MACTEC

MACTEC Engineering and Consulting
3301 Atlantic Avenue
Raleigh, North Carolina

Slug Test Data Sheet

MACTEC Job Name: North Anna COL	**MACTEC Job Number:** 6468-06-1472
Date: 11-13-06 **Time:** 1530	**Observation Well No.:** OW947OUT
Weather Conditions: Clear & Approx 48 °F	
Method of Slug Withdrawl (circle one): (A) water, mechanical, or pressure	**Test Method:** (Rising Head) or Falling Head (circle)
Diameter of Screen: 2 in.	**Diameter of Casing:** 2 in.
Total Well Depth: 58 ft below reference point	**Reference Point:** Permanent mark on top of casing
Length of Screened Section: 10 ft	**Depth interval of screened portion:** 45-55 ft
Depth to Groundwater: 18.02 ft below reference point	

Groundwater Measurements Collected Prior to Slug Test

Depth to Groundwater	Date
16.02 (pre-Development)	11-8-06
18.24 (post-Development)	11-9-06
18.03 (OW947IN test)	11-13-06
18.02 (OW947out test)	11-13-06

Comments/Remarks

USED Transducer SN D00513 Hermit 3000

Set Transducer 30' below TOC

Transducer read 12.044 vs. 11.97

offset 3.485

Final Hermit reading =

0% Recovery

NOTE: Transducer slightly raised due to tangling of line during removal of slug.

In-Situ Inc. Hermit 3000

Report generated: 12/11/06 17:39:49
Report from file: P:\6468\2006 Projects\1472 North Anna COL\Slug Test Data\Raw data logger fil
DataMgr Version 3.71

ial number: 00045369
mware Version 7.08
Unit name: HERMIT 3000

Test name: OW947out PAGE 1 OF 3

Test defined on: 11/13/06 16:36:05
Test started on: 11/13/06 16:39:54
Test stopped on: 11/13/06 16:53:57
Test extracted on: 11/13/06 18:03:25

Data gathered using Logarithmic testing
Maximum time between data points: 0.1667 Minutes.
Number of data samples: 135

TOTAL DATA SAMPLES 135

Channel number [1]
Measurement type: Pressure
Channel name: D00513
Linearity: 0.0212000
Scale: 19.9368000
Offset: 0.1304000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
Referenced on: test start
ressure head at reference: 12.037 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg
11/13/06	16:39:54	0.0000	0.000	29.715
11/13/06	16:39:54	0.0110	0.006	29.717
11/13/06	16:39:55	0.0220	0.446	29.715
11/13/06	16:39:55	0.0330	0.365	29.717
11/13/06	16:39:56	0.0440	0.820	29.717
11/13/06	16:39:57	0.0550	1.691	29.715
11/13/06	16:39:57	0.0660	2.654	29.717
11/13/06	16:39:58	0.0770	3.485	29.717
11/13/06	16:39:59	0.0880	3.318	29.717
11/13/06	16:39:59	0.0990	3.293	29.715
11/13/06	16:40:00	0.1100	3.241	29.719
11/13/06	16:40:01	0.1210	3.218	29.715
11/13/06	16:40:01	0.1320	3.183	29.715
11/13/06	16:40:02	0.1430	3.149	29.719
11/13/06	16:40:03	0.1540	3.132	29.717
11/13/06	16:40:03	0.1650	3.088	29.715
11/13/06	16:40:04	0.1760	3.071	29.717
11/13/06	16:40:05	0.1870	3.045	29.715
11/13/06	16:40:05	0.1980	3.025	29.717
11/13/06	16:40:06	0.2090	3.014	29.719
11/13/06	16:40:07	0.2200	3.011	29.717

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11/13/06	16:40:07	0.2310	2.976	29.715
11/13/06	16:40:08	0.2427	2.979	29.715
11/13/06	16:40:09	0.2552	2.959	29.719
11/13/06	16:40:10	0.2683	2.945	29.717
11/13/06	16:40:10	0.2823	2.924	29.717
11/13/06	16:40:11	0.2972	2.873	29.715
13/06	16:40:12	0.3128	2.855	29.715
13/06	16:40:13	0.3295	2.832	29.719
11/13/06	16:40:14	0.3472	2.812	29.715
11/13/06	16:40:15	0.3658	2.795	29.715
11/13/06	16:40:17	0.3857	2.772	29.715
11/13/06	16:40:18	0.4067	2.752	29.717
11/13/06	16:40:19	0.4288	2.729	29.715
11/13/06	16:40:21	0.4523	2.703	29.717
11/13/06	16:40:22	0.4772	2.680	29.719
11/13/06	16:40:24	0.5035	2.669	29.717
11/13/06	16:40:25	0.5315	2.623	29.719
11/13/06	16:40:27	0.5612	2.594	29.717
11/13/06	16:40:29	0.5925	2.559	29.717
11/13/06	16:40:31	0.6257	2.525	29.719
11/13/06	16:40:33	0.6608	2.487	29.717
11/13/06	16:40:35	0.6982	2.453	29.713
11/13/06	16:40:38	0.7377	2.416	29.717
11/13/06	16:40:40	0.7795	2.372	29.715
11/13/06	16:40:43	0.8238	2.332	29.717
11/13/06	16:40:46	0.8708	2.289	29.719
11/13/06	16:40:49	0.9207	2.249	29.719
11/13/06	16:40:52	0.9733	2.203	29.717
11/13/06	16:40:55	1.0292	2.157	29.724
11/13/06	16:40:59	1.0883	2.108	29.717
11/13/06	16:41:03	1.1510	2.062	29.722
11/13/06	16:41:07	1.2173	2.010	29.719
11/13/06	16:41:11	1.2877	1.958	29.722
11/13/06	16:41:15	1.3622	1.904	29.722
13/06	16:41:20	1.4412	1.852	29.719
13/06	16:41:25	1.5248	1.797	29.717
11/13/06	16:41:30	1.6133	1.740	29.715
11/13/06	16:41:36	1.7072	1.682	29.717
11/13/06	16:41:42	1.8065	1.625	29.722
11/13/06	16:41:48	1.9118	1.564	29.717
11/13/06	16:41:55	2.0233	1.504	29.719
11/13/06	16:42:02	2.1415	1.449	29.719
11/13/06	16:42:10	2.2667	1.386	29.719
11/13/06	16:42:17	2.3992	1.323	29.717
11/13/06	16:42:26	2.5397	1.262	29.719
11/13/06	16:42:35	2.6885	1.202	29.719
11/13/06	16:42:44	2.8460	1.136	29.689
11/13/06	16:42:54	3.0127	1.076	29.699
11/13/06	16:43:04	3.1793	1.015	29.705
11/13/06	16:43:14	3.3460	0.963	29.705
11/13/06	16:43:24	3.5127	0.912	29.705
11/13/06	16:43:34	3.6793	0.863	29.705
11/13/06	16:43:44	3.8460	0.820	29.709
11/13/06	16:43:54	4.0127	0.776	29.709
11/13/06	16:44:04	4.1793	0.736	29.709
11/13/06	16:44:14	4.3460	0.699	29.711
11/13/06	16:44:24	4.5127	0.664	29.715
11/13/06	16:44:34	4.6793	0.633	29.711
11/13/06	16:44:44	4.8460	0.601	29.715
11/13/06	16:44:54	5.0127	0.575	29.715
11/13/06	16:45:04	5.1793	0.546	29.717
11/13/06	16:45:14	5.3460	0.521	29.717
13/06	16:45:24	5.5127	0.495	29.719
13/06	16:45:34	5.6793	0.474	29.719
11/13/06	16:45:44	5.8460	0.451	29.717
11/13/06	16:45:54	6.0127	0.431	29.719
11/13/06	16:46:04	6.1793	0.414	29.719
11/13/06	16:46:14	6.3460	0.397	29.715
11/13/06	16:46:24	6.5127	0.380	29.719
11/13/06	16:46:34	6.6793	0.362	29.719

11/13/06	16:46:44	6.8460	0.348	29.719
11/13/06	16:46:54	7.0127	0.334	29.719
11/13/06	16:47:04	7.1793	0.319	29.722
11/13/06	16:47:14	7.3460	0.308	29.719
11/13/06	16:47:24	7.5127	0.293	29.717
11/13/06	16:47:34	7.6793	0.282	29.722
13/06	16:47:44	7.8460	0.270	29.677
13/06	16:47:54	8.0127	0.262	29.689
11/13/06	16:48:04	8.1793	0.250	29.697
11/13/06	16:48:14	8.3460	0.242	29.699
11/13/06	16:48:24	8.5127	0.233	29.703
11/13/06	16:48:34	8.6793	0.221	29.703
11/13/06	16:48:44	8.8460	0.213	29.705
11/13/06	16:48:54	9.0127	0.207	29.705
11/13/06	16:49:04	9.1793	0.198	29.707
11/13/06	16:49:14	9.3460	0.193	29.705
11/13/06	16:49:24	9.5127	0.187	29.707
11/13/06	16:49:34	9.6793	0.181	29.711
11/13/06	16:49:44	9.8460	0.175	29.711
11/13/06	16:49:54	10.0127	0.170	29.709
11/13/06	16:50:04	10.1793	0.161	29.713
11/13/06	16:50:14	10.3460	0.155	29.713
11/13/06	16:50:24	10.5127	0.150	29.717
11/13/06	16:50:34	10.6793	0.147	29.715
11/13/06	16:50:44	10.8460	0.141	29.715
11/13/06	16:50:54	11.0127	0.138	29.717
11/13/06	16:51:04	11.1793	0.132	29.719
11/13/06	16:51:14	11.3460	0.129	29.717
11/13/06	16:51:24	11.5127	0.127	29.717
11/13/06	16:51:34	11.6793	0.124	29.719
11/13/06	16:51:44	11.8460	0.121	29.722
11/13/06	16:51:54	12.0127	0.118	29.719
11/13/06	16:52:04	12.1793	0.115	29.722
11/13/06	16:52:14	12.3460	0.112	29.719
13/06	16:52:24	12.5127	0.106	29.722
13/06	16:52:34	12.6793	0.106	29.722
11/13/06	16:52:44	12.8460	0.104	29.717
11/13/06	16:52:54	13.0127	0.095	29.719
11/13/06	16:53:04	13.1793	0.095	29.717
11/13/06	16:53:14	13.3460	0.092	29.722
11/13/06	16:53:24	13.5127	0.089	29.719
11/13/06	16:53:34	13.6793	0.089	29.719
11/13/06	16:53:44	13.8460	0.086	29.717
11/13/06	16:53:54	14.0127	0.083	29.717

