seconds
TV	=	L/s*TP	
	=	5.12	1440
	=	442368	litres
Yield	=	TV/TT	
		3.96387097	l/s
Production yield			
	=	Yield *FS	
	=	3.96387097	70%
	=	2.97290323	l/s @ 24hrs

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STEPPED DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06 0882	PROJECT:	SOUTHERN DISTRICT		-
ALTERNATIVE NO.:		SITE NAME:	PHYS 2		
ALTERNATIVE NO.:		CLIENT:	Research	PUMP INLET DIAMETER (mm):	100
BOREHOLE DEPTH (mbdl):	86.75	DATUM LEVEL (magl):	0.26	EXISTING PUMP:	no
STATIC WATER LEVEL (mbdl):	1.69	CASING HEIGHT (magl):	0.13	CONTRACTOR:	AB pumps
DEPTH OF PUMP (mbdl):	32.00	CASING DEPTH (magl):	12.00	PUMP TYPE USED:	BP40

DISCHARGE RATE 1

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		0.24		1		
2		0.27		2		
3		0.29		3		
5		0.31		5		
7		0.32		7		
10		0.34	1.02	10		
15		0.36		15		
20		0.36		20		
30		0.38		30		
40		0.39		40		
50		0.41		50		
60		0.41		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 2

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		0.55		1		
2		0.55		2		
3		0.56		3		
5		0.58		5		
7		0.59		7		
10		0.61	2.05	10		
15		0.61		15		
20		0.63		20		
30		0.65		30		
40		0.66		40		
50		0.65		50		
60		0.66		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 3

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		1.01		1		
2		1.08		2		
3		1.10		3		
5		1.18		5		
7		1.32		7		
10		1.34	4.03	10		
15		1.39		15		
20		1.44		20		
30		1.52		30		
40		1.56		40		
50		1.57		50		
60		1.59		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 4

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1		2.34		1		
2		2.96		2		
3		3.11		3		
5		3.14		5		
7		3.24		7		
10		3.33	8.40	10		
15		3.47		15		
20		3.51		20		
30		3.58		30		
40		3.68		40		
50		3.71		50		
60		3.76		60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 5

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		
2				2		
3				3		
5				5		
7				7		
10				10		
15				15		
20				20		
30				30		
40				40		
50				50		
60				60		
70				70		
80				80		
90				90		
100				100		
110				110		
120				120		
				150		

DISCHARGE RATE 6

DATE: 09-Feb-99 TIME:

Time	Drawdown		Yield	Time	Recovery	
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)
1				1		1.560
2				2		1.240
3				3		1.090
5				5		0.900
7				7		0.810
10				10		0.720
15				15		0.680
20				20		0.470
30				30		0.390
40				40		0.360
50				60		0.290
60				90		0.210
70				120		0.160
80				150		0.090
90				180		0.000
100				210		
110				240		
120				300		
				360		
				420		
				480		
				540		
				600		

COMMENTS:

CONSTANT DISCHARGE TEST AND RECOVERY

BOREHOLE NO.:	H06 0882	PROJECT:	SOUTHERN DISTRICT
ALTERNATIVE NO.:		SITE NAME:	PHYS 2
ALTERNATIVE NO.:		CLIENT:	Research
PUMP INLET DIAMETER (mm):	100		
BOREHOLE DEPTH (mbdl):	86.75	DATUM LEVEL (magl):	0.26
EXISTING PUMP:	no		
STATIC WATER LEVEL (mbdl):	1.69	CASING HEIGHT (magl):	0.13
CONTRACTOR:	AB pumps		
DEPTH OF PUMP (mbdl):	32.00	CASING DEPTH (magl):	12.00
PUMP TYPE USED:	BP40		

