Non-Aqueous Phase Liquid/Product Bail-Down Test

Fairview Station

1626 North Riverside Drive

Espanola, New Mexico

June 10, 2014

Terracon Project No. 66127029

Prepared for:
New Mexico Environment Department
Petroleum Storage Tank Bureau
Santa Fe, New Mexico

Prepared by:
Terracon Consultants, Inc.
Las Cruces, New Mexico

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New Mexico Environment Department
Petroleum Storage Tank Bureau
1301 Siler Road, Building B
Santa Fe, New Mexico 87507

Attn: Ms. Susan von Gonten, CPG
P: (505) 476-4389
E: susan.vongonten@state.nm.us

Re: Non-Aqueous Phase Liquid (NAPL) Bail-Down Test
Fairview Station
1626 North Riverside Drive
Espanola, New Mexico
Facility # 28779 / Release ID # 4657
Terracon Project No. 66127029

Dear Ms. von Groten:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Bail-Down Test report for the above-referenced site. This investigation was performed in accordance with Terracon Bail-Down Test Work Plan, dated February 6, 2014.

We appreciate the opportunity to perform these services for Holiday Inn Express. Please contact Kyle Williams at (575) 527-1700 if you have questions regarding the information provided in the report.

Sincerely,

Prepared By:

J. Kyle Williams
Senior Project Manager

Reviewed By:

Daniel F. Schneider, P.E., C.H.M.M.
Principal

Enclosure

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BAIL-DOWN TEST

FAIRVIEW STATION
1626 NORTH RIVERSIDE DRIVE
ESPANOLA, NEW MEXICO
FACILITY ID # 28779 / RELEASE ID # 4657

Terracon Project No. 66127029
June 10, 2014

1.0 INTRODUCTION

1.1 Site Description

The property is an approximate 0.5-acre tract of land formerly developed with the Fairview Station located at 1626 N. Riverside Drive in Espanola, New Mexico (hereinafter, the site). Releases of petroleum products were identified during the removal of three underground storage tanks (USTs) from the site on July 5, 2012. Terracon Consultants, Inc. (Terracon) has conducted assessment activities, including the installation of seven on-site and one off-site monitoring well. During the most recent gauging event conducted on November 26, 2013, non-aqueous phase liquid (NAPL) was detected in three on-site monitoring wells and one off-site monitoring well with thicknesses ranging from 1.08 feet to 6.00 feet. Terracon performed three bi-weekly NAPL recovery events in June - July 2013 and October - November 2013. During these activities, approximately 70 gallons of NAPL were removed from the three on-site monitoring wells and the off-site monitoring well.

1.2 Scope of Services

This investigation was performed in accordance with Terracon Bail-Down Test Work Plan, dated February 6, 2014. The Scope of Services includes conducting bail-down tests on on-site monitoring wells MW-2 and MW-3 and off-site monitoring well MW-8. The tests were conducted in accordance with the method described in Determination of a Realistic Estimate of the Actual Formation Product Thickness Using Monitor Wells: A Field Bailout Test, by Thomas S. Gurszczenski. This method consists of removing Non-Aqueous Phase Liquid (NAPL) and groundwater from each of the monitoring wells by hand bailing and measuring the depth to NAPL and the NAPL/water interface in the wells during recovery. Depth to NAPL and the NAPL/water interface measurements were recorded periodically, using an interface probe, for up to 24 hours. This procedure was conducted three times for each of the three monitoring wells in order to minimize the skewing effect of NAPL within the bore annuli. The volume of NAPL removed from each monitoring well was be recorded and the recovered NAPL was stored in a 55-gallon drum, which will be sealed and staged on site pending completion of proposed NAPL recovery activities.

This report include field notes provided in Appendix A, a graphical representation of the field data and recovery rates provided in Appendix B, an estimation of the actual estimated NAPL thickness, and an estimated maximum daily NAPL recovery volume for each monitoring well.

1.3 Standard of Care

Terracon's services were performed in a manner consistent with generally-accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, our client, as set forth in our proposal and were not intended to be in strict conformance with ASTM E1903-11.

1.4 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this investigation. Data are often subject to seasonal variability and subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.5 Reliance

This report has been prepared for the exclusive use of the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB), and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of the NMED PSTB and Terracon. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, this bail-down test report, and Terracon's Terms and Conditions. The limitation of liability defined in the Terms and Conditions is the aggregate limit of Terracon's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 FIELD ACTIVITIES

NAPL bail-down tests were performed on the on-site monitoring wells MW-2 and MW-3 and the off-site monitoring well MW-8 on April 2, 3 and 4, 2014 by Ms. Julie Smith, Terracon environmental scientist. Terracon removed NAPL and groundwater from each of the monitoring wells by hand-bailing. The depth to NAPL and the NAPL/water interface were measured in each well during recovery. Depth to NAPL and the NAPL/water interface measurements were recorded periodically, using an interface probe, for up to 8 hours. This procedure was conducted three times for each of the three monitoring wells in order to minimize the skewing effect of NAPL thickness within the bore annuli.

3.0 DATA EVALUATION

The bail-down test results were evaluated in accordance with the method described in "Determination of a Realistic Estimate of the Actual Formation Product Thickness Using Monitor Wells: A Field Bailout Test", by Thomas S. Gurszczenski. This method states that "during the recovery phase, the NAPL level will rise and the water level will first rise then fall. The point where the water level starts to fall is referred to as the inflection point. The NAPL thickness at this point is the actual product thickness." Recovery rates were also estimated for each monitoring well based on observed NAPL recovery rates during these tests.

The inflection point was determined for each bail-down test at each monitoring well. The apparent NAPL thickness for each inflection point at each well is as follows:

Monitoring Well	Test Date	Point of Inflection (POI) Elapsed Time (minutes)	NAPL Thickness at POI (inches)
MW-2	April 2, 2014	10	0.48
	April 3, 2014	10	0.23
	April 4, 2014	30	0.49
MW-3	April 2, 2014	100	1.52
	April 3, 2014	35	1.19
	April 4, 2014	90	1.12
MW-8	April 2, 2014	160	0.26
	April 3, 2014	90	0.14
	April 4, 2014	50	0.14

Based on the observed product recovery, the estimated NAPL recovery rates within MW-2 appear to range from 0.5 to 3.0 gallons per day. Estimated NAPL recovery rates within MW-3 appear to range from 1.8 to 4.0 gallons per day. Estimated NAPL recovery rates within MW-8 appear to range from 0.4 to 0.6 gallons per day.

APPENDIX A

Field Notes

4/2/14

4/2/14 started bailing @ 1000

Well No. 3		Depth to NAPL	Depth to GW				
Time (min) 1035		13.12	17.94	volume NAPL Removed - 4 gal			
1035	0	15.1	15.15	Volume GW removed - 20 gal			
	0.5	15.0	15.1				
	1	14.85	14.98				
	1.5	14.71	14.83				
	2	14.64	14.87				
	2.5	14.57	14.77				
	3	14.52	14.85				
	3.5	14.47	14.85				
	4	14.45	14.77				
	4.5	14.41	14.77				
1040	5	14.40	14.80				
1041	6	14.37	14.77				
1042	7	14.33	14.78				
1043	8	14.31	14.78				
1044	9	14.30	14.77				
1045	10	14.29	14.77				
1047	12	14.27	14.77				
1049	14	14.26	14.79				
1051	16	14.25	14.80				
1053	18	14.24	14.80				
1055	20	14.22	14.81				
1057	22	14.21	14.81				
1059	24	14.21	14.82				
1101	26						
1103	28	14.20	14.82				
1105	30	14.20	14.82				
1110	35	14.18	14.83				
1115	40	14.18	14.83				
1120	45	14.15	14.85				
1125	50	14.15	14.89				
1130	55	14.15	14.90				
1135	60	14.16	14.93				
1145	70	14.17	14.98				
1155	80	14.16	14.99				
1205	90	14.12	14.99				
1215	100	14.10	14.99				
1225	110	14.10	14.99				
1235	120	14.08	15.00				
1246	130	14.06	15.01				
1255	140	14.05	15.02				
1305	150	14.04	15.04				
1315	160	14.03	15.06				
1335	180	14.02	15.08				
1405	30 min 210	14.03	15.118				
1435	30 240	14.03	15.22				
1505	30 270	14.03	15.30				
1535	30 300	14.00	15.35				
1635	1 Hr 360	13.95	15.38	85%			
1735	1 420	13.90	15.45	86%			
1835	1 480						
	24 1,440						