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engineering and constructing a better tomorrow

North Anna COL Project
Hydraulic Conductivity (K) Calculation Worksheet
MACTEC Job Number: 6468-06-1472

Well: OW-947
Test Date: 11/13/2006
Test Type: Recovery (slug out)
Test Name: OW-947-out2

Conducted by: Grimes & Charles-Smith
Entered/date: ww 12/12/06
Checked/date: SCP 12/12/06 by [signature] with permission

TEST DATA [signature]

WELL DATA

SWL =	18.05	(ft BTOC)
WD =	60.00	(ft BTOC)
WD =	58.00	(ft BGS)
DTSP =	41.00	(ft BGS)
rc =	0.08	(ft)
n =	0.30	
rw =	0.35	(ft)
rc (adjusted) =	0.08	(ft)
Le =	10	(ft)
Lw =	38.95	(ft)
Le/rw =	28.57	
H =	62.65	(ft)

H is depth from SWL to top of bedrock (no recovery zone) as listed on boring logs

CALCULATION OF K

K = [(rc^2 ln(Re/rw))/2Le]*(1/t)ln(yo/yt)

yo =	3.16	(ft) from plot
yt =	1.68	(ft) from plot
t =	1.52	(minutes) from plot
ln(Re/rw) =	2.70	
K =	5.4E-01	(ft/day)
K =	1.9E-04	(cm/sec)

Calculation of ln(Re/rw)

Where: Lw < H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{A+Bln((H-Lw)/rw)}/(Le/rw)]^-1= 2.70

Where: Lw = H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{C/(Le/rw)}]^-1 = 3.33

Calculation of Coefficients

Value range for Le/rw from Table of Coefficients

Le/rw	A	B	C
25	2.4	0.31	1.9
30	2.5	0.35	2.1

Interpolated values of A, B and C for Le/rw

28.57	2.47	0.34	2.04

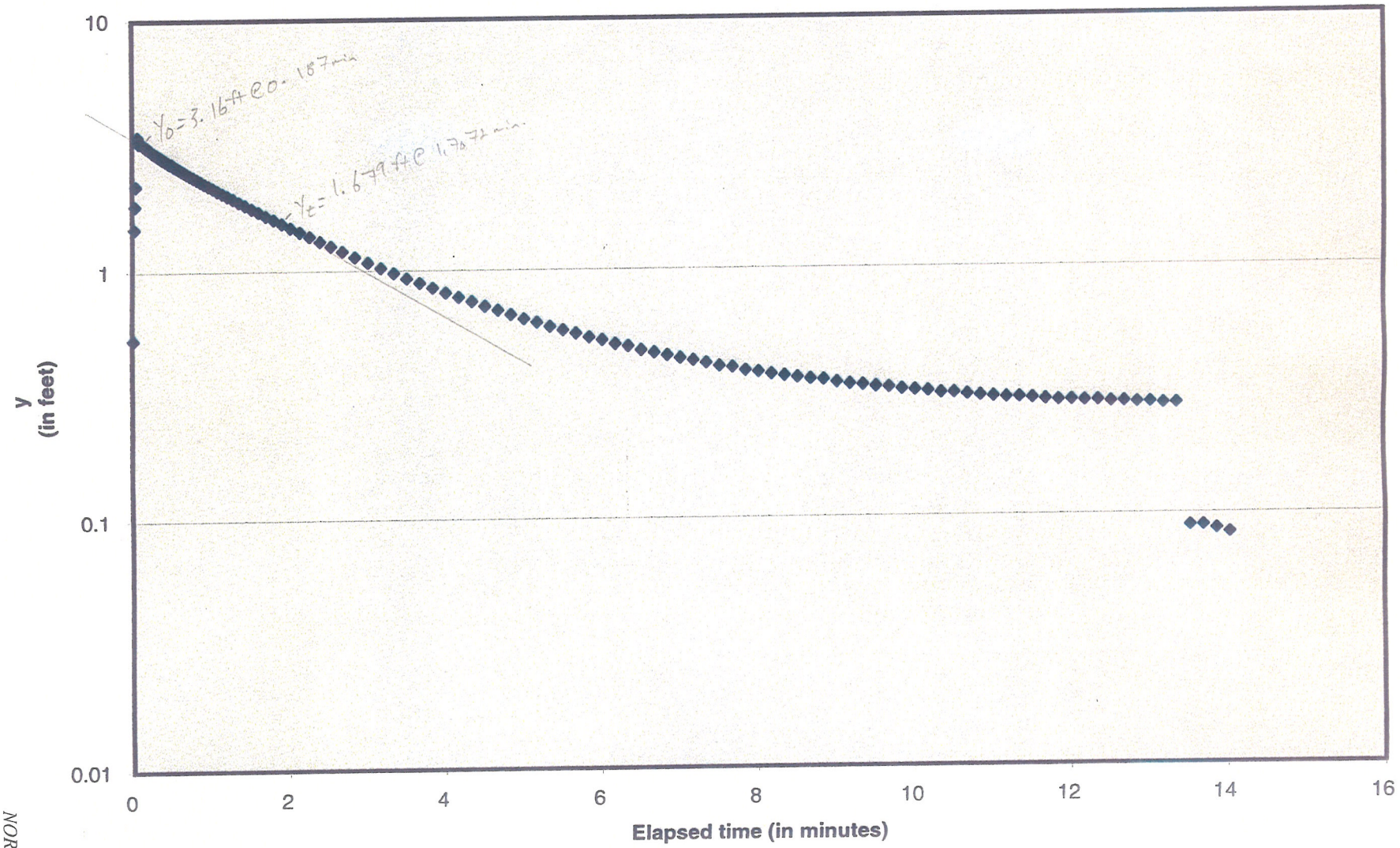
Coefficients Table

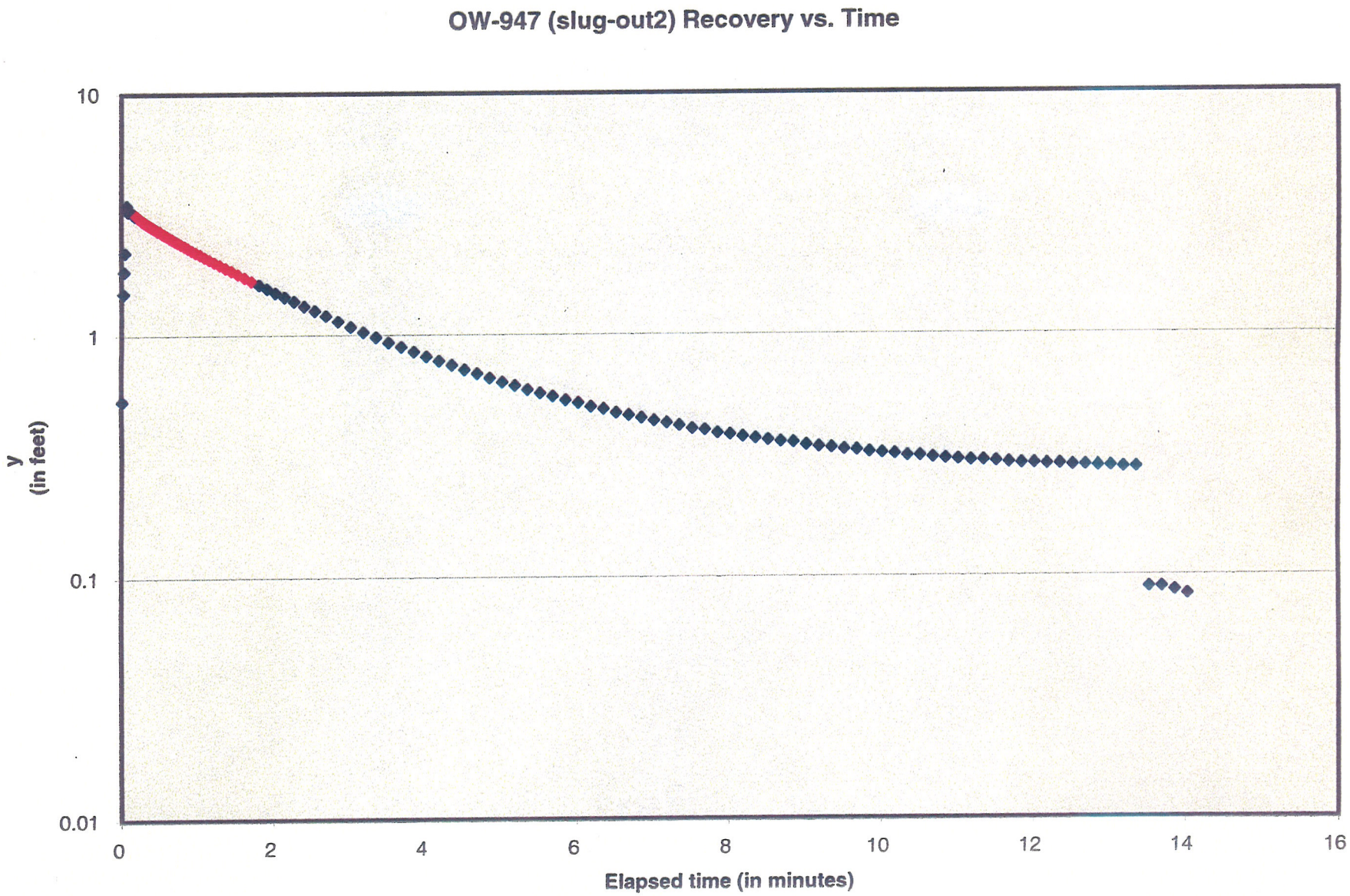
Le/rw	A	Le/rw	B	Le/rw	C
4	1.75	4	0.25	4	0.75
5	1.76	5	0.25	5	0.85
6	1.77	6	0.25	6	0.90
7	1.80	7	0.25	7	1.00
8	1.83	8	0.25	8	1.10
9	1.90	9	0.25	9	1.20
10	1.95	10	0.25	10	1.30
15	2.10	15	0.27	15	1.50
20	2.23	20	0.29	20	1.75
25	2.40	25	0.31	25	1.90
30	2.50	30	0.35	30	2.10
40	2.75	40	0.45	40	2.45
50	3.00	50	0.50	50	2.70
60	3.45	60	0.52	60	3.00
70	3.70	70	0.60	70	3.40
80	3.90	80	0.65	80	3.60
90	4.20	90	0.70	90	3.85
100	4.50	100	0.75	100	4.20
150	5.45	150	0.98	150	5.70
200	6.10	200	1.20	200	7.00
250	6.70	250	1.30	250	8.00
300	7.10	300	1.50	300	8.80
400	7.75	400	1.90	400	9.90
500	8.20	500	2.20	500	10.60
600	8.50	600	2.33	600	11.10
700	8.70	700	2.50	700	11.50
800	8.90	800	2.70	800	11.80
900	9.00	900	2.75	900	12.00
1000	9.20	1000	2.83	1000	12.40
1500	9.50	1500	3.18	1500	12.90