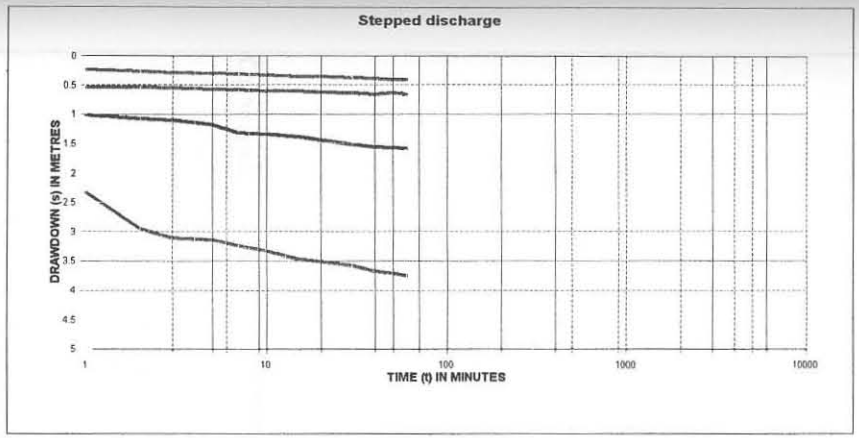
TEST STARTED			TEST COMPLETED			DURATION (min):	
DATE:		TIME: 07h20	DATE:		TIME:	TOTAL TIME PUMPED (min):	
AVERAGE YIELD (l/s):	5.1						