6.3 G

To start: Product @ 13.12 10% = 14.44

H_2O @ 17.94 10% = 16.15

4/3/14

Started bailing @ 1040

Well No. 2	Depth to NAPL	Depth to GW				
Time (min) 1205	13.73	16.22	volume NAPL Removed - 2.5 gal			
0	15.60	15.65	Volume GW removed - 33 gal			
0.5	15.55	15.6				
1	15.51	15.58				
1.5	15.5	15.6				
2	15.48	15.6				
2.5	15.46	15.62				
3	15.45	15.63				
3.5	15.43	15.63				
4	15.43	15.63				
4.5	15.41	15.63				
1210 5	15.41	15.60				
6	15.39	15.60				
7	15.35	15.56				
8	15.32	15.55				
9	15.30	15.52				
1215 10	15.27	15.50				
12	15.25	15.52				
14	15.25	15.57				
16	15.3	15.64				
18	15.3	15.64				
1225 20	15.27	15.61				
22	15.25	15.57				
24	15.25	15.60				
26	15.25	15.62				
28	15.25	15.62				
1235 30	15.24	15.61				
1240 35	15.30	15.75				
1245 40	15.37	15.82				
1250 45	15.28	15.65				
1255 50	15.25	15.67				
1300 55	15.34	15.38				
1305 60	15.44	15.50				
1315 70	15.31	15.68				
1325 80	15.26	15.56				
1335 90	15.26	15.77				
1345 100	15.1	15.40				
1355 110	15.0	15.31				
1405 120						
1415 130						
1425 140	14.78	15.1				
1435 150						
1445 160	14.70	15.08				
20 min 1505 180	14.63	15.01				
30 1535 210	14.60	15.01				
30 1605 240	14.60	15.05				
30 1635 270	14.55	15.01				
30 1705 300						
1 hr 1805 360						
1 hr 1905 420						
1 hr 2005 480						
1,440						

NAPL @ 13.73 10% = 14.3

H_2O @ 16.22 10% = 14.6

4/4/24

started bailing @ 1040

Well No. 2	Depth to NAPL	Depth to GW				
Time (min) 1130	14.21	15.12	volume NAPL Removed - .25 gal			
0	14.75	1500	Volume GW removed - 35 gal			
0.5	14.72	15.00				
1	14.7	14.99				
1.5	14.68	15.00				
2	14.65	15.01				
2.5	14.66	15.02				
3	14.66	15.04				
3.5	14.65	15.05				
4	14.65	15.06				
4.5	14.65	15.06				
1135 5	14.63	15.06				
6						
7	14.62	15.12				
8	14.65	15.15				
9	14.67	15.18				
1140 10	14.69	15.22				
12	14.73	15.28				
14	14.79	15.36				
16	14.84	15.42				
18	14.91	15.50				
1150 20	14.95	15.51				
22						
24						
26	15.01	15.58				
28	14.97	15.49				
1200 30	14.93	15.42				
35	14.93	15.49				
40	15.05	15.75				
45						
1220 50	15.20	15.95				
55	15.24	16.01				
60	15.29	16.13				
70	15.38	16.26				
1250 80	15.41	16.38				
90	15.46	16.52				
100	15.25	15.90				
110	15.03	15.56				
120						
1340 130	14.72	15.32				
140	14.67	15.26				
150						
1410 160	14.59	15.22				
1430 180	14.57	15.21				
1500 210	14.48	15.12				
240						
270						
300						
360						
420						
480						
1,440						

4/2/14 4/2/14

start

	Well No. 3	Depth to NAPL	Depth to GW				
	Time (min)	13.12	18.20	volume NAPL Removed - 5 gal			
0940 ~~937~~	0	21.85 / ~~24.82~~	24.35	Volume GW removed - 7 gal			
938	0.5	22.15	22.16				
	1	21.11	21.13				
	1.5	19.54	19.60				
	2	18.69	18.75				
	2.5	17.70	18.90				
	3	17.10	17.20				
	3.5	16.85	17.95				
	4	16.62	16.80				
	4.5	16.47	16.90				
0945	5	16.38	16.45				
	6	16.13	16.50				
	7	16.08	16.30				
	8	15.93	16.10				
	9	15.84	16.15				
0950	10	15.75	16.20				
	12	15.59	16.20				
	14	15.47	16.30				
	16	15.34	16.30				
	18	15.21	16.20				
	20	15.07	16.10				
	22	14.97	16.00				
	24	14.87	16.00				
	26	14.82	15.94				
	28						
1010	30	14.75	15.85				
1015	35	14.66	15.80				
1020	40	14.60	15.75				
1025	45	14.50	15.70				
1030	50	14.42	15.68				
1035	55	14.35	15.65				
1040	60						
1050	70	14.20	15.60				
1100	80	14.13	15.58				
1110	90	14.07	15.57				
1120	100	14.04	15.56				
1130	110	14.00	15.59				
1140	120	1400	15.61				
1150	130	1399	15.65				
1200	140	1398	15.68				
1210	150	1396	15.68				
1220	160	1395	15.69				
1240	180	1391	15.72				
1310	210	1386	15.75				
1340	240	13.83	15.80				
1410	270	13.85	15.93				
1440	300	13.83	15.98				
1540	360	13.80	16.10				
1640	420	13.72	16.20				
1740	480	13.67	16.30	89.5%			
	1,440						

540

GW/NAPL removal started bailing @ 0910

10:00 Bailing MW-2

product @ 13.12 = 10% = 14.44

H_2O @ 18.20/10% = 16.38

4/3/14

started bailing @ 0925
"lost bailer in hole, tried to recover it. Bailed again @ 1015

Well No. 3	Depth to NAPL	Depth to GW				
Time (min) 1040			volume NAPL Removed - 3 gal			
0	23.55	23.75	Volume GW removed - 7			
0.5	22	22.37				
1	21.3	21.77				
1.5	20.74	21.23				
2	20.15	20.93				
2.5	19.6	20.37				
3	19.3	20.17				
3.5	18.7	19.65				
4	18.32	19.4				
4.5	17.92	19.08				
5	17.53	18.96				
6	17.1	18.50				
7	16.85	18.21				
8	16.71	17.94				
9	16.56	17.62				
1058 10	16.46	17.45				
12	16.31	17.12				
14	16.19	16.96				
16	16.08	16.86				
18	15.99	16.85				
1100 20	15.88	16.80				
" 22	15.81	16.73				
24	15.75	16.70				
26	15.65	16.67				
28	15.60	16.67				
1110 30	15.55	16.66				
1115 35	15.46	16.65				
1120 40	15.38	16.67				
1125 45	15.30	16.62				
1130 50	15.24	16.62				
1135 55	15.20	16.68				
1140 60	15.15	16.67				
1150 70	15.00	16.63				
1200 80	14.93	16.65				
1210 90	~~14.87~~	~~16.78~~	No reading			
1220 100	14.87	16.76				
1230 110	14.84	16.82				
1240 120	14.83	16.92				
1250 130	14.82	16.97				
1300 140	14.82	17.14				
1310 150	14.85	17.31				
1320 160	14.77	17.18				
20 min 1340 180	14.70	17.24				
30 min 1410 210	14.42	16.8				
1440 240	14.29	16.74				
1510 270	14.18	16.67				
1540 300	14.11	16.65				
1hr 1640 360	14.06	16.68				
1hr 1740 420						
1hr 1840 480						
1,440						

NAPL = 13.47 (14.78 - 1347)
H2O @ 17.20 (15.41 - 1720)

4/4/14
Bailed
Started @
0920

Well No. 3	Depth to NAPL	Depth to GW				
Time (min) 0935	13.72	16.86	volume NAPL Removed - 3 gal			
0	22.6	22.7	Volume GW removed - 5 gal			
0.5	22	22.5				
1	20.65	22.57				
1.5	20.55	21.03				
2	20.0	20.73				
2.5	19.55	20.5				
3	18.95	19.75				
3.5	18.39	19.27				
4	17.85	18.83				
4.5	17.44	18.58				
0940 5	17.15	18.40				
6	17.00	18.04				
7	16.68	17.45				
8	16.52	17.15				
9	16.41	16.89				
0945 10	16.26	16.68				
12	16.03	16.52				
14	15.83	16.32				
16	15.65	16.24				
18	15.51	16.13				
0955 20	15.35	16.02				
22	15.24	15.96				
24	15.13	15.87				
26	15.03	15.81				
28	14.95	15.75				
1005 30	14.86	15.68				
35	14.75	15.60				
40	14.64	15.55				
45	14.55	15.49				
50	14.48	15.46				
55	14.44	15.43				
1035 60	14.40	15.42				
70	14.32	15.38				
80	14.27	15.36				
90	14.25	15.37				
100	14.23	15.37				
110						
1135 120	14.32	15.60				
130						
140	14.46	15.82				
150	14.63	16.00				
1215 160	14.73	16.20				
1235 180	14.92	16.68				
1305 210	15.01	17.13				
240	14.6	16.66				
270	14.33	16.43				
1445 300	14.22	16.42				
360						
420						
480						
1,440						

4/2/14
started bailing @ 1350

Well No. 8	Depth to NAPL	Depth to GW				
Time (min) 1400	14.50	16.92	volume NAPL Removed - 2.5			gal
0	25.45	25.5	Volume GW removed - 5 gal			
0.5	24.5	25				
1	23.57	23.65				
1.5	22.38	22.45				
2	21.2	21.32				
2.5						
3	20.13	20.33				
3.5	19.4	19.53				
4	19.35	19.55				
4.5	18.00	18.2				
1405 5	17.8	18.00				
6	17.17	17.48				
7	16.95	17.18				
8	17.72	16.87				
9	—	16.6				
1410 10	—	16.5				
12						
14	16.31	16.34				
16	16.21	16.24				
18	16.13	16.15				
20	16.00	16.01				
22	15.97	15.98				
24	15.87	15.93				
26	15.83	15.88				
28	15.76	15.82				
30	15.75	15.78				
35	15.6	15.7				
1440 40	15.48	15.57				
45	15.4	15.52				
50	15.35	15.47				
55	15.3	15.43				
60	15.25	15.4				
1570 70	15.18	15.32				
1520 80						
1530 90	15.1	15.29				
1540 100	15.08	15.29				
1550 110	15.06	15.28				
1600 120	15.04	15.26				
1610 130	15.01	15.26				
1620 140	15.00	15.25				
1630 150	15.00	15.25				
1640 160	14.98	15.24				
1700 180	14.98	15.27				
1730 210	14.95	15.31				
240						
270						
300						
360						
420						
480						
1,440						