Reference: Bouwer(1989), Bouwer and Rice(1976)

Elapsed time (min)	Log y	y (ft)	WL (ft BTOC)	
0	#NUM!	0	18.05	
0.011	-0.27	0.535	18.59	
0.022	0.17	1.495	19.55	
0.033	0.27	1.846	19.90	
0.044	0.35	2.217	20.27	
0.055	0.53	3.364	21.41	
0.066	0.54	3.479	21.53	
0.077	0.52	3.298	21.35	
0.088	0.52	3.284	21.33	
0.099	0.52	3.301	21.35	
0.11	0.52	3.293	21.34	
0.121	0.52	3.278	21.33	
0.132	0.51	3.249	21.30	
0.143	0.51	3.221	21.27	
0.154	0.51	3.203	21.25	
0.165	0.50	3.186	21.24	
0.176	0.50	3.155	21.21	
0.187	0.50	3.16	21.21	Test initialization
0.198	0.50	3.134	21.18	
0.209	0.49	3.117	21.17	
0.22	0.49	3.094	21.14	
0.231	0.49	3.074	21.12	
0.2427	0.49	3.057	21.11	
0.2552	0.48	3.031	21.08	
0.2683	0.48	3.011	21.06	
0.2823	0.48	2.991	21.04	
0.2972	0.47	2.965	21.02	
0.3128	0.47	2.945	21.00	
0.3295	0.47	2.922	20.97	
0.3472	0.46	2.896	20.95	
0.3658	0.46	2.873	20.92	
0.3857	0.45	2.847	20.90	
0.4067	0.45	2.818	20.87	
0.4288	0.45	2.792	20.84	
0.4523	0.44	2.761	20.81	
0.4772	0.44	2.732	20.78	
0.5035	0.43	2.717	20.77	
0.5315	0.43	2.666	20.72	
0.5612	0.42	2.634	20.68	
0.5925	0.41	2.597	20.65	
0.6257	0.41	2.559	20.61	
0.6608	0.40	2.522	20.57	
0.6982	0.39	2.482	20.53	
0.7377	0.39	2.441	20.49	
0.7795	0.38	2.401	20.45	
0.8238	0.37	2.355	20.41	
0.8708	0.36	2.312	20.36	
0.9207	0.36	2.266	20.32	
0.9733	0.35	2.217	20.27	
1.0292	0.34	2.171	20.22	
1.0883	0.33	2.119	20.17	
1.151	0.32	2.068	20.12	
1.2173	0.30	2.016	20.07	
1.2877	0.29	1.964	20.01	
1.3622	0.28	1.909	19.96	
1.4412	0.27	1.855	19.91	
1.5248	0.25	1.797	19.85	
1.6133	0.24	1.737	19.79	
1.7072	0.23	1.679	19.73	Test completion
1.8065	0.21	1.619	19.67	
1.9118	0.19	1.561	19.61	
2.0233	0.18	1.501	19.55	
2.1415	0.16	1.441	19.49	
2.2667	0.14	1.383	19.43	
2.3992	0.12	1.32	19.37	
2.5397	0.10	1.262	19.31	
2.6885	0.08	1.202	19.25	
2.846	0.06	1.139	19.19	
3.0127	0.03	1.081	19.13	
3.1793	0.01	1.027	19.08	
3.346	-0.01	0.978	19.03	
3.5127	-0.03	0.929	18.98	
3.6793	-0.05	0.891	18.94	
3.846	-0.07	0.851	18.90	
4.0127	-0.09	0.811	18.86	
4.1793	-0.11	0.779	18.83	
4.346	-0.13	0.748	18.80	
4.5127	-0.15	0.716	18.77	
4.6793	-0.16	0.69	18.74	
4.846	-0.18	0.661	18.71	

OW-947 (slug-out2) Recovery vs. Time




OW-947 (slug-out2) Recovery vs. Time
10
1
0.1
0.01
y
(in feet)
0
2
4
6
8
10
12
14
16
Elapsed time (in minutes)

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MACTEC Engineering and Consulting
3301 Atlantic Avenue
Raleigh, North Carolina

Slug Test Data Sheet

MACTEC Job Name: North Anna COL **MACTEC Job Number:** 6468-06-1472

Date: 11-13-06 **Time:** 1630 **Observation Well No.:** OW947D2+2

Weather Conditions: Cloudy Approx 48°F

Method of Slug Withdrawl (circle one): water (mechanical) or pressure (N) **Test Method:** **Rising Head** or **Falling Head** (circle)

Diameter of Screen: 2 in. **Diameter of Casing:** 2 in.

Total Well Depth: 58 ft below reference point **Reference Point:** Permanent mark on top of casing

Length of Screened Section: 10 ft **Depth interval of screened portion:** 45-55 ft

Depth to Groundwater: 18.05 ft below reference point

Groundwater Measurements Collected Prior to Slug Test

Depth to Groundwater	Date
16.02 (pre-Dewlpmt)	11-8-06
18.24 (post-Dewlpmt	11-9-06
18.03 (OW947In test)	11-13-06
18.02 (OW947D2 test)	11-13-06
18.05 (OW947IN2 test)	11-13-06

Comments/Remarks

WSED Transducer
SN D00513 Hermit 3000
Set Transducer 30' below TOC

Transducer read
12.023 vs. 11.95

offset = 3.479

Final Hermit reading =

90 Recovery

NOTE: Transducer slightly raised one to tangling during removal of Slug.

In-Situ Inc. Hermit 3000

Report generated: 12/11/06 17:40:05
Report from file: P:\6468\2006 Projects\1472 North Anna COL\Slug Test Data\Raw data logger fil
DataMgr Version 3.71

ial number: 00045369
mware Version 7.08
Unit name: HERMIT 3000

Test name: OW947out2 PAGE 1 OF 3

Test defined on: 11/13/06 17:14:41
Test started on: 11/13/06 17:17:00
Test stopped on: 11/13/06 17:30:29
Test extracted on: 11/13/06 18:04:13

Data gathered using Logarithmic testing
Maximum time between data points: 0.1667 Minutes.
Number of data samples: 131

TOTAL DATA SAMPLES 131

Channel number [1]
Measurement type: Pressure
Channel name: D00513
Linearity: 0.0212000
Scale: 19.9368000
Offset: 0.1304000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
eferenced on: test start
ressure head at reference: 12.022 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg
11/13/06	17:17:00	0.0000	0.000	29.722
11/13/06	17:17:00	0.0110	0.535	29.719
11/13/06	17:17:01	0.0220	1.495	29.722
11/13/06	17:17:01	0.0330	1.846	29.722
11/13/06	17:17:02	0.0440	2.217	29.715
11/13/06	17:17:03	0.0550	3.364	29.722
11/13/06	17:17:03	0.0660	3.479	29.722
11/13/06	17:17:04	0.0770	3.298	29.722
11/13/06	17:17:05	0.0880	3.284	29.719
11/13/06	17:17:05	0.0990	3.301	29.719
11/13/06	17:17:06	0.1100	3.293	29.722
11/13/06	17:17:07	0.1210	3.278	29.722
11/13/06	17:17:07	0.1320	3.249	29.719
11/13/06	17:17:08	0.1430	3.221	29.719
11/13/06	17:17:09	0.1540	3.203	29.719
11/13/06	17:17:09	0.1650	3.186	29.717
11/13/06	17:17:10	0.1760	3.155	29.717
11/13/06	17:17:11	0.1870	3.160	29.722
11/13/06	17:17:11	0.1980	3.134	29.722
11/13/06	17:17:12	0.2090	3.117	29.719
11/13/06	17:17:13	0.2200	3.094	29.722