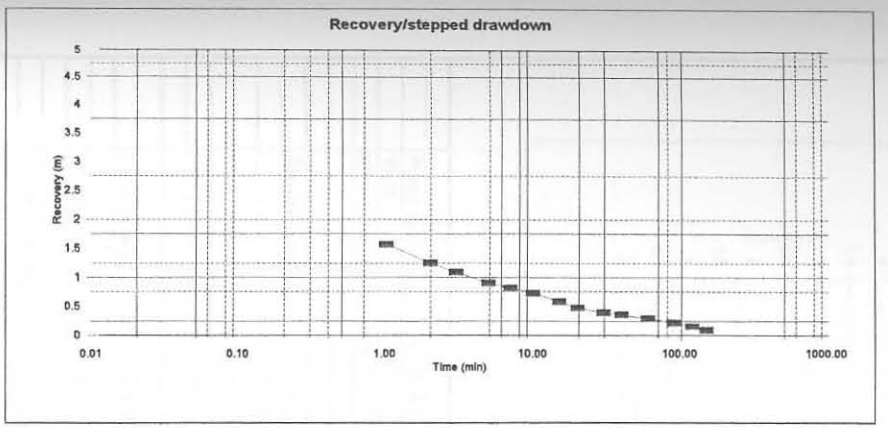
DISCHARGE BOREHOLE

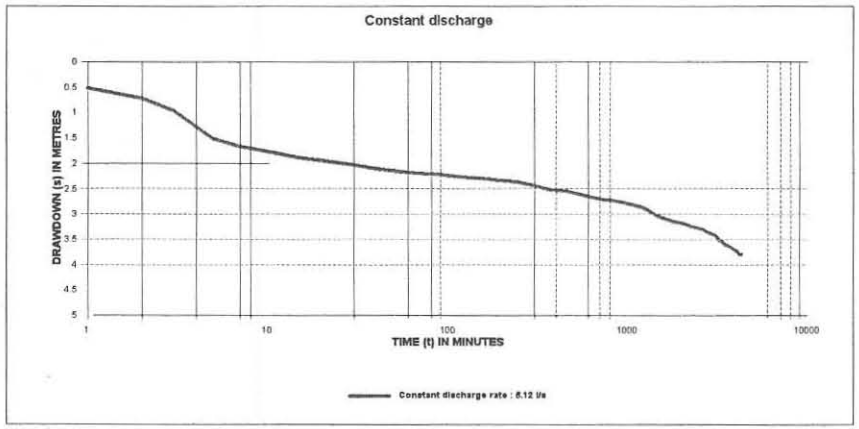
Time	Drawdown		Yield	Time	Recovery		
(min)	mbdl	(m)	(l/s)	(min)	mbdl	(m)	t/t'
1		0.52		1		2.76	5721
2		0.73		2		2.46	2861
3		0.96		3		2.42	1907.7
5		1.52		5		2.40	1145
7		1.67		7		2.39	818.14
10		1.77		10		2.36	573
15		1.89		15		2.31	382.33
20		1.94		20		2.28	287
30		2.04		30		2.23	191.67
40		2.11		40		2.17	144
60		2.18		60		2.09	96.333
90		2.23		90		2.00	64.556
120		2.27		120		1.93	48.667
150		2.30		150		1.87	39.133
180		2.32		180		1.84	32.778
210		2.35		210		1.78	28.238
240		2.36		240		1.73	24.833
300		2.44		300		1.68	20.067
360		2.51		360		1.61	16.889
420		2.54		420		1.57	14.619
480		2.56		480		1.51	12.917
540		2.61		540		1.46	11.593
600		2.65		600		1.42	10.533
720		2.71		720		1.31	8.9444
840		2.74		840		1.27	7.8095
960		2.78		960		1.22	6.9583
1080		2.83		1080		1.19	6.2963
1200		2.87		1200		1.15	5.7667
1320		2.94		1320		1.13	5.3333
1440		3.02		1440		1.11	4.9722
1560		3.08		1560		1.09	4.6667
1680		3.12		1680		1.06	4.4048
1800		3.15		1800		1.04	4.1778
1920		3.17		1920		1.02	3.9792
2040		3.19		2040		1	3.8039
2160		3.22		2160		0.98	3.6481
2280		3.25		2280		0.96	3.5088
2400		3.27		2400		0.94	3.3833
2520		3.29		2520		0.92	3.2698
2640		3.3		2640		0.9	3.1667
2760		3.35		2760		0.89	3.0725
2880		3.38		2880		0.87	2.9861
3000		3.42		3000		0.86	2.9067
3120		3.44		3120		0.85	2.8333
3240		3.53		3240		0.83	2.7654
3360		3.54		3360		0.82	2.7024
3480		3.6		3480		0.81	2.6437
3600		3.63		3600		0.8	2.5889
3720		3.66		3720		0.79	2.5376
3840		3.69		3840		0.78	2.4896
3960		3.72		3960		0.77	2.4444
4080		3.74		4080		0.76	2.402
4200		3.8		4200		0.75	2.3619
4320		3.8		4320		0.75	2.3241
5040				5040		0.69	2.1349
5720				5720		0.67	2
7200				7200			
10080				10080			