4/3/14

Started bailing @ 1310

Well No. 8	Depth to NAPL	Depth to GW				
Time (min) 1410	14.85	15.84	volume NAPL Removed - 1 gal			
0	—	25.8	Volume GW removed - 7 gal			
0.5	—	25.5				
1	25.59	25.6				
1.5	23.99	24.0				
2	21.5	21.51				
2.5						
3	22.58	22.6				
3.5	21.45	21.47				
4	21.5	21.53				
4.5	20.75	20.77				
1415 5	20.32	20.36				
6	19.5	19.6				
7	18.73	18.77				
8	18.43	18.45				
9	17.91	18.00				
1420 10	17.56	17.62				
12						
14	17.72	17.77				
16						
18	16.44	16.48				
1430 20	16.36	16.39				
22	16.28	16.3				
24	16.25	16.28				
26	16.17	16.20				
28	16.1	16.13				
30	16.04	16.08				
35	15.92	15.98				
1440 40	15.85	15.90				
45	15.75	15.82				
50	15.68	15.76				
55	15.63	15.71				
1510 60	15.56	15.65				
70	15.49	15.60				
80	15.45	15.57				
90	15.43	15.57				
100	15.42	15.57				
110	15.42	15.58				
120	15.41	15.58				
130	15.40	15.57				
140	15.37	15.54				
1640 150	15.37	15.54				
160						
180						
210						
240						
270						
300						
360						
420						
480						
1,440						

4/4/16
Started bailing @ 1350

Well No. 8	Depth to NAPL	Depth to GW				
Time (min) 1420	15.06	15.54	volume NAPL Removed - .25 gal			
0	–	24.36	Volume GW removed - 13 gal			
0.5	–	23.6				
1	–	23.1				
1.5	–	22.7				
2	–	22.2				
2.5	–	21.9				
3	–	21.42				
3.5	–	21.00				
4	–	20.72				
4.5	20.90	20.92				
1425 5	19.05	19.07				
6	17.83	17.85				
7	17.02	17.10				
8	16.72	16.73				
9	–	16.6				
1430 10	–	16.45				
12	16.29	16.30				
14	15.93	15.98				
16	15.90	15.94				
18	15.81	15.86				
1440 20	15.75	15.78				
22	15.67	15.78				
24	15.63	15.69				
26	15.60	15.66				
28	15.56	15.66				
1450 30	15.54	15.62				
35	15.48	15.56				
40	15.43	15.52				
45	15.39	15.52				
1510 50	15.37	15.51				
55						
60						
70						
80						
90						
100						
110						
120						
130						
140						
150						
160						
180						
210						
240						
270						
300						
360						
420						
480						
1,440						

1st bailer - water & gas - Water clear after that light brown/grey TO dark

APPENDIX B

Data Tables and Graphs

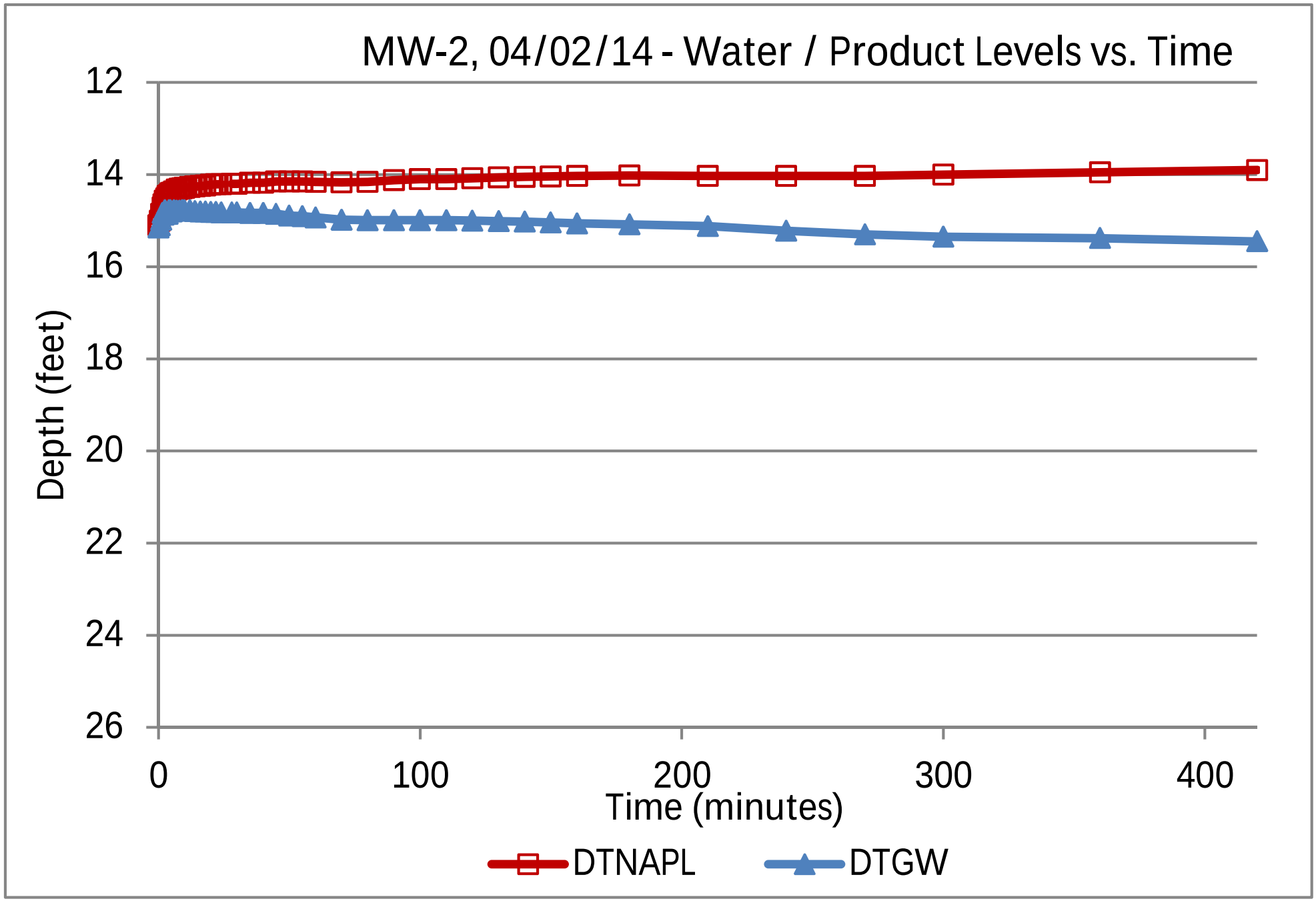
MW-2 (On-Site)