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11/13/06	17:17:13	0.2310	3.074	29.722
11/13/06	17:17:14	0.2427	3.057	29.722
11/13/06	17:17:15	0.2552	3.031	29.719
11/13/06	17:17:16	0.2683	3.011	29.722
11/13/06	17:17:16	0.2823	2.991	29.724
11/13/06	17:17:17	0.2972	2.965	29.722
11/13/06	17:17:18	0.3128	2.945	29.722
11/13/06	17:17:19	0.3295	2.922	29.722
11/13/06	17:17:20	0.3472	2.896	29.724
11/13/06	17:17:21	0.3658	2.873	29.722
11/13/06	17:17:23	0.3857	2.847	29.722
11/13/06	17:17:24	0.4067	2.818	29.722
11/13/06	17:17:25	0.4288	2.792	29.717
11/13/06	17:17:27	0.4523	2.761	29.719
11/13/06	17:17:28	0.4772	2.732	29.722
11/13/06	17:17:30	0.5035	2.717	29.717
11/13/06	17:17:31	0.5315	2.666	29.722
11/13/06	17:17:33	0.5612	2.634	29.719
11/13/06	17:17:35	0.5925	2.597	29.722
11/13/06	17:17:37	0.6257	2.559	29.722
11/13/06	17:17:39	0.6608	2.522	29.724
11/13/06	17:17:41	0.6982	2.482	29.722
11/13/06	17:17:44	0.7377	2.441	29.722
11/13/06	17:17:46	0.7795	2.401	29.722
11/13/06	17:17:49	0.8238	2.355	29.722
11/13/06	17:17:52	0.8708	2.312	29.722
11/13/06	17:17:55	0.9207	2.266	29.722
11/13/06	17:17:58	0.9733	2.217	29.722
11/13/06	17:18:01	1.0292	2.171	29.722
11/13/06	17:18:05	1.0883	2.119	29.722
11/13/06	17:18:09	1.1510	2.068	29.724
11/13/06	17:18:13	1.2173	2.016	29.724
11/13/06	17:18:17	1.2877	1.964	29.722
11/13/06	17:18:21	1.3622	1.909	29.724
11/13/06	17:18:26	1.4412	1.855	29.722
11/13/06	17:18:31	1.5248	1.797	29.722
11/13/06	17:18:36	1.6133	1.737	29.726
11/13/06	17:18:42	1.7072	1.679	29.722
11/13/06	17:18:48	1.8065	1.619	29.724
11/13/06	17:18:54	1.9118	1.561	29.722
11/13/06	17:19:01	2.0233	1.501	29.724
11/13/06	17:19:08	2.1415	1.441	29.722
11/13/06	17:19:16	2.2667	1.383	29.724
11/13/06	17:19:23	2.3992	1.320	29.722
11/13/06	17:19:32	2.5397	1.262	29.719
11/13/06	17:19:41	2.6885	1.202	29.719
11/13/06	17:19:50	2.8460	1.139	29.691
11/13/06	17:20:00	3.0127	1.081	29.673
11/13/06	17:20:10	3.1793	1.027	29.673
11/13/06	17:20:20	3.3460	0.978	29.673
11/13/06	17:20:30	3.5127	0.929	29.669
11/13/06	17:20:40	3.6793	0.891	29.689
11/13/06	17:20:50	3.8460	0.851	29.699
11/13/06	17:21:00	4.0127	0.811	29.701
11/13/06	17:21:10	4.1793	0.779	29.705
11/13/06	17:21:20	4.3460	0.748	29.707
11/13/06	17:21:30	4.5127	0.716	29.711
11/13/06	17:21:40	4.6793	0.690	29.709
11/13/06	17:21:50	4.8460	0.661	29.715
11/13/06	17:22:00	5.0127	0.636	29.711
11/13/06	17:22:10	5.1793	0.615	29.711
11/13/06	17:22:20	5.3460	0.592	29.713
11/13/06	17:22:30	5.5127	0.572	29.715
11/13/06	17:22:40	5.6793	0.555	29.713
11/13/06	17:22:50	5.8460	0.535	29.713
11/13/06	17:23:00	6.0127	0.521	29.717
11/13/06	17:23:10	6.1793	0.503	29.717
11/13/06	17:23:20	6.3460	0.492	29.715
11/13/06	17:23:30	6.5127	0.474	29.717
11/13/06	17:23:40	6.6793	0.463	29.719

11/13/06	17:23:50	6.8460	0.451	29.719
11/13/06	17:24:00	7.0127	0.440	29.719
11/13/06	17:24:10	7.1793	0.431	29.722
11/13/06	17:24:20	7.3460	0.420	29.719
11/13/06	17:24:30	7.5127	0.408	29.717
11/13/06	17:24:40	7.6793	0.403	29.717
13/06	17:24:50	7.8460	0.391	29.722
13/06	17:25:00	8.0127	0.385	29.722
11/13/06	17:25:10	8.1793	0.377	29.719
11/13/06	17:25:20	8.3460	0.371	29.719
11/13/06	17:25:30	8.5127	0.365	29.722
11/13/06	17:25:40	8.6793	0.359	29.717
11/13/06	17:25:50	8.8460	0.357	29.717
11/13/06	17:26:00	9.0127	0.348	29.722
11/13/06	17:26:10	9.1793	0.342	29.717
11/13/06	17:26:20	9.3460	0.339	29.717
11/13/06	17:26:30	9.5127	0.334	29.717
11/13/06	17:26:40	9.6793	0.331	29.722
11/13/06	17:26:50	9.8460	0.325	29.717
11/13/06	17:27:00	10.0127	0.322	29.724
11/13/06	17:27:10	10.1793	0.319	29.719
11/13/06	17:27:20	10.3460	0.313	29.722
11/13/06	17:27:30	10.5127	0.313	29.717
11/13/06	17:27:40	10.6793	0.308	29.719
11/13/06	17:27:50	10.8460	0.305	29.722
11/13/06	17:28:00	11.0127	0.302	29.724
11/13/06	17:28:10	11.1793	0.299	29.722
11/13/06	17:28:20	11.3460	0.299	29.719
11/13/06	17:28:30	11.5127	0.296	29.719
11/13/06	17:28:40	11.6793	0.293	29.722
11/13/06	17:28:50	11.8460	0.290	29.726
11/13/06	17:29:00	12.0127	0.290	29.719
11/13/06	17:29:10	12.1793	0.288	29.722
11/13/06	17:29:20	12.3460	0.288	29.719
13/06	17:29:30	12.5127	0.285	29.719
13/06	17:29:40	12.6793	0.285	29.724
11/13/06	17:29:50	12.8460	0.282	29.722
11/13/06	17:30:00	13.0127	0.282	29.726
11/13/06	17:30:10	13.1793	0.279	29.724
11/13/06	17:30:20	13.3460	0.279	29.724

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MACTEC
engineering and constructing a better tomorrow

North Anna COL Project
Hydraulic Conductivity (K) Calculation Worksheet
MACTEC Job Number: 6468-06-1472

Well: OW-949
Test Date: 11/14/2006
Test Type: Recovery (slug in)
Test Name: OW-949-in

Conducted by: Grimes & Charles-Smith
Entered/date: 12/12/06
Checked/date: JCP by gmm 12/12/06 with permission

WELL DATA

SWL =	23.50	(ft BTOC)
WD =	106.50	(ft BTOC)
WD =	104.50	(ft BGS)
DTSP =	87.00	(ft BGS)
rc =	0.08	(ft)
n =	0.30	
rw =	0.25	(ft)
rc (adjusted) =	0.08	(ft)
Le =	10	(ft)
Lw =	81.00	(ft)
Le/rw =	40.00	
H =	81.00	(ft)

Because well is completed in bedrock, H is depth from SWL to bottom of screened interval of well

CALCULATION OF K

K = [(rc^2 ln(Re/rw))/2Le]*(1/t)ln(yo/yt)

yo =	2.75	(ft) from plot
yt =	0.59	(ft) from plot
t =	1.46	(minutes) from plot
ln(Re/rw) =	4.00	
K =	2.0E+00	(ft/day)
K =	7.0E-04	(cm/sec)

Calculation of ln(Re/rw)

Where: Lw < H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{A+Bln((H-Lw)/rw)}/(Le/rw)}^-1= #NUM!

Where: Lw = H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{C/(Le/rw)}]^-1 = 4.00

Calculation of Coefficients

Value range for Le/rw from Table of Coefficients

Le/rw	A	B	C
40	2.75	0.45	2.45
50	3	0.5	2.7

Interpolated values of A, B and C for Le/rw

40.00	2.75	0.45	2.45

Coefficients Table

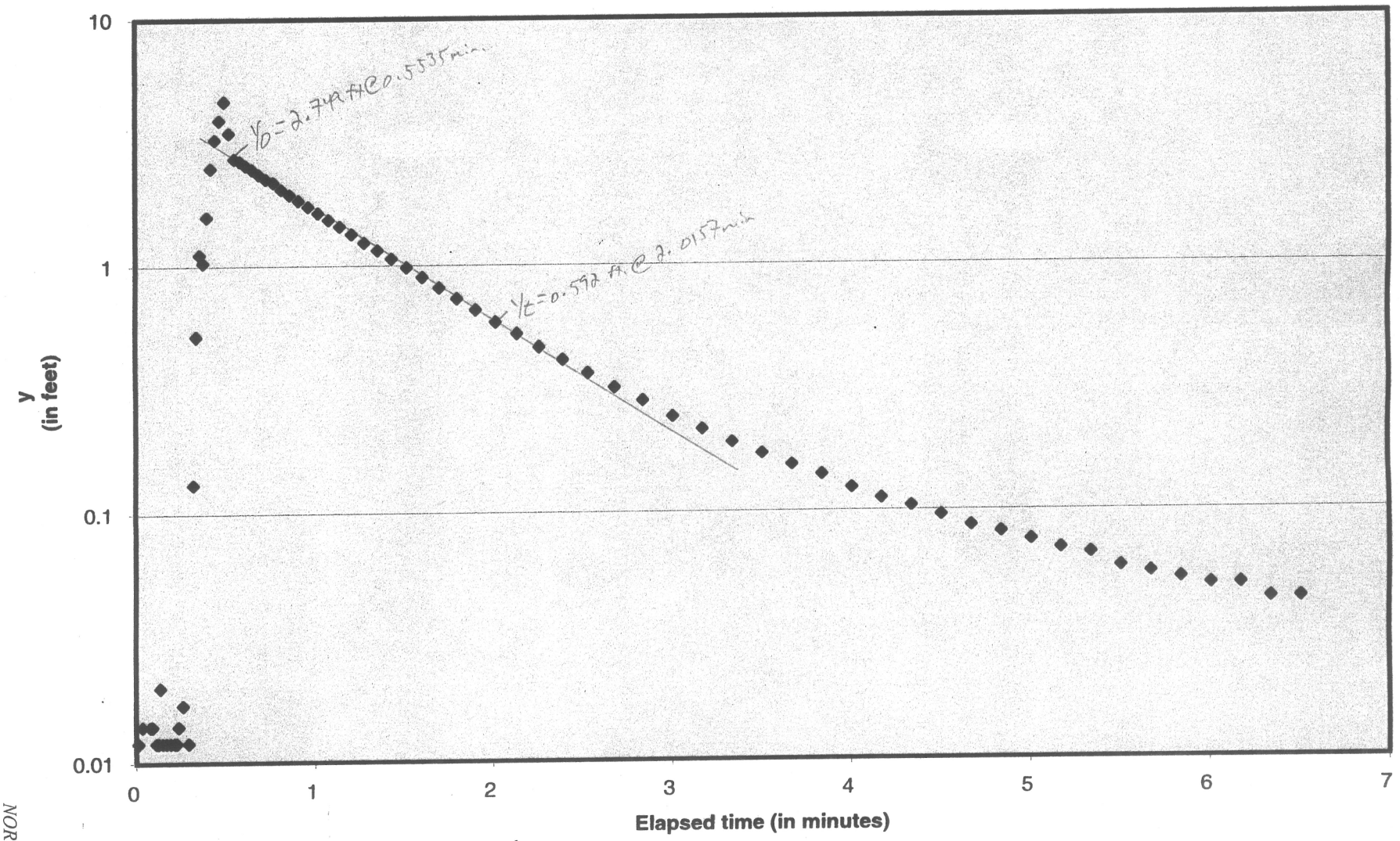
Le/rw	A	Le/rw	B	Le/rw	C
4	1.75	4	0.25	4	0.75
5	1.76	5	0.25	5	0.85
6	1.77	6	0.25	6	0.90
7	1.80	7	0.25	7	1.00
8	1.83	8	0.25	8	1.10
9	1.90	9	0.25	9	1.20
10	1.95	10	0.25	10	1.30
15	2.10	15	0.27	15	1.50
20	2.23	20	0.29	20	1.75
25	2.40	25	0.31	25	1.90
30	2.50	30	0.35	30	2.10
40	2.75	40	0.45	40	2.45
50	3.00	50	0.50	50	2.70
60	3.45	60	0.52	60	3.00
70	3.70	70	0.60	70	3.40
80	3.90	80	0.65	80	3.60
90	4.20	90	0.70	90	3.85
100	4.50	100	0.75	100	4.20
150	5.45	150	0.98	150	5.70
200	6.10	200	1.20	200	7.00
250	6.70	250	1.30	250	8.00
300	7.10	300	1.50	300	8.80
400	7.75	400	1.90	400	9.90
500	8.20	500	2.20	500	10.60
600	8.50	600	2.33	600	11.10
700	8.70	700	2.50	700	11.50
800	8.90	800	2.70	800	11.80
900	9.00	900	2.75	900	12.00
1000	9.20	1000	2.83	1000	12.40
1500	9.50	1500	3.18	1500	12.90