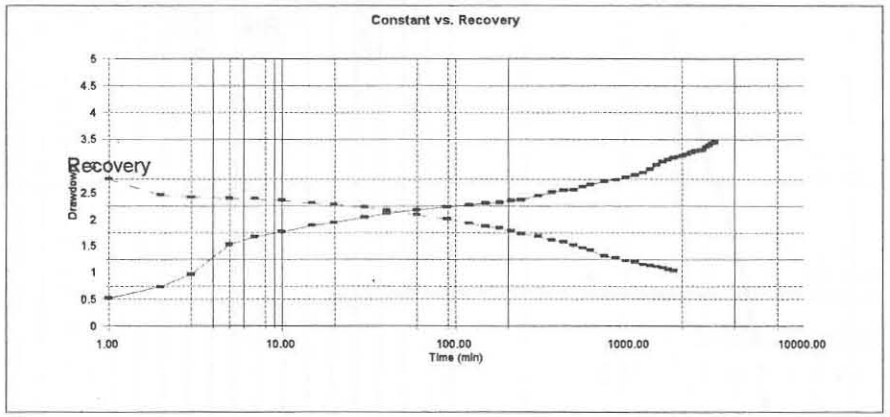
OBSERVATION BOREHOLES

BOREHOLE 1				BOREHOLE 2				BOREHOLE 3			
No.: H06 1071				No.: H061070				No.: H06 1069			
Distance (m): 20				Distance (m): 30				Distance: 100			
Time	Drawdown		Rec	Time	Drawdown		Rec	Time	Drawdown		Rec
(min)	mbdl	(m)	(m)	(min)	mbdl	(m)	(m)	(min)	mbdl	(m)	(m)
1		0.01	1.6	1		0.21	2.39	1		0.00	1.82
2		0.03	1.55	2		0.27	2.36	2		0.00	1.82
3		0.05	1.5	3		0.31	2.31	3		0.01	1.81
5		0.09	1.45	5		0.37	2.23	5		0.03	1.81
7		0.10	1.43	7		0.39	2.19	7		0.04	1.81
10		0.11	1.39	10		0.45	2.16	10		0.05	1.81
15		0.17	1.36	15		0.59	2.13	15		0.11	1.81
20		0.21	1.35	20		0.64	2.08	20		0.14	1.8
30		0.27	1.33	30		0.71	2.02	30		0.17	1.79
40		0.29	1.33	40		0.75	1.97	40		0.19	1.79
60		0.33	1.33	60		0.82	1.9	60		0.22	1.76
90		0.36	1.32	90		0.88	1.83	90		0.26	1.73
120		0.37	1.32	120		0.92	1.77	120		0.30	1.7
150		0.40	1.32	150		0.84	1.74	150		0.32	1.68
180		0.43	1.3	180		0.97	1.68	180		0.35	1.65
210		0.51	1.3	210		0.99	1.61	210		0.37	1.63
240		0.55	1.27	240		1.02	1.53	240		0.38	1.6
300		0.57	1.27	300		1.07	1.49	300		0.43	1.56
360		0.60	1.2	360		1.12	1.45	360		0.46	1.5
420		0.62	1.18	420		1.16	1.43	420		0.49	1.47
480		0.64	1.15	480		1.20	1.4	480		0.53	1.42
540		0.67	1.11	540		1.24	1.36	540		0.57	1.39
600		0.71	1.07	600		1.27	1.29	600		0.60	1.36
720		0.86	1	720		1.39	1	720		0.69	1.29
840		0.88	1	840		1.45	0.95	840		0.73	1.27
960		0.90	0.99	960		1.51	0.9	960		0.77	1.26
1080		0.92	0.98	1080		1.56	0.89	1080		0.81	1.23
1200		0.94	0.97	1200		1.62	0.87	1200		0.86	1.2
1320		0.97	0.96	1320		1.63	0.84	1320		0.91	1.17
1440		1.00	0.96	1440		1.65	0.81	1440		0.97	1.14
1560		1.03	0.9	1560		1.69	0.78	1560		1.01	1.12
1680		1.05	0.85	1680		1.72	0.75	1680		1.05	1.1
1800		1.07	0.83	1800		1.76	0.75	1800		1.09	1.08
1920		1.09	0.81	1920		1.8	0.74	1920		1.14	1.07
2040		1.14	0.79	2040		1.84	0.73	2040		1.18	1.06
2160		1.18	0.77	2160		1.87	0.73	2160		1.21	1.05
2280		1.2	0.75	2280		1.93	0.73	2280		1.25	1.02
2400		1.22	0.73	2400		1.98	0.73	2400		1.29	0.99
2520		1.23	0.71	2520		2	0.72	2520		1.32	0.96
2640		1.25	0.69	2640		2.03	0.72	2640		1.36	0.94
2760		1.27	0.65	2760		2.08	0.72	2760		1.45	0.9
2880		1.35	0.61	2880		2.1	0.7	2880		1.47	0.86
3000		1.46	0.6	3000		2.14	0.61	3000		1.48	0.8
3120		1.49	0.58	3120		2.24	0.68	3120		1.51	0.78
3240		1.49	0.57	3240		2.29	0.67	3240		1.55	0.78
3360		1.49	0.53	3360		2.29	0.66	3360		1.58	0.76
3480		1.51	0.52	3480		2.29	0.65	3480		1.61	0.74
3600		1.55	0.51	3600		2.3	0.65	3600		1.64	0.73
3720		1.58	0.5	3720		2.33	0.64	3720		1.65	0.72
3840		1.6	0.49	3840		2.36	0.63	3840		1.71	0.72
3960		1.63	0.48	3960		2.39	0.62	3960		1.75	0.71
4080		1.65	0.47	4080		2.42	0.61	4080		1.78	0.7
4200		1.66	0.47	4200		2.47	0.61	4200		1.81	0.69
4320		1.7	0.46	4320		2.49	0.59	4320		1.83	0.68
5040			0.42	5040			0.53	5040			0.67
5720			0.42	5720			0.51	5720			0.66
7200				7200				7200			
10080				10080				10080			