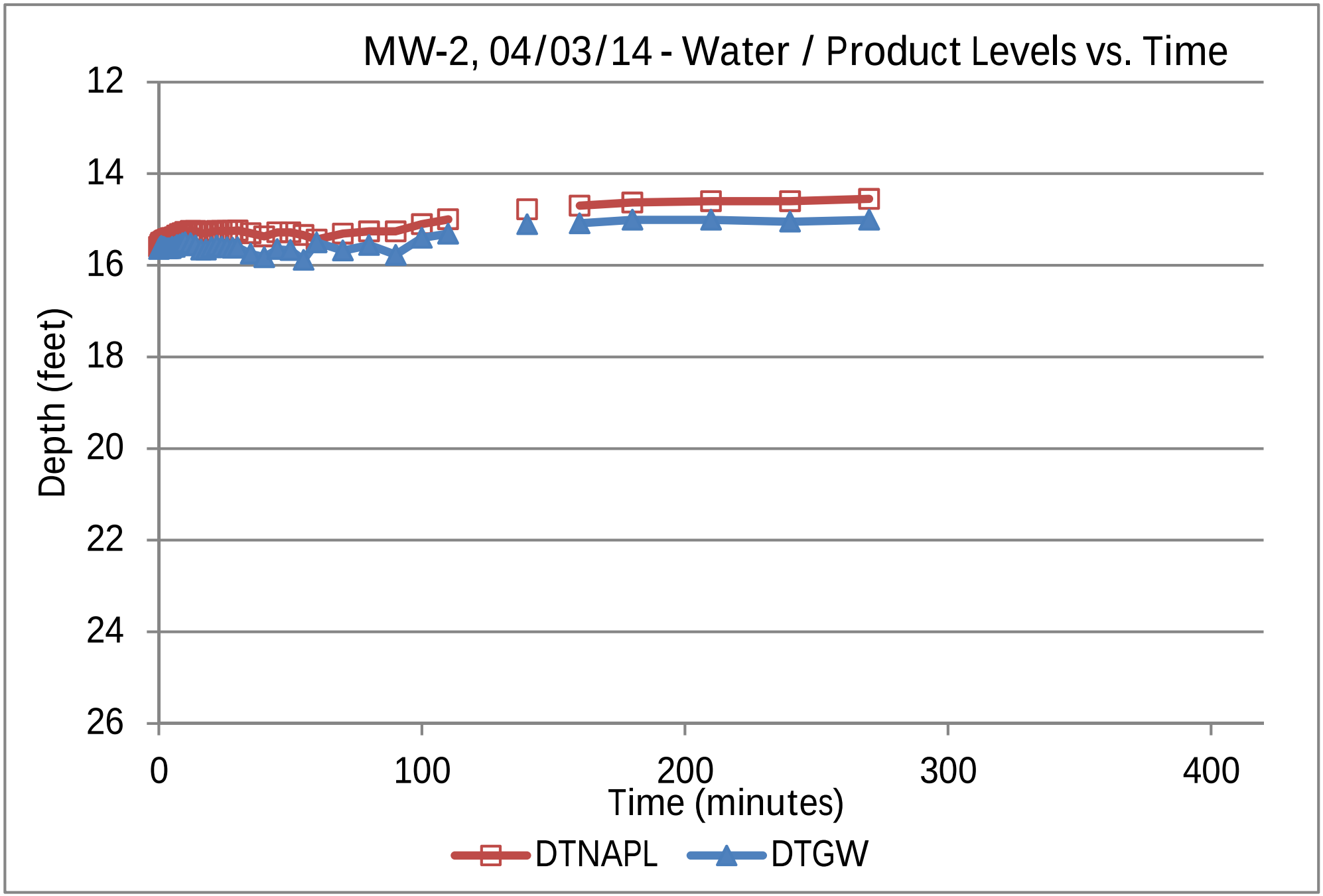
April 2, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	13.12	17.94	4.82
Recovery	0	15.1	15.15	0.05
	0.5	15	15.1	0.1
	1	14.85	14.98	0.13
	1.5	14.71	14.83	0.12
	2	14.64	14.87	0.23
	2.5	14.57	14.77	0.2
	3	14.52	14.85	0.33
	3.5	14.47	14.85	0.38
	4	14.45	14.77	0.32
	4.5	14.41	14.77	0.36
	5	14.4	14.8	0.4
	6	14.37	14.77	0.4
	7	14.33	14.78	0.45
	8	14.31	14.78	0.47
	9	14.3	14.77	0.47
POI	10	14.29	14.77	0.48
	12	14.27	14.77	0.5
	14	14.26	14.79	0.53
	16	14.25	14.8	0.55
	18	14.24	14.8	0.56
	20	14.22	14.81	0.59
	22	14.21	14.81	0.6
	24	14.21	14.82	0.61
	28	14.2	14.82	0.62
	30	14.2	14.82	0.62
	35	14.18	14.83	0.65
	40	14.18	14.83	0.65
	45	14.15	14.85	0.7
	50	14.15	14.89	0.74
	55	14.15	14.9	0.75
	60	14.16	14.93	0.77
	70	14.17	14.98	0.81
	80	14.16	14.99	0.83
	90	14.12	14.99	0.87
	100	14.1	14.99	0.89
	110	14.1	14.99	0.89
	120	14.08	15	0.92
	130	14.06	15.01	0.95
	140	14.05	15.02	0.97
	150	14.04	15.04	1
	160	14.03	15.06	1.03
	180	14.02	15.08	1.06
	210	14.03	15.118	1.088
	240	14.03	15.22	1.19
	270	14.03	15.3	1.27
	300	14	15.35	1.35
	360	13.95	15.38	1.43
	420	13.9	15.45	1.55
	Amount of product bailed out			4 gallons

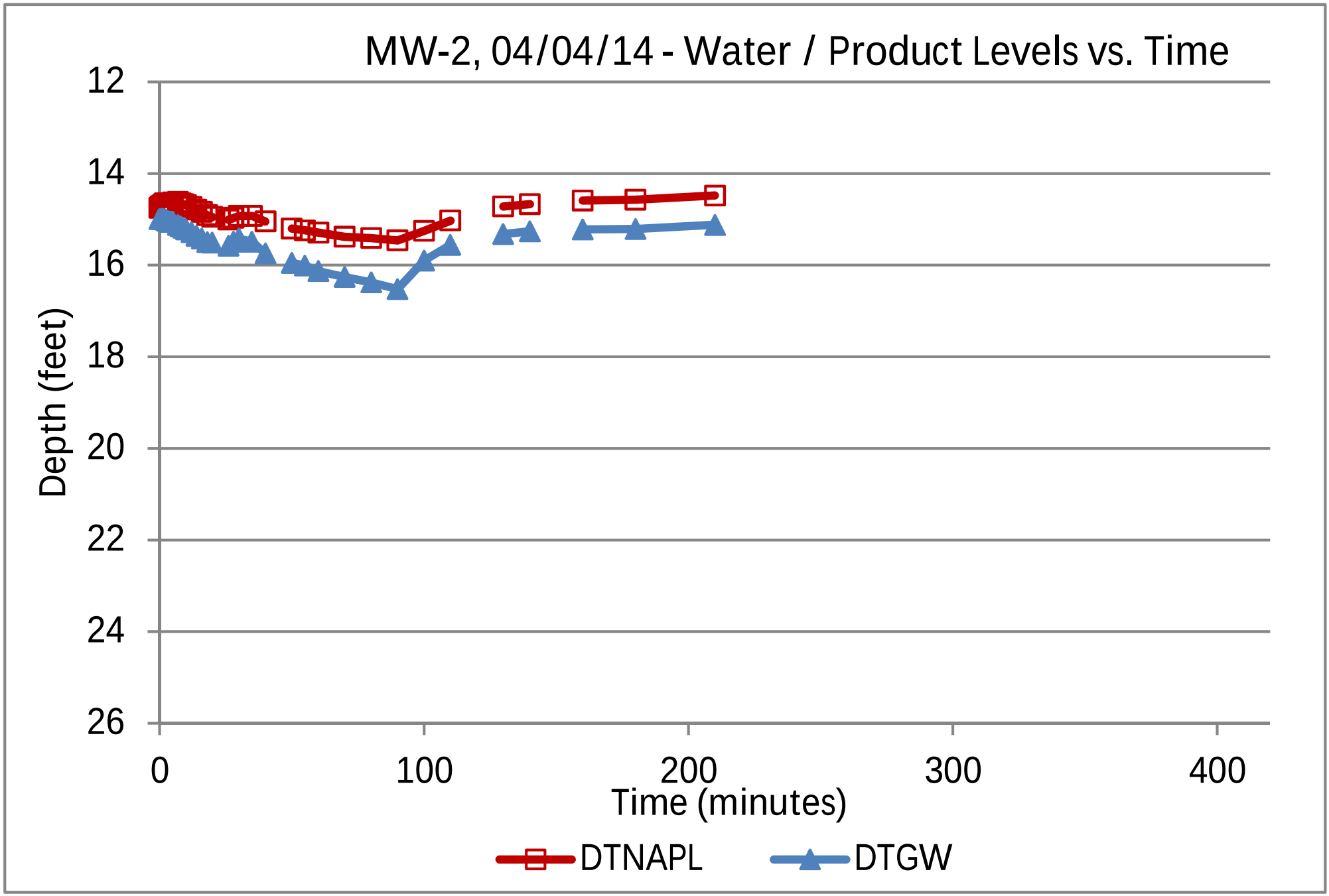
April 3, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	13.73	16.22	2.49
Recovery	0	15.6	15.65	0.05
	0.5	15.55	15.6	0.05
	1	15.51	15.58	0.07
	1.5	15.5	15.6	0.1
	2	15.48	15.6	0.12
	2.5	15.46	15.62	0.16
	3	15.45	15.63	0.18
	3.5	15.43	15.63	0.2
	4	15.43	15.63	0.2
	4.5	15.41	15.63	0.22
	5	15.41	15.6	0.19
	6	15.39	15.6	0.21
	7	15.35	15.56	0.21
	8	15.32	15.55	0.23
	9	15.3	15.52	0.22
POI	10	15.27	15.5	0.23
	12	15.25	15.52	0.27
	14	15.25	15.57	0.32
	16	15.3	15.66	0.36
	18	15.3	15.66	0.36
	20	15.27	15.61	0.34
	22	15.25	15.57	0.32
	24	15.25	15.6	0.35
	26	15.25	15.61	0.36
	28	15.25	15.62	0.37
	30	15.24	15.61	0.37
	35	15.3	15.75	0.45
	40	15.37	15.82	0.45
	45	15.28	15.65	0.37
	50	15.28	15.67	0.39
	55	15.34	15.88	0.54
	60	15.44	15.5	0.06
	70	15.31	15.68	0.37
	80	15.26	15.56	0.3
	90	15.26	15.77	0.51
	100	15.1	15.4	0.3
	110	15	15.31	0.31
	140	14.78	15.1	0.32
	160	14.7	15.08	0.38
	180	14.63	15.01	0.38
	210	14.6	15.01	0.41
	240	14.6	15.05	0.45
	270	14.55	15.01	0.46
	Amount of product bailed out			2.5 gallons

April 4, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	14.21	15.12	0.91
Recovery	0	14.75	15	0.25
	0.5	14.72	15	0.28
	1	14.7	14.99	0.29
	1.5	14.68	15	0.32
	2	14.65	15.01	0.36
	2.5	14.66	15.02	0.36
	3	14.66	15.04	0.38
	3.5	14.65	15.05	0.4
	4	14.65	15.06	0.41
	4.5	14.65	15.06	0.41
	5	14.63	15.06	0.43
	7	14.62	15.12	0.5
	8	14.65	15.15	0.5
	9	14.67	15.18	0.51
	10	14.69	15.22	0.53
	12	14.73	15.28	0.55
	14	14.79	15.36	0.57
	16	14.84	15.42	0.58
	18	14.91	15.5	0.59
	20	14.95	15.51	0.56
	26	15.01	15.58	0.57
	28	14.97	15.49	0.52
POI	30	14.93	15.42	0.49
	35	14.93	15.49	0.56
	40	15.05	15.75	0.7
	50	15.2	15.95	0.75
	55	15.24	16.01	0.77
	60	15.29	16.13	0.84
	70	15.38	16.26	0.88
	80	15.41	16.38	0.97
	90	15.46	16.52	1.06
	100	15.25	15.9	0.65
	110	15.03	15.56	0.53
	130	14.72	15.32	0.6
	140	14.67	15.26	0.59
	160	14.59	15.22	0.63
	180	14.57	15.21	0.64
	210	14.48	15.12	0.64
	Amount of product bailed out			0.25 gallon

DTNAPL Depth to Non Aqueous Phase Liquid, below top of casing.
DTGW Depth to water, below top of casing.
POI Point of inflection.