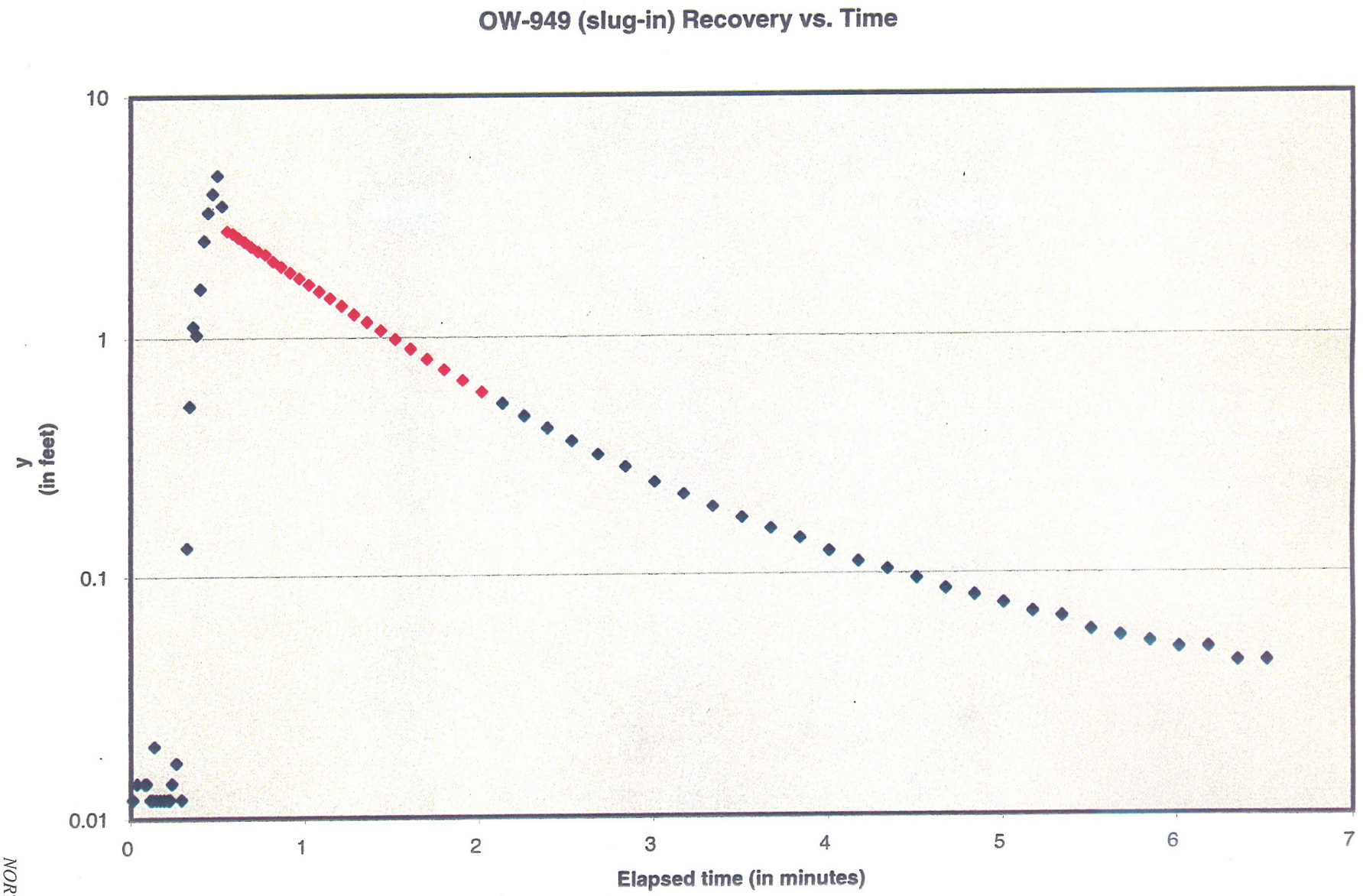
Reference: Bouwer(1989), Bouwer and Rice(1976)

TEST DATA

	Elapsed time (min)	Log y	y (ft)	WL (ft BTOC)
	0	#NUM!	0	23.50
	0.0112	-1.92	0.012	23.49
	0.0223	-2.05	0.009	23.49
	0.0335	-1.85	0.014	23.49
	0.0447	-2.05	0.009	23.49
	0.0558	-2.05	0.009	23.49
	0.067	-2.22	0.006	23.49
	0.0782	-1.85	0.014	23.49
	0.0893	-1.85	0.014	23.49
	0.1005	-2.05	0.009	23.49
	0.1117	-1.92	0.012	23.49
	0.1228	-1.92	0.012	23.49
	0.134	-1.70	0.02	23.48
	0.1452	-1.92	0.012	23.49
	0.1563	-2.05	0.009	23.49
	0.1675	-1.92	0.012	23.49
	0.1787	-2.05	0.009	23.49
	0.1898	-1.92	0.012	23.49
	0.201	-2.05	0.009	23.49
	0.2122	-1.92	0.012	23.49
	0.2233	-1.92	0.012	23.49
	0.235	-1.85	0.014	23.49
	0.2475	-2.05	0.009	23.49
	0.2607	-1.77	0.017	23.48
	0.2747	-2.05	0.009	23.49
	0.2895	-1.92	0.012	23.49
	0.3052	-2.05	0.009	23.49
	0.3218	-0.88	0.132	23.37
	0.3395	-0.28	0.526	22.97
	0.3582	0.05	1.113	22.39
	0.378	0.01	1.03	22.47
	0.399	0.20	1.585	21.92
	0.4212	0.40	2.508	20.99
	0.4447	0.52	3.287	20.21
	0.4695	0.60	3.943	19.56
	0.4958	0.67	4.697	18.80
	0.5238	0.54	3.506	19.99
Test initialization	0.5535	0.44	2.749	20.75
	0.5848	0.43	2.683	20.82
	0.618	0.41	2.577	20.92
	0.6532	0.39	2.479	21.02
	0.6905	0.37	2.367	21.13
	0.73	0.35	2.263	21.24
	0.7718	0.34	2.191	21.31
	0.8162	0.31	2.056	21.44
	0.8632	0.29	1.95	21.55
	0.913	0.27	1.846	21.65
	0.9657	0.24	1.743	21.76
	1.0215	0.22	1.642	21.86
	1.0807	0.19	1.539	21.96
	1.1433	0.16	1.444	22.06
	1.2097	0.13	1.343	22.16
	1.28	0.09	1.237	22.26
	1.3545	0.06	1.153	22.35
	1.4335	0.03	1.064	22.44
	1.5172	-0.01	0.978	22.52
	1.6057	-0.05	0.894	22.61
	1.6995	-0.09	0.811	22.69
	1.7988	-0.13	0.733	22.77
	1.9042	-0.18	0.661	22.84
Test completion	2.0157	-0.23	0.592	22.91
	2.1338	-0.27	0.532	22.97
	2.259	-0.33	0.472	23.03
90% recovery	2.3915	-0.38	0.42	23.08
	2.532	-0.43	0.371	23.13
	2.6808	-0.49	0.325	23.18
	2.8383	-0.54	0.288	23.21
	3.005	-0.61	0.247	23.25
	3.1717	-0.66	0.219	23.28
	3.3383	-0.71	0.193	23.31
	3.505	-0.76	0.173	23.33
	3.6717	-0.81	0.155	23.35
	3.8383	-0.85	0.141	23.36
	4.005	-0.91	0.124	23.38
	4.1717	-0.95	0.112	23.39
	4.3383	-0.98	0.104	23.40
	4.505	-1.02	0.095	23.41
	4.6717	-1.07	0.086	23.41
	4.8383	-1.09	0.081	23.42
	5.005	-1.12	0.075	23.43

OW-949 (slug-in) Recovery vs. Time




OW-949 (slug-in) Recovery vs. Time
y
(in feet)
10
1
0.1
0.01
0
1
2
3
4
5
6
7
Elapsed time (in minutes)

MACTEC

MACTEC Engineering and Consulting
3301 Atlantic Avenue
Raleigh, North Carolina

Slug Test Data Sheet

MACTEC Job Name:	North Anna COL	**MACTEC Job Number:**	6468-06-1472
Date: 11-14-06	**Time:** 0930	**Observation Well No.:**	OW949IN
Weather Conditions:	Sunny Approx 64°F		
Method of Slug Withdrawl (circle one):	water, mechanical, or pressure	**Test Method:**	Rising Head or Falling Head (circle)
Diameter of Screen:	2 in.	**Diameter of Casing:**	2 in.
Total Well Depth:	104.5 ft below reference point	**Reference Point:**	Permanent mark on top of casing
Length of Screened Section:	10 ft	**Depth interval of screened portion:**	92.5-102.5ft
Depth to Groundwater:	23.50 ft below reference point		

Groundwater Measurements Collected Prior to Slug Test

Depth to Groundwater	Date
23.80 (pre-Development)	11-2-06
23.54 (post-Development)	11-7-06
23.50 (OW949IN)	11-14-06

Comments/Remarks

USED Transducer SN D00513
Hermit 3000
Set Transducer 35' below TOC
Transducer = 23.43' vs. 23.50 Static.
OFFSet = 4.697
Final Hermit = .081
= 98% Recovery