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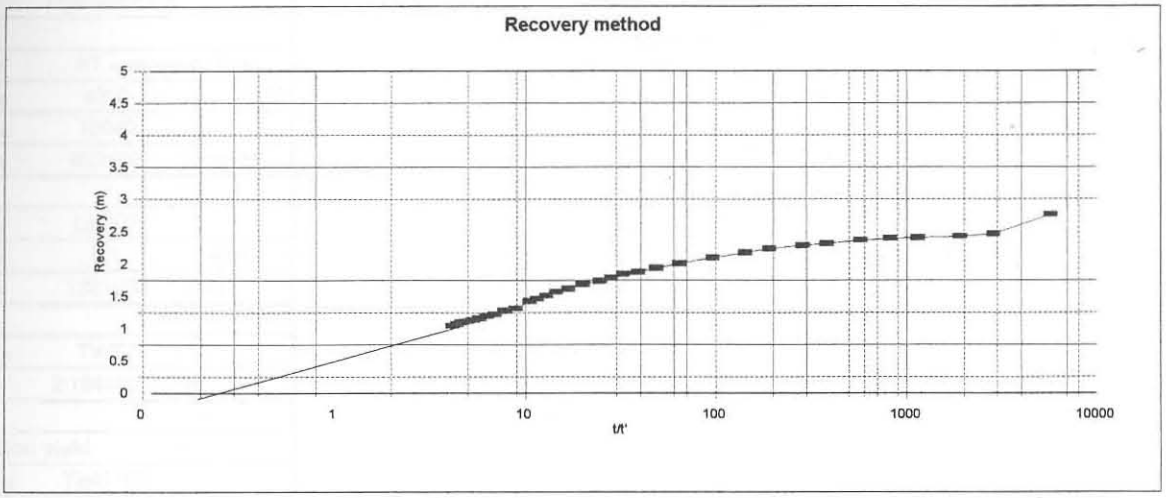
IMBER: H06 0882



	Pump cycle	=	1440	min	(24hrs)
	Yield	=	5.1	l/s	
	t/t"	=	1	(Graph)	
	Recovery period	=	1440 /	t/t"	
			1440 /	1.00	
				1440.00	min
	Pumping period	=	1440 -	1440.00	
				0.00	min
	Litres pumped	=	0.00E+00	L	
	Pump yield @ 24 hrs		0.00	L/s	
	Factor of safety	=	0.75		
	Operating yield	=	**0.00**	**L/s for 24 hrs**	

Comments:

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UMB

Bh no.	H06 0882DJA		
TT	=	PT + recovery time	
	=	4320	5720
	=	10040	
	=	602400	seconds
TV	=	L/s*TP	
	=	5.1	4320
	=	1321920	litres
Yield	=	TV/TT	
		2.19442231	l/s
Production yield			
	=	Yield *FS	
	=	2.19442231	70%
	=	1.64581673	l/s @ 24hrs