MW-2, 04/02/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-2, 04/03/14 - Water / Product Levels vs. Time
12
14
16
18
20
22
24
26
Depth (feet)
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-2, 04/04/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW

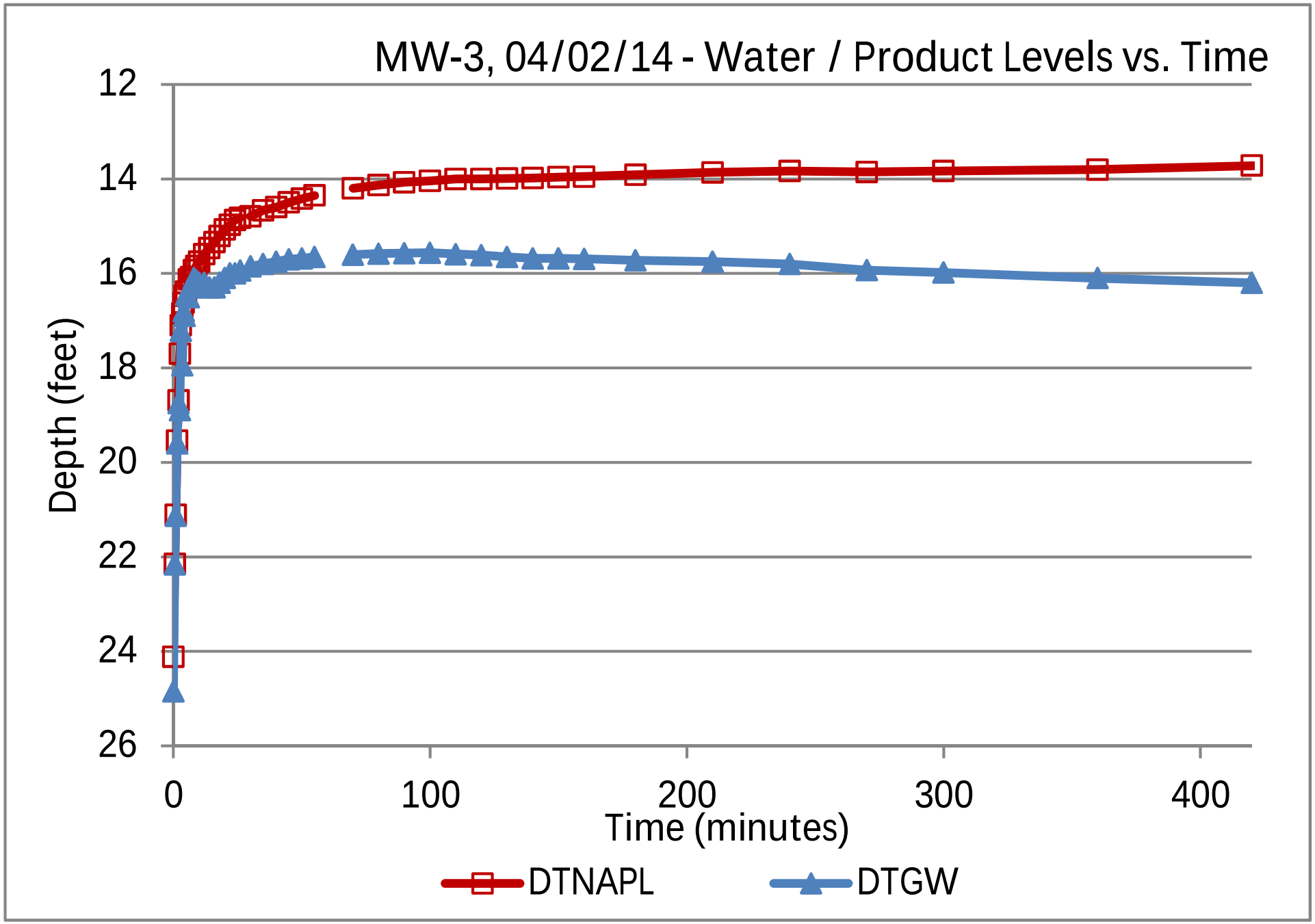
MW-3 (On-Site)

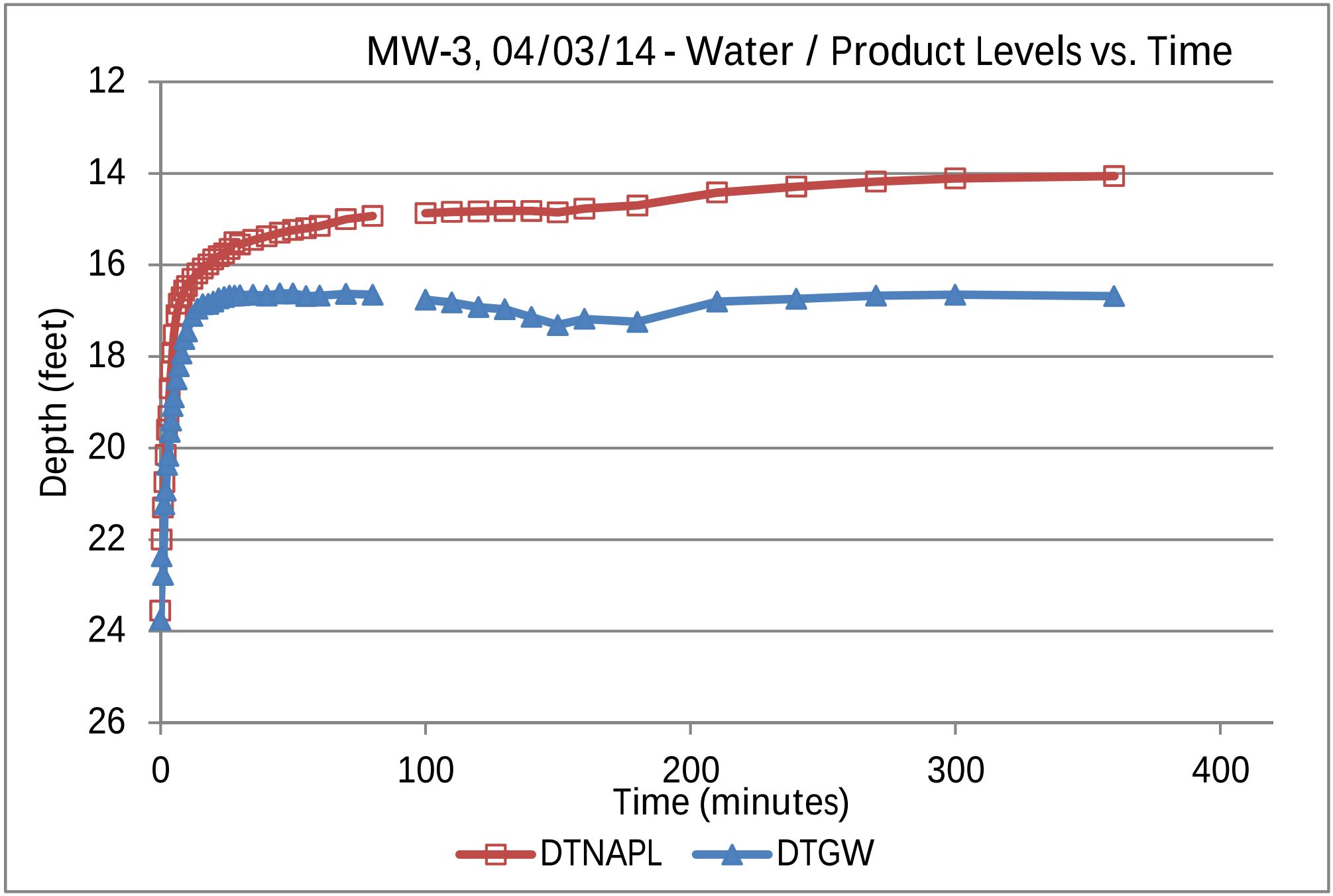
April 2, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	13.12	18.2	5.08
Recovery	0	24.12	24.85	0.73
	0.5	22.15	22.16	0.01
	1	21.11	21.13	0.02
	1.5	19.54	19.6	0.06
	2	18.69	18.75	0.06
	2.5	17.7	18.9	1.2
	3	17.1	17.22	0.12
	3.5	16.85	17.95	1.1
	4	16.62	16.8	0.18
	4.5	16.47	16.9	0.43
	5	16.38	16.45	0.07
	6	16.13	16.5	0.37
	7	16.08	16.3	0.22
	8	15.93	16.1	0.17
	9	15.84	16.15	0.31
	10	15.75	16.2	0.45
	12	15.59	16.2	0.61
	14	15.47	16.3	0.83
	16	15.34	16.3	0.96
	18	15.21	16.2	0.99
	20	15.07	16.1	1.03
	22	14.97	16	1.03
	24	14.87	16	1.13
	26	14.82	15.94	1.12
	30	14.79	15.85	1.06
	35	14.66	15.8	1.14
	40	14.6	15.75	1.15
	45	14.5	15.7	1.2
	50	14.42	15.68	1.26
	55	14.35	15.65	1.3
	70	14.2	15.6	1.4
	80	14.13	15.58	1.45
	90	14.07	15.57	1.5
POI	100	14.04	15.56	1.52
	110	14	15.59	1.59
	120	14	15.61	1.61
	130	13.99	15.65	1.66
	140	13.98	15.68	1.7
	150	13.96	15.68	1.72
	160	13.95	15.69	1.74
	180	13.91	15.72	1.81
	210	13.86	15.75	1.89
	240	13.83	15.8	1.97
	270	13.85	15.93	2.08
	300	13.83	15.98	2.15
	360	13.8	16.1	2.3
	420	13.72	16.2	2.48
	480	13.67	16.3	2.63
	Amount of product bailed out			5 gallons