In-Situ Inc. Hermit 3000

Report generated: 12/11/06 17:40:13
Report from file: P:\6468\2006 Projects\1472 North Anna COL\Slug Test Data\Raw data logger fil
DataMgr Version 3.71

Serial number: 00045369
Firmware Version 7.08
Unit name: HERMIT 3000

Test name: OW949in PAGE 1 OF 2

Test defined on: 11/14/06 10:42:40
Test started on: 11/14/06 10:51:19
Test stopped on: 11/14/06 10:57:55
Test extracted on: 11/14/06 12:03:22

Data gathered using Logarithmic testing
Maximum time between data points: 0.1667 Minutes.
Number of data samples: 89

TOTAL DATA SAMPLES 89

Channel number [1]
Measurement type: Pressure
Channel name: D00513
Linearity: 0.0212000
Scale: 19.9368000
Offset: 0.1304000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 11.559 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg
11/14/06	10:51:19	0.0000	0.000	29.630
11/14/06	10:51:19	0.0112	-0.012	29.630
11/14/06	10:51:20	0.0223	-0.009	29.630
11/14/06	10:51:21	0.0335	-0.014	29.632
11/14/06	10:51:21	0.0447	-0.009	29.632
11/14/06	10:51:22	0.0558	-0.009	29.632
11/14/06	10:51:23	0.0670	0.006	29.628
11/14/06	10:51:23	0.0782	-0.014	29.632
11/14/06	10:51:24	0.0893	-0.014	29.630
11/14/06	10:51:25	0.1005	-0.009	29.628
11/14/06	10:51:25	0.1117	-0.012	29.630
11/14/06	10:51:26	0.1228	-0.012	29.628
11/14/06	10:51:27	0.1340	-0.020	29.628
11/14/06	10:51:27	0.1452	-0.012	29.628
11/14/06	10:51:28	0.1563	-0.009	29.628
11/14/06	10:51:29	0.1675	-0.012	29.630
11/14/06	10:51:29	0.1787	-0.009	29.630
11/14/06	10:51:30	0.1898	-0.012	29.626
11/14/06	10:51:31	0.2010	-0.009	29.628
11/14/06	10:51:31	0.2122	-0.012	29.630
11/14/06	10:51:32	0.2233	-0.012	29.632

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11/14/06	10:51:33	0.2350	-0.014	29.628
11/14/06	10:51:33	0.2475	-0.009	29.628
11/14/06	10:51:34	0.2607	-0.017	29.630
11/14/06	10:51:35	0.2747	-0.009	29.630
11/14/06	10:51:36	0.2895	-0.012	29.630
11/14/06	10:51:37	0.3052	-0.009	29.630
14/06	10:51:38	0.3218	-0.132	29.632
14/06	10:51:39	0.3395	-0.526	29.628
11/14/06	10:51:40	0.3582	-1.113	29.630
11/14/06	10:51:41	0.3780	-1.030	29.630
11/14/06	10:51:42	0.3990	-1.585	29.630
11/14/06	10:51:44	0.4212	-2.508	29.630
11/14/06	10:51:45	0.4447	-3.287	29.632
11/14/06	10:51:47	0.4695	-3.943	29.630
11/14/06	10:51:48	0.4958	-4.697	29.628
11/14/06	10:51:50	0.5238	-3.506	29.630
11/14/06	10:51:52	0.5535	-2.749	29.628
11/14/06	10:51:54	0.5848	-2.683	29.630
11/14/06	10:51:56	0.6180	-2.577	29.628
11/14/06	10:51:58	0.6532	-2.479	29.628
11/14/06	10:52:00	0.6905	-2.367	29.630
11/14/06	10:52:02	0.7300	-2.263	29.628
11/14/06	10:52:05	0.7718	-2.191	29.628
11/14/06	10:52:07	0.8162	-2.056	29.628
11/14/06	10:52:10	0.8632	-1.950	29.630
11/14/06	10:52:13	0.9130	-1.846	29.630
11/14/06	10:52:16	0.9657	-1.743	29.630
11/14/06	10:52:20	1.0215	-1.642	29.628
11/14/06	10:52:23	1.0807	-1.539	29.622
11/14/06	10:52:27	1.1433	-1.444	29.622
11/14/06	10:52:31	1.2097	-1.343	29.620
11/14/06	10:52:35	1.2800	-1.237	29.620
11/14/06	10:52:40	1.3545	-1.153	29.624
11/14/06	10:52:45	1.4335	-1.064	29.622
14/06	10:52:50	1.5172	-0.978	29.616
14/06	10:52:55	1.6057	-0.894	29.624
11/14/06	10:53:00	1.6995	-0.811	29.622
11/14/06	10:53:06	1.7988	-0.733	29.622
11/14/06	10:53:13	1.9042	-0.661	29.618
11/14/06	10:53:19	2.0157	-0.592	29.620
11/14/06	10:53:27	2.1338	-0.532	29.620
11/14/06	10:53:34	2.2590	-0.472	29.620
11/14/06	10:53:42	2.3915	-0.420	29.620
11/14/06	10:53:50	2.5320	-0.371	29.622
11/14/06	10:53:59	2.6808	-0.325	29.622
11/14/06	10:54:09	2.8383	-0.288	29.618
11/14/06	10:54:19	3.0050	-0.247	29.620
11/14/06	10:54:29	3.1717	-0.219	29.618
11/14/06	10:54:39	3.3383	-0.193	29.616
11/14/06	10:54:49	3.5050	-0.173	29.620
11/14/06	10:54:59	3.6717	-0.155	29.620
11/14/06	10:55:09	3.8383	-0.141	29.616
11/14/06	10:55:19	4.0050	-0.124	29.618
11/14/06	10:55:29	4.1717	-0.112	29.616
11/14/06	10:55:39	4.3383	-0.104	29.616
11/14/06	10:55:49	4.5050	-0.095	29.614
11/14/06	10:55:59	4.6717	-0.086	29.618
11/14/06	10:56:09	4.8383	-0.081	29.618
11/14/06	10:56:19	5.0050	-0.075	29.616
11/14/06	10:56:29	5.1717	-0.069	29.616
11/14/06	10:56:39	5.3383	-0.066	29.618
11/14/06	10:56:49	5.5050	-0.058	29.616
11/14/06	10:56:59	5.6717	-0.055	29.616
14/06	10:57:09	5.8383	-0.052	29.616
11/14/06	10:57:19	6.0050	-0.049	29.616
11/14/06	10:57:29	6.1717	-0.049	29.612
11/14/06	10:57:39	6.3383	-0.043	29.612
11/14/06	10:57:49	6.5050	-0.043	29.612

MACTEC
engineering and constructing a better tomorrow

North Anna COL Project
Hydraulic Conductivity (K) Calculation Worksheet
MACTEC Job Number: 6468-06-1472

Well: OW-949
Test Date: 11/14/2006
Test Type: Recovery (slug in)
Test Name: OW-949-in2

Conducted by: Grimes & Charles-Smith
Entered/date: WSB 12-8-06
Checked/date: JCP by QM with permission 12/12/06

WELL DATA

SWL =	23.38	(ft BTOC)
WD =	106.50	(ft BTOC)
WD =	104.50	(ft BGS)
DTSP =	87.00	(ft BGS)
rc =	0.08	(ft)
n =	0.30	
rw =	0.25	(ft)
rc (adjusted) =	0.08	(ft)
Le =	10	(ft)
Lw =	81.12	(ft)
Le/rw =	40.00	
H =	81.12	(ft)

Because well is completed in bedrock, H is depth from SWL to bottom of screened interval of well

CALCULATION OF K

K = [(rc^2 ln(Re/rw))/2Le]*(1/t)ln(yo/yt)

yo =	3.07	(ft) from plot
yt =	0.47	(ft) from plot
t =	1.84	(minutes) from plot
ln(Re/rw) =	4.00	
K =	1.9E+00	(ft/day)
K =	6.7E-04	(cm/sec)

Calculation of ln(Re/rw)

Where: Lw < H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{A+Bln((H-Lw)/rw)}/(Le/rw)}^-1= #NUM!

Where: Lw = H;