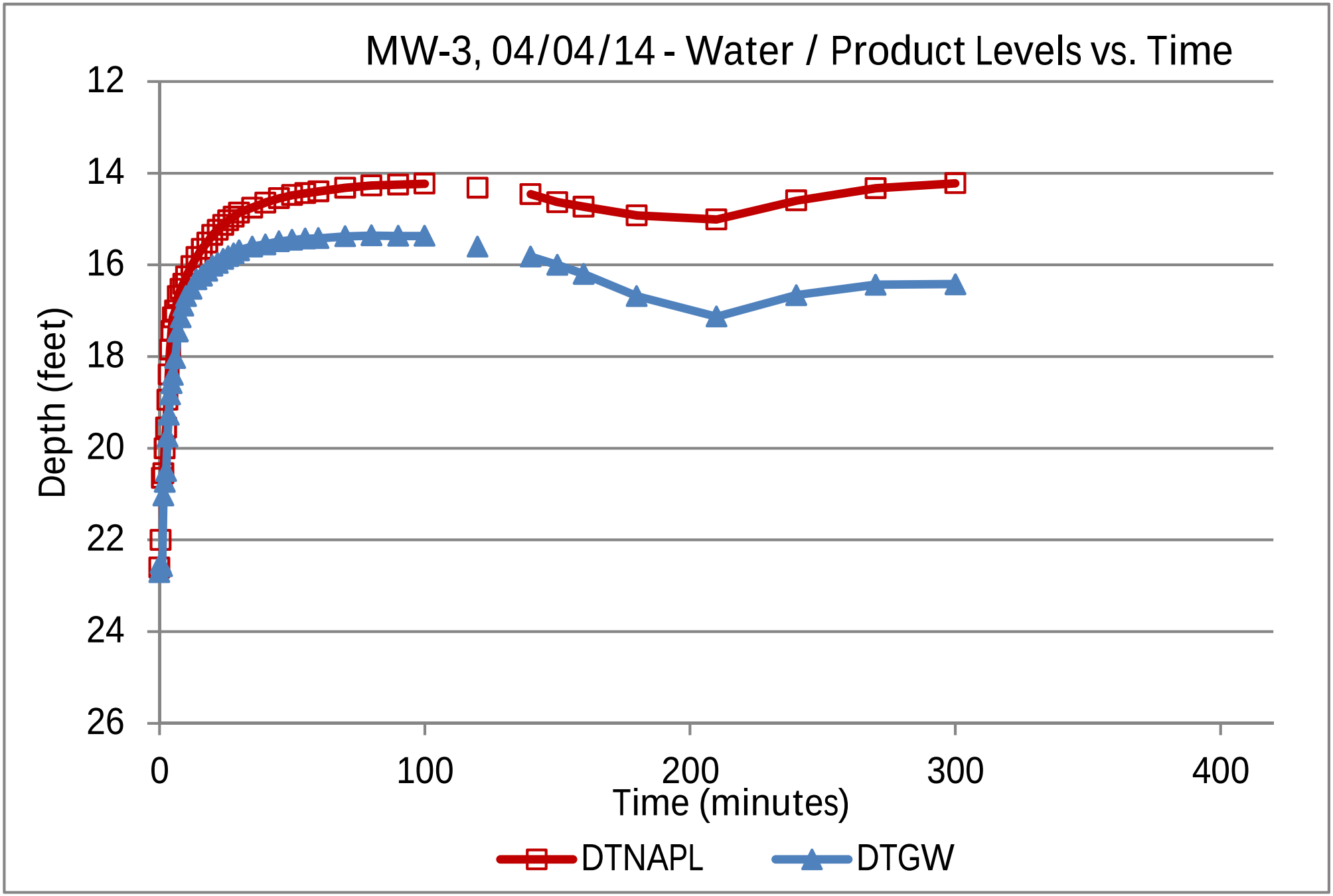
April 3, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-			0
Recovery	0	23.55	23.75	0.2
	0.5	22	22.37	0.37
	1	21.3	22.77	1.47
	1.5	20.74	21.23	0.49
	2	20.15	20.93	0.78
	2.5	19.6	20.37	0.77
	3	19.3	20.17	0.87
	3.5	18.7	19.65	0.95
	4	18.32	19.4	1.08
	4.5	17.92	19.08	1.16
	5	17.53	18.9	1.37
	6	17.1	18.5	1.4
	7	16.85	18.21	1.36
	8	16.71	17.94	1.23
	9	16.56	17.62	1.06
	10	16.46	17.45	0.99
	12	16.31	17.12	0.81
	14	16.19	16.96	0.77
	16	16.08	16.86	0.78
	18	15.99	16.85	0.86
	20	15.88	16.8	0.92
	22	15.81	16.73	0.92
	24	15.75	16.7	0.95
	26	15.65	16.67	1.02
	28	15.5	16.67	1.17
	30	15.55	16.66	1.11
POI	35	15.46	16.65	1.19
	40	15.38	16.67	1.29
	45	15.3	16.62	1.32
	50	15.24	16.62	1.38
	55	15.2	16.68	1.48
	60	15.15	16.67	1.52
	70	15	16.63	1.63
	80	14.93	16.65	1.72
	100	14.87	16.76	1.89
	110	14.84	16.82	1.98
	120	14.83	16.92	2.09
	130	14.82	16.97	2.15
	140	14.82	17.14	2.32
	150	14.85	17.31	2.46
	160	14.77	17.18	2.41
	180	14.7	17.24	2.54
	210	14.42	16.8	2.38
	240	14.29	16.74	2.45
	270	14.18	16.67	2.49
	300	14.11	16.65	2.54
	360	14.06	16.68	2.62
	Amount of product bailed out			3 gallons

April 4, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	13.72	16.86	3.14
Recovery	0	22.6	22.7	0.1
	0.5	22	22.5	0.5
	1	20.65	22.57	1.92
	1.5	20.55	21.03	0.48
	2	20	20.73	0.73
	2.5	19.55	20.5	0.95
	3	18.95	19.75	0.8
	3.5	18.39	19.27	0.88
	4	17.85	18.83	0.98
	4.5	17.44	18.58	1.14
	5	17.15	18.4	1.25
	6	17	18.04	1.04
	7	16.68	17.45	0.77
	8	16.52	17.15	0.63
	9	16.41	16.89	0.48
	10	16.26	16.68	0.42
	12	16.03	16.52	0.49
	14	15.83	16.32	0.49
	16	15.65	16.24	0.59
	18	15.51	16.13	0.62
	20	15.35	16.02	0.67
	22	15.24	15.96	0.72
	24	15.13	15.87	0.74
	26	15.03	15.81	0.78
	28	14.95	15.75	0.8
	30	14.86	15.68	0.82
	35	14.75	15.6	0.85
	40	14.64	15.55	0.91
	45	14.55	15.49	0.94
	50	14.48	15.46	0.98
	55	14.44	15.43	0.99
	60	14.4	15.42	1.02
	70	14.32	15.38	1.06
	80	14.27	15.36	1.09
POI	90	14.25	15.37	1.12
	100	14.23	15.37	1.14
	120	14.32	15.6	1.28
	140	14.46	15.82	1.36
	150	14.63	16	1.37
	160	14.73	16.2	1.47
	180	14.92	16.68	1.76
	210	15.01	17.13	2.12
	240	14.6	16.66	2.06
	270	14.33	16.43	2.1
	300	14.22	16.42	2.2
	Amount of product bailed out			3 gallons

DTNAPL Depth to Non Aqueous Phase Liquid, below top of casing.
DTGW Depth to water, below top of casing.
POI Point of inflection.


MW-3, 04/02/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-3, 04/03/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-3, 04/04/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW

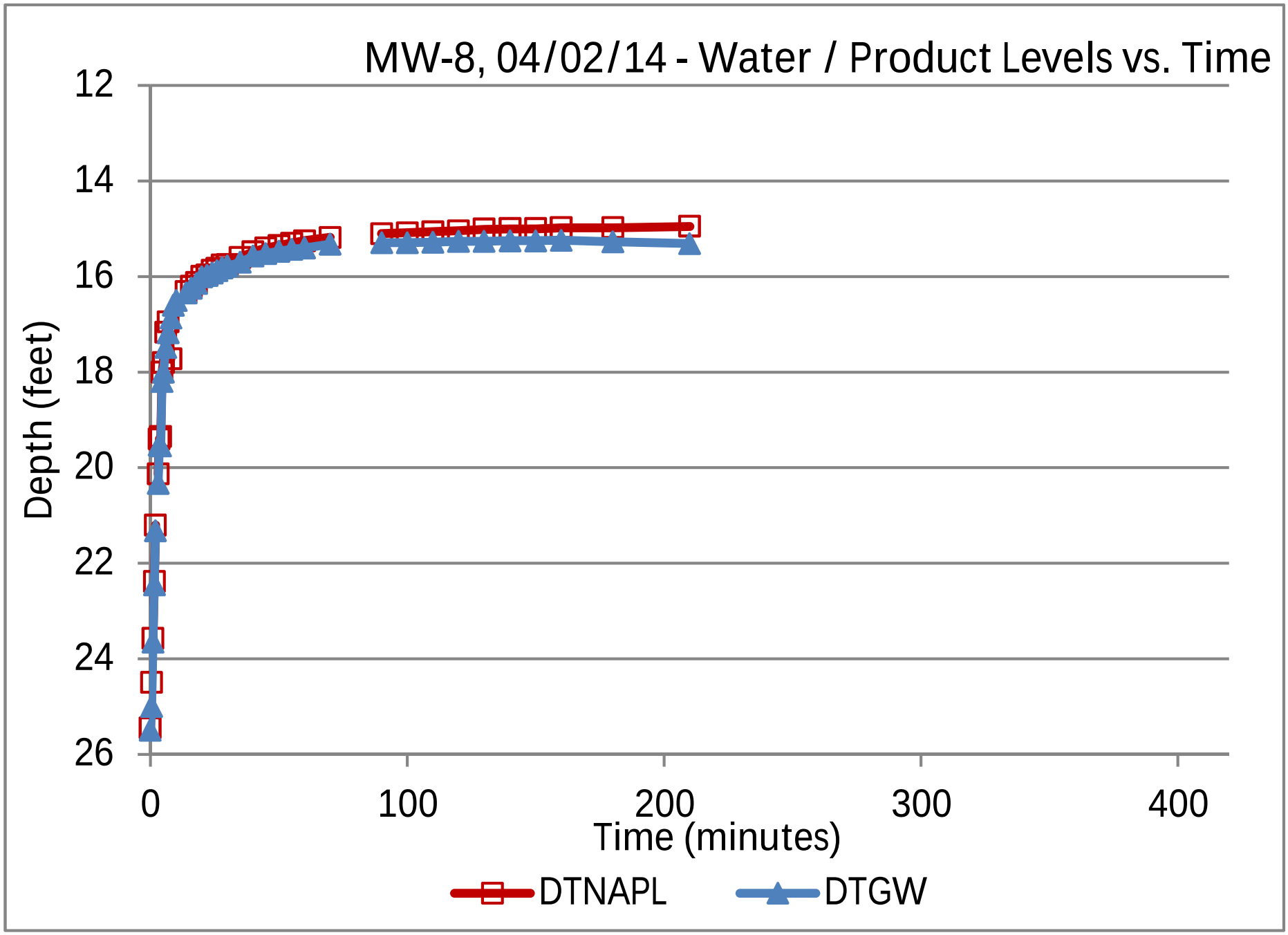
MW-8 (Off-Site)

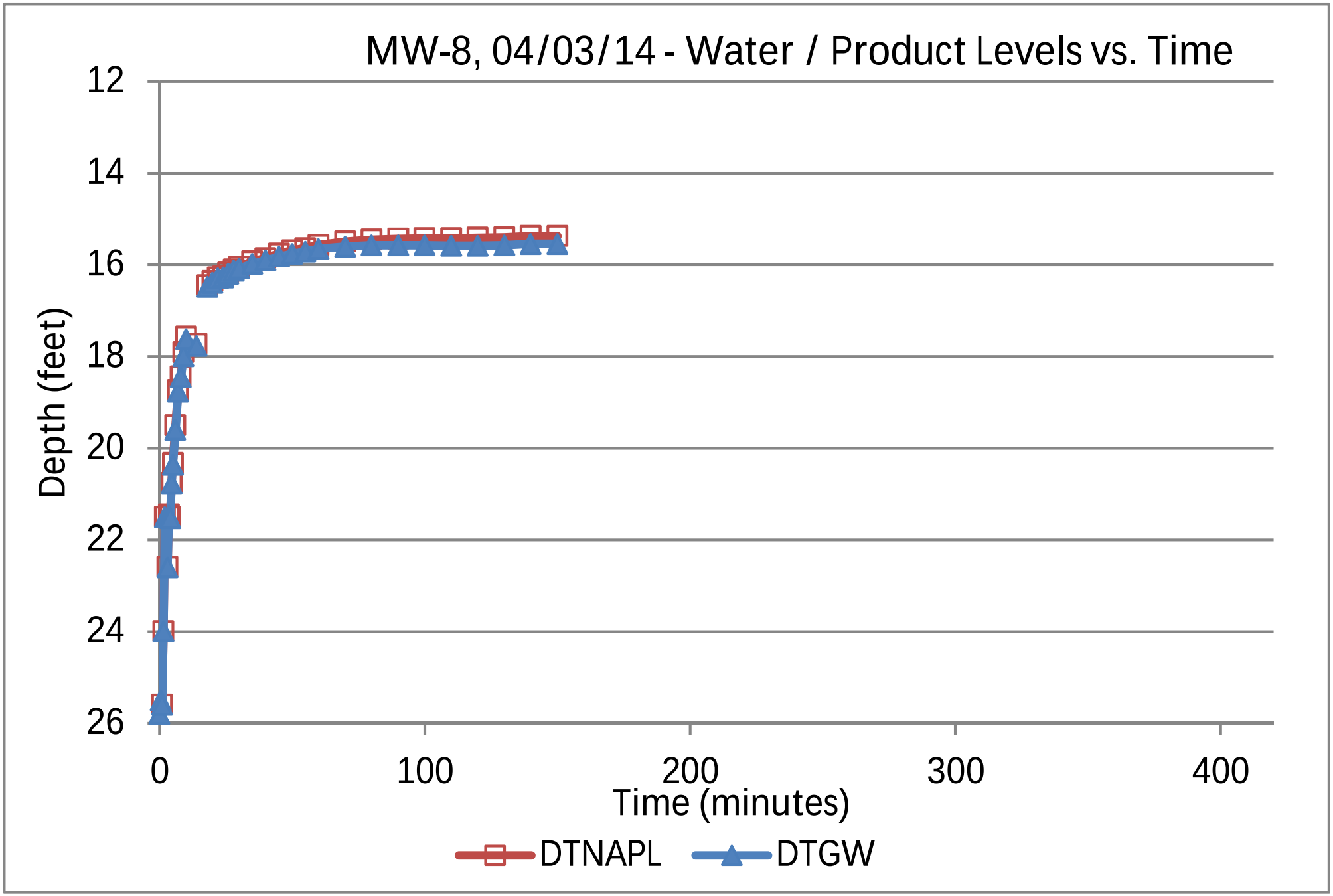
April 2, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	14.5	16.92	2.42
Recovery	0	25.45	25.5	0.05
	0.5	24.5	25	0.5
	1	23.57	23.65	0.08
	1.5	22.38	22.45	0.07
	2	21.2	21.32	0.12
	3	20.13	20.33	0.2
	3.5	19.4	19.53	0.13
	4	19.35	19.55	0.2
	4.5	18	18.2	0.2
	5	17.8	18	0.2
	6	17.17	17.48	0.31
	7	16.95	17.18	0.23
	8	17.72	16.87	-0.85
	14	16.31	16.34	0.03
	16	16.21	16.24	0.03
	18	16.13	16.15	0.02
	20	16	16.01	0.01
	22	15.97	15.98	0.01
	24	15.87	15.93	0.06
	26	15.83	15.88	0.05
	28	15.76	15.82	0.06
	30	15.75	15.78	0.03
	35	15.6	15.7	0.1
	40	15.48	15.57	0.09
	45	15.4	15.52	0.12
	50	15.35	15.47	0.12
	55	15.3	15.43	0.13
	60	15.25	15.4	0.15
	70	15.18	15.32	0.14
	90	15.1	15.29	0.19
	100	15.08	15.29	0.21
	110	15.06	15.28	0.22
	120	15.04	15.26	0.22
	130	15.01	15.26	0.25
	140	15	15.25	0.25
	150	15	15.25	0.25
POI	160	14.98	15.24	0.26
	180	14.98	15.27	0.29
	210	14.95	15.31	0.36
	Amount of product bailed out			2.5 gallons