ln(Re/rw) = [{1.1/(ln(Lw/rw))}+{C/(Le/rw)}]^-1 = 4.00

Calculation of Coefficients

Value range for Le/rw from Table of Coefficients

Le/rw	A	B	C
40	2.75	0.45	2.45
50	3	0.5	2.7

Interpolated values of A, B and C for Le/rw

40.00	2.75	0.45	2.45

Coefficients Table

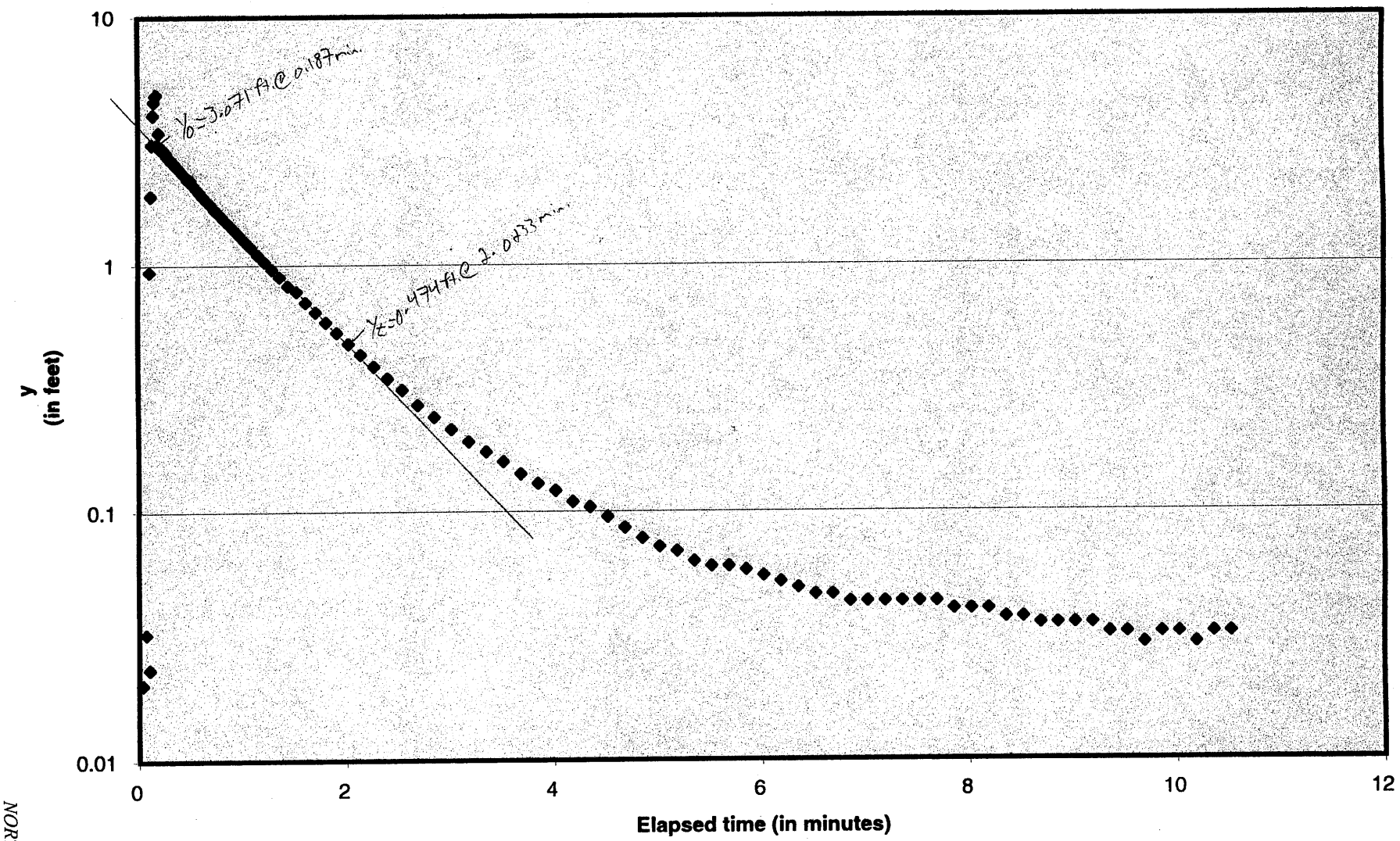
Le/rw	A	Le/rw	B	Le/rw	C
4	1.75	4	0.25	4	0.75
5	1.76	5	0.25	5	0.85
6	1.77	6	0.25	6	0.90
7	1.80	7	0.25	7	1.00
8	1.83	8	0.25	8	1.10
9	1.90	9	0.25	9	1.20
10	1.95	10	0.25	10	1.30
15	2.10	15	0.27	15	1.50
20	2.23	20	0.29	20	1.75
25	2.40	25	0.31	25	1.90
30	2.50	30	0.35	30	2.10
40	2.75	40	0.45	40	2.45
50	3.00	50	0.50	50	2.70
60	3.45	60	0.52	60	3.00
70	3.70	70	0.60	70	3.40
80	3.90	80	0.65	80	3.60
90	4.20	90	0.70	90	3.85
100	4.50	100	0.75	100	4.20
150	5.45	150	0.98	150	5.70
200	6.10	200	1.20	200	7.00
250	6.70	250	1.30	250	8.00
300	7.10	300	1.50	300	8.80
400	7.75	400	1.90	400	9.90
500	8.20	500	2.20	500	10.60
600	8.50	600	2.33	600	11.10
700	8.70	700	2.50	700	11.50
800	8.90	800	2.70	800	11.80
900	9.00	900	2.75	900	12.00
1000	9.20	1000	2.83	1000	12.40
1500	9.50	1500	3.18	1500	12.90

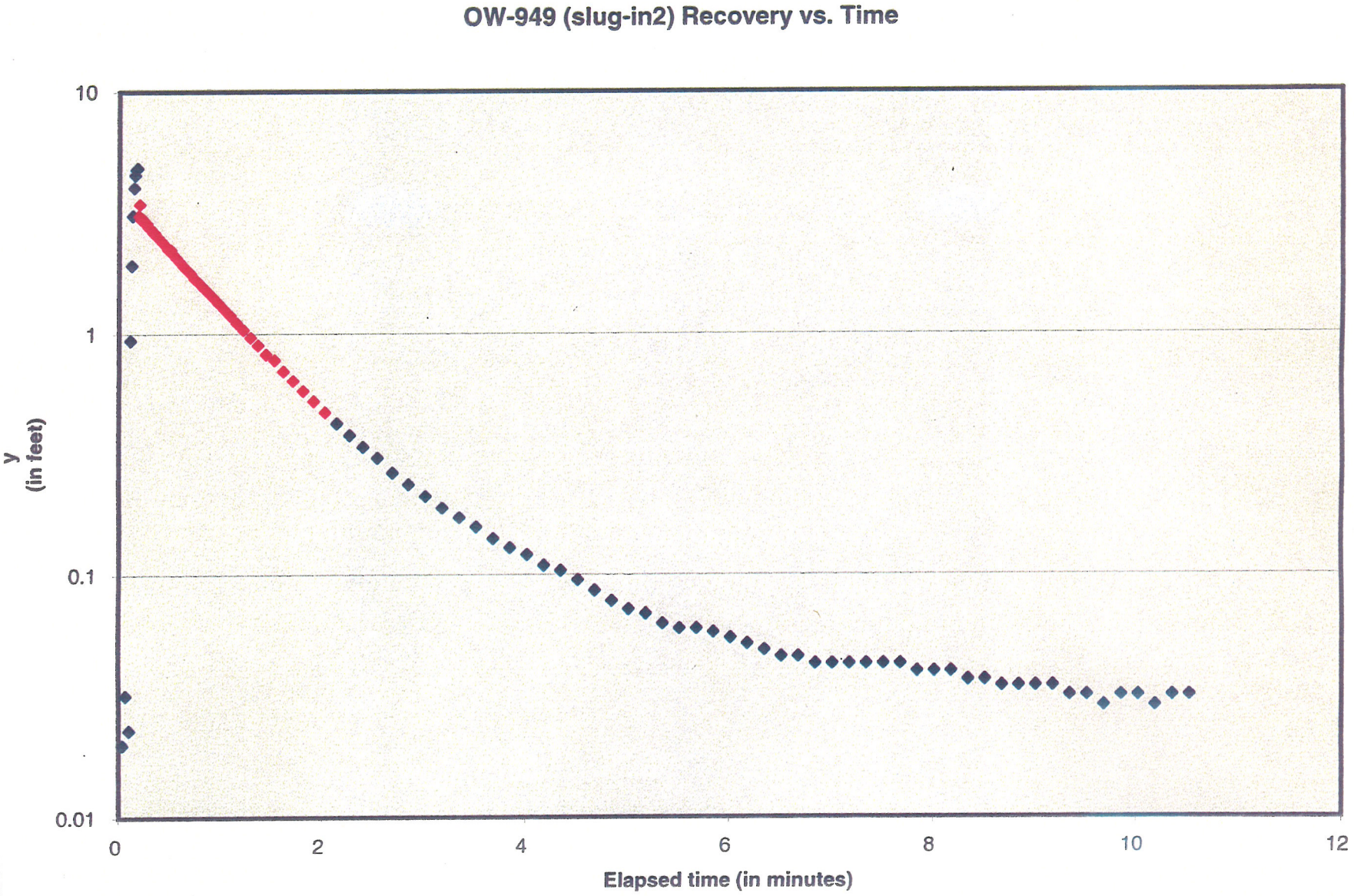
Reference: Bouwer(1989), Bouwer and Rice(1976)

TEST DATA

Elapsed time (min)	Log y	y (ft)	WL (ft BTOC)	
0	#NUM!	0	23.38	
0.011	-2.22	0.006	23.37	
0.022	#NUM!	0	23.38	
0.033	-1.70	0.02	23.36	
0.044	-2.05	0.009	23.37	
0.055	#NUM!	0	23.38	
0.066	-1.49	0.032	23.35	
0.077	-2.52	0.003	23.38	
0.088	#NUM!	0	23.38	
0.099	-1.64	0.023	23.36	
0.11	-0.03	0.938	22.44	
0.121	0.28	1.912	21.47	
0.132	0.49	3.071	20.31	
0.143	0.60	4.018	19.36	
0.154	0.66	4.533	18.85	
0.165	0.68	4.8	18.58	
0.176	0.68	4.84	18.54	
0.187	0.49	3.071	20.31	Test initialization
0.198	0.53	3.422	19.96	
0.209	0.47	2.965	20.42	
0.22	0.47	2.979	20.40	
0.231	0.47	2.968	20.41	
0.2427	0.47	2.928	20.45	
0.2552	0.45	2.847	20.53	
0.2683	0.45	2.85	20.53	
0.2823	0.44	2.752	20.63	
0.2972	0.43	2.709	20.67	
0.3128	0.43	2.689	20.69	
0.3295	0.42	2.62	20.76	
0.3472	0.41	2.591	20.79	
0.3658	0.40	2.519	20.86	
0.3857	0.39	2.479	20.90	
0.4067	0.38	2.421	20.96	
0.4288	0.37	2.364	21.02	
0.4523	0.36	2.304	21.08	
0.4772	0.35	2.223	21.16	
0.5035	0.34	2.212	21.17	
0.5315	0.32	2.111	21.27	
0.5612	0.31	2.042	21.34	
0.5925	0.30	1.976	21.40	
0.6257	0.28	1.898	21.48	
0.6608	0.26	1.832	21.55	
0.6982	0.25	1.766	21.61	
0.7377	0.23	1.679	21.70	
0.7795	0.21	1.619	21.76	
0.8238	0.19	1.547	21.83	
0.8708	0.17	1.475	21.91	
0.9207	0.15	1.406	21.97	
0.9733	0.12	1.329	22.05	
1.0292	0.10	1.254	22.13	
1.0883	0.07	1.182	22.20	
1.151	0.04	1.101	22.28	
1.2173	0.01	1.032	22.35	
1.2877	-0.02	0.961	22.42	
1.3622	-0.05	0.894	22.49	
1.4412	-0.09	0.82	22.56	
1.5248	-0.11	0.776	22.60	
1.6133	-0.16	0.699	22.68	
1.7072	-0.20	0.638	22.74	
1.8065	-0.24	0.581	22.80	
1.9118	-0.28	0.526	22.85	
2.0233	-0.32	0.474	22.91	Test completion & 90% recovery
2.1415	-0.37	0.428	22.95	
2.2667	-0.42	0.382	23.00	
2.3992	-0.47	0.342	23.04	
2.5397	-0.51	0.308	23.07	
2.6885	-0.57	0.267	23.11	
2.846	-0.62	0.239	23.14	
3.0127	-0.67	0.213	23.17	
3.1793	-0.72	0.19	23.19	
3.346	-0.76	0.173	23.21	
3.5127	-0.80	0.158	23.22	
3.6793	-0.85	0.141	23.24	
3.846	-0.89	0.129	23.25	
4.0127	-0.92	0.121	23.26	
4.1793	-0.96	0.109	23.27	
4.346	-0.98	0.104	23.28	
4.5127	-1.02	0.095	23.29	
4.6793	-1.07	0.086	23.29	
4.846	-1.11	0.078	23.30	