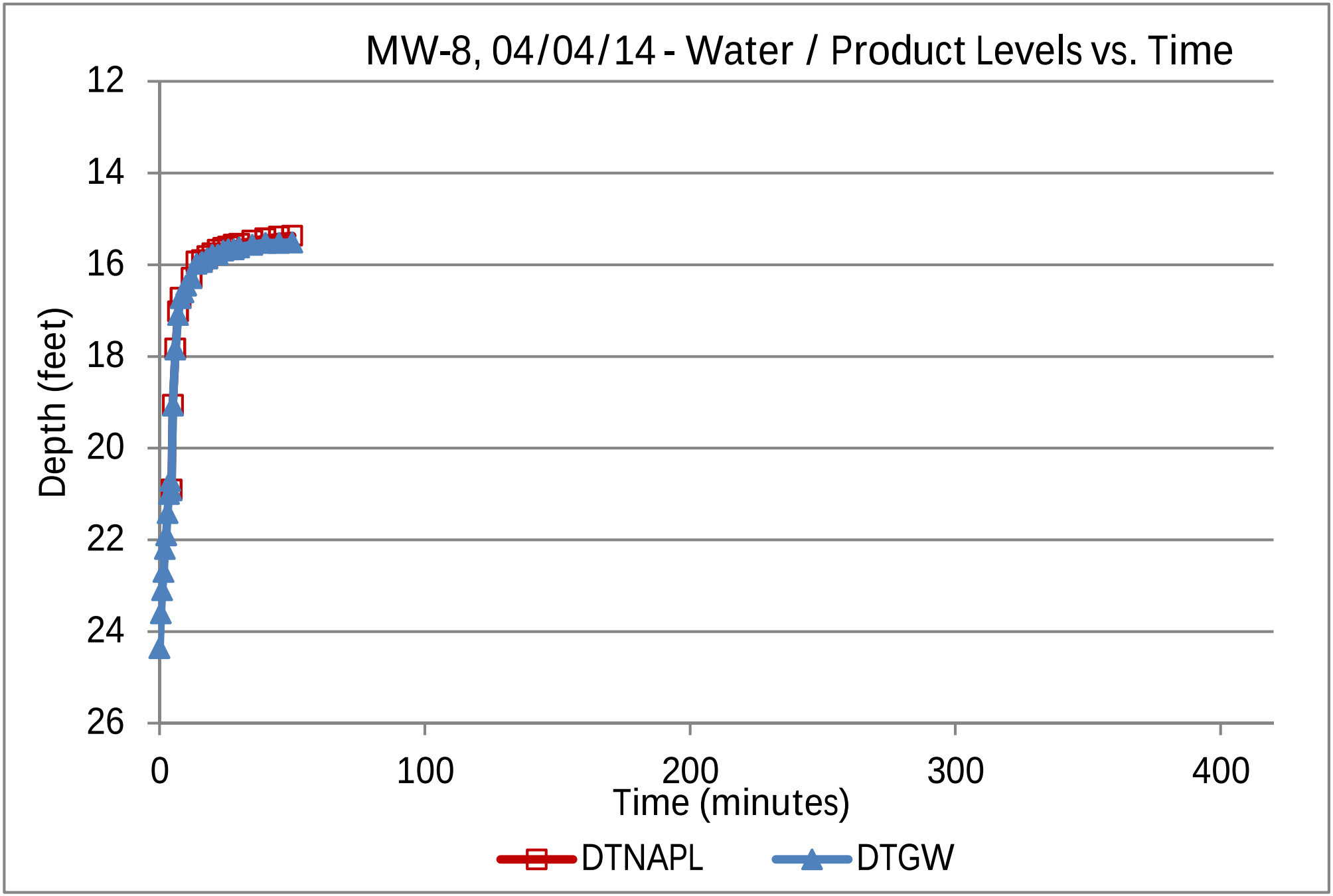
April 3, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	14.85	15.84	0.99
Recovery	0		25.8	
	0.5		25.5	
	1	25.59	25.6	0.01
	1.5	23.99	24	0.01
	2	21.5	21.51	0.01
	3	22.58	22.6	0.02
	3.5	21.45	21.47	0.02
	4	21.5	21.53	0.03
	4.5	20.75	20.77	0.02
	5	20.32	20.36	0.04
	6	19.5	19.6	0.1
	7	18.73	18.77	0.04
	8	18.43	18.45	0.02
	9	17.91	18	0.09
	10	17.56	17.62	0.06
	14	17.72	17.77	0.05
	18	16.44	16.48	0.04
	20	16.36	16.39	0.03
	22	16.28	16.3	0.02
	24	16.25	16.28	0.03
	26	16.17	16.2	0.03
	28	16.1	16.13	0.03
	30	16.04	16.08	0.04
	35	15.92	15.98	0.06
	40	15.85	15.9	0.05
	45	15.75	15.82	0.07
	50	15.68	15.76	0.08
	55	15.63	15.71	0.08
	60	15.56	15.65	0.09
	70	15.49	15.6	0.11
	80	15.45	15.57	0.12
POI	90	15.43	15.57	0.14
	100	15.42	15.57	0.15
	110	15.42	15.58	0.16
	120	15.41	15.58	0.17
	130	15.4	15.57	0.17
	140	15.37	15.54	0.17
	150	15.37	15.54	0.17
	Amount of product bailed out			1 gallon

April 4, 2014 Test Data				
Comment	Min. Elapsed	DTNAPL	DTGW	Thickness
Initial	-	15.06	15.54	0.48
Recovery	0		24.36	
	0.5		23.6	
	1		23.1	
	1.5		22.7	
	2		22.2	
	2.5		21.9	
	3		21.42	
	3.5		21	
	4		20.72	
	4.5	20.9	20.92	0.02
	5	19.05	19.07	0.02
	6	17.83	17.85	0.02
	7	17.02	17.1	0.08
	8	16.72	16.73	0.01
	9		16.6	
	10		16.45	
	12	16.29	16.3	0.01
	14	15.93	15.98	0.05
	16	15.9	15.94	0.04
	18	15.81	15.86	0.05
	20	15.75	15.78	0.03
	22	15.67	15.78	0.11
	24	15.63	15.69	0.06
	26	15.6	15.66	0.06
	28	15.56	15.66	0.1
	30	15.54	15.62	0.08
	35	15.48	15.56	0.08
	40	15.43	15.52	0.09
	45	15.39	15.52	0.13
POI	50	15.37	15.51	0.14
	Amount of product bailed out			0.25 gallon

DTNAPL Depth to Non Aqueous Phase Liquid, below top of casing.
DTGW Depth to water, below top of casing.
POI Point of inflection.


MW-8, 04/02/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-8, 04/03/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW


MW-8, 04/04/14 - Water / Product Levels vs. Time
Depth (feet)
12
14
16
18
20
22
24
26
0
100
200
300
400
Time (minutes)
DTNAPL
DTGW

API LNAPL Transmissivity Workbook

Calculation of LNAPL Transmissivity from Baildown Test Data

STEP 1: RESET OUTPUT SUMMARY

STEP 2: ENTER DATA & VIEW FIGURES

STEP 3: CHOOSE WELL CONDITIONS

STEP 4: LNAPL TRANSMISSIVITY SUMMARY

Mean LNAPL Transmissivity (ft^2/d)

0.25

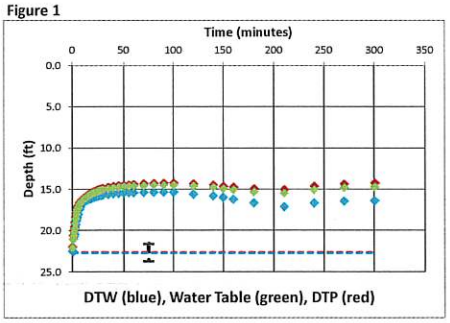
Standard Deviation (ft^2/d)

NA

Coefficient of Variation

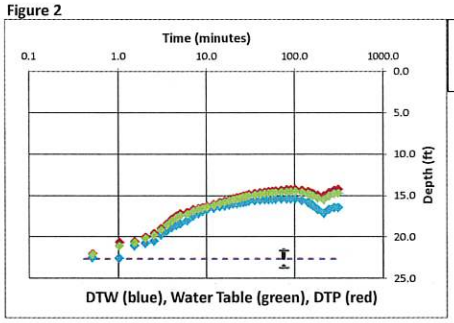
NA

Figure 1



DTW (blue), Water Table (green), DTP (red)

Figure 2



DTW (blue), Water Table (green), DTP (red)

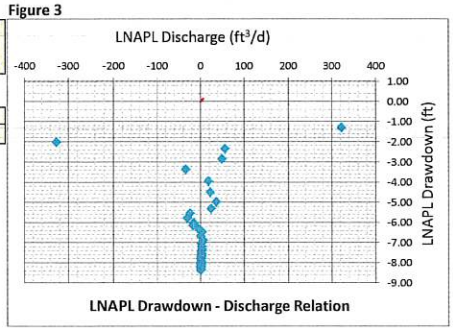
0.4	22.60
300	22.60
0.4	22.7
300	22.7

75.0	21.6	21.6
75.0	23.7	23.7

Figure 3

Q_n (ft³/d)	s_n (ft)
0	0
6	0.12

Drawdown Adjust.	
Δs_n (ft)	0.018



LNAPL Drawdown - Discharge Relation

Figure 4

b_n	s_n
1.53	0
0	0.275

J-ratio	-0.180

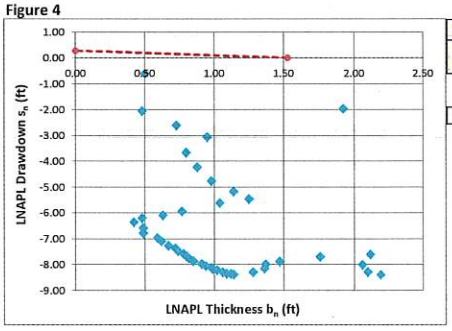