OW-949 (slug-in2) Recovery vs. Time





NORTH ANNA COL
DATA REPORT REV 0
1/23/07
MACTEC E&C

MACTEC

MACTEC Engineering and Consulting
3301 Atlantic Avenue
Raleigh, North Carolina

Slug Test Data Sheet

MACTEC Job Name: North Anna COL	**MACTEC Job Number:** 6468-06-1472
Date: 11-14-06 **Time:** 1015	**Observation Well No.:** OW949JN 2
Weather Conditions: Sunny Approx 60°F	
Method of Slug Withdrawl (circle one): water, (mechanical), or pressure	**Test Method:** **Rising Head** or (**Falling Head**) (circle)
Diameter of Screen: 2 in.	**Diameter of Casing:** 2 in.
Total Well Depth: 104.5ft below reference point	**Reference Point:** Permanent mark on top of casing
Length of Screened Section: 10 ft	**Depth interval of screened portion:** 92.5-102.5ft
Depth to Groundwater: 23.38 ft below reference point	

Groundwater Measurements Collected Prior to Slug Test

Depth to Groundwater	Date
23.80 (Pre-Development)	11-2-06
23.54 (Post-Development)	11-7-06
23.50 (OW949JN)	11-14-06
23.40 (OW949OUT)	11-14-06
23.38 (OW949JN2)	11-14-06

Comments/Remarks

USED Transducer SN D00513
Hermit 3000
Set Transducer 35' below TOC
Transducer = 23.41'
VS. 23.38 Static.
OFFSet = 4.840
Final Hermit data =
.032 = 99% Recovery

In-Situ Inc. Hermit 3000

Report generated: 12/11/06 17:40:28
Report from file: P:\6468\2006 Projects\1472 North Anna COL\Slug Test Data\Raw data logger fil
DataMgr Version 3.71

ial number: 00045369
mware Version 7.08
Unit name: HERMIT 3000

Test name: OW949in2 PAGE 1 OF 3

Test defined on: 11/14/06 10:43:47
Test started on: 11/14/06 11:20:53
Test stopped on: 11/14/06 11:31:31
Test extracted on: 11/14/06 12:07:20

Data gathered using Logarithmic testing
Maximum time between data points: 0.1667 Minutes.
Number of data samples: 114

TOTAL DATA SAMPLES 114

Channel number [1]
Measurement type: Pressure
Channel name: D00513
Linearity: 0.0212000
Scale: 19.9368000
Offset: 0.1304000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
eferenced on: test start
ressure head at reference: 11.565 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg
11/14/06	11:20:53	0.0000	0.000	29.599
11/14/06	11:20:53	0.0110	-0.006	29.601
11/14/06	11:20:54	0.0220	0.000	29.599
11/14/06	11:20:54	0.0330	-0.020	29.597
11/14/06	11:20:55	0.0440	-0.009	29.601
11/14/06	11:20:56	0.0550	0.000	29.601
11/14/06	11:20:56	0.0660	0.032	29.603
11/14/06	11:20:57	0.0770	0.003	29.601
11/14/06	11:20:58	0.0880	0.000	29.601
11/14/06	11:20:58	0.0990	-0.023	29.601
11/14/06	11:20:59	0.1100	-0.938	29.605
11/14/06	11:21:00	0.1210	-1.912	29.597
11/14/06	11:21:00	0.1320	-3.071	29.597
'14/06	11:21:01	0.1430	-4.018	29.601
14/06	11:21:02	0.1540	-4.533	29.601
11/14/06	11:21:02	0.1650	-4.800	29.601
11/14/06	11:21:03	0.1760	-4.840	29.601
11/14/06	11:21:04	0.1870	-3.071	29.603
11/14/06	11:21:04	0.1980	-3.422	29.601
11/14/06	11:21:05	0.2090	-2.965	29.601
11/14/06	11:21:06	0.2200	-2.979	29.603

OW949 IN 2- PAGE 2 OF 3

11/14/06	11:21:06	0.2310	-2.968	29.599
11/14/06	11:21:07	0.2427	-2.928	29.599
11/14/06	11:21:08	0.2552	-2.847	29.601
11/14/06	11:21:09	0.2683	-2.850	29.603
11/14/06	11:21:09	0.2823	-2.752	29.601
11/14/06	11:21:10	0.2972	-2.709	29.601
14/06	11:21:11	0.3128	-2.689	29.603
14/06	11:21:12	0.3295	-2.620	29.603
11/14/06	11:21:13	0.3472	-2.591	29.603
11/14/06	11:21:14	0.3658	-2.519	29.603
11/14/06	11:21:16	0.3857	-2.479	29.601
11/14/06	11:21:17	0.4067	-2.421	29.601
11/14/06	11:21:18	0.4288	-2.364	29.601
11/14/06	11:21:20	0.4523	-2.304	29.601
11/14/06	11:21:21	0.4772	-2.223	29.599
11/14/06	11:21:23	0.5035	-2.212	29.601
11/14/06	11:21:24	0.5315	-2.111	29.601
11/14/06	11:21:26	0.5612	-2.042	29.601
11/14/06	11:21:28	0.5925	-1.976	29.603
11/14/06	11:21:30	0.6257	-1.898	29.601
11/14/06	11:21:32	0.6608	-1.832	29.601
11/14/06	11:21:34	0.6982	-1.766	29.601
11/14/06	11:21:37	0.7377	-1.679	29.603
11/14/06	11:21:39	0.7795	-1.619	29.603
11/14/06	11:21:42	0.8238	-1.547	29.601
11/14/06	11:21:45	0.8708	-1.475	29.601
11/14/06	11:21:48	0.9207	-1.406	29.601
11/14/06	11:21:51	0.9733	-1.329	29.601
11/14/06	11:21:54	1.0292	-1.254	29.599
11/14/06	11:21:58	1.0883	-1.182	29.603
11/14/06	11:22:02	1.1510	-1.101	29.601
11/14/06	11:22:06	1.2173	-1.032	29.599
11/14/06	11:22:10	1.2877	-0.961	29.597
11/14/06	11:22:14	1.3622	-0.894	29.599
14/06	11:22:19	1.4412	-0.820	29.597
14/06	11:22:24	1.5248	-0.776	29.597
11/14/06	11:22:29	1.6133	-0.699	29.597
11/14/06	11:22:35	1.7072	-0.638	29.599
11/14/06	11:22:41	1.8065	-0.581	29.599
11/14/06	11:22:47	1.9118	-0.526	29.601
11/14/06	11:22:54	2.0233	-0.474	29.599
11/14/06	11:23:01	2.1415	-0.428	29.599
11/14/06	11:23:09	2.2667	-0.382	29.601
11/14/06	11:23:16	2.3992	-0.342	29.597
11/14/06	11:23:25	2.5397	-0.308	29.599
11/14/06	11:23:34	2.6885	-0.267	29.601
11/14/06	11:23:43	2.8460	-0.239	29.599
11/14/06	11:23:53	3.0127	-0.213	29.593
11/14/06	11:24:03	3.1793	-0.190	29.593
11/14/06	11:24:13	3.3460	-0.173	29.593
11/14/06	11:24:23	3.5127	-0.158	29.595
11/14/06	11:24:33	3.6793	-0.141	29.593
11/14/06	11:24:43	3.8460	-0.129	29.595
11/14/06	11:24:53	4.0127	-0.121	29.595
11/14/06	11:25:03	4.1793	-0.109	29.593
11/14/06	11:25:13	4.3460	-0.104	29.597
11/14/06	11:25:23	4.5127	-0.095	29.597
11/14/06	11:25:33	4.6793	-0.086	29.618
11/14/06	11:25:43	4.8460	-0.078	29.618
11/14/06	11:25:53	5.0127	-0.072	29.616
11/14/06	11:26:03	5.1793	-0.069	29.620
11/14/06	11:26:13	5.3460	-0.063	29.616
14/06	11:26:23	5.5127	-0.060	29.612
14/06	11:26:33	5.6793	-0.060	29.612
11/14/06	11:26:43	5.8460	-0.058	29.616
11/14/06	11:26:53	6.0127	-0.055	29.614
11/14/06	11:27:03	6.1793	-0.052	29.610
11/14/06	11:27:13	6.3460	-0.049	29.612
11/14/06	11:27:23	6.5127	-0.046	29.612
11/14/06	11:27:33	6.6793	-0.046	29.608

11/14/06	11:27:43	6.8460	-0.043	29.608
11/14/06	11:27:53	7.0127	-0.043	29.603
11/14/06	11:28:03	7.1793	-0.043	29.599
11/14/06	11:28:13	7.3460	-0.043	29.605
11/14/06	11:28:23	7.5127	-0.043	29.603
11/14/06	11:28:33	7.6793	-0.043	29.599
11/14/06	11:28:43	7.8460	-0.040	29.601
11/14/06	11:28:53	8.0127	-0.040	29.601
11/14/06	11:29:03	8.1793	-0.040	29.603
11/14/06	11:29:13	8.3460	-0.037	29.603
11/14/06	11:29:23	8.5127	-0.037	29.612
11/14/06	11:29:33	8.6793	-0.035	29.612
11/14/06	11:29:43	8.8460	-0.035	29.612
11/14/06	11:29:53	9.0127	-0.035	29.612
11/14/06	11:30:03	9.1793	-0.035	29.610
11/14/06	11:30:13	9.3460	-0.032	29.608
11/14/06	11:30:23	9.5127	-0.032	29.610
11/14/06	11:30:33	9.6793	-0.029	29.610
11/14/06	11:30:43	9.8460	-0.032	29.608
11/14/06	11:30:53	10.0127	-0.032	29.610
11/14/06	11:31:03	10.1793	-0.029	29.608
11/14/06	11:31:13	10.3460	-0.032	29.605
11/14/06	11:31:23	10.5127	-0.032	29.610

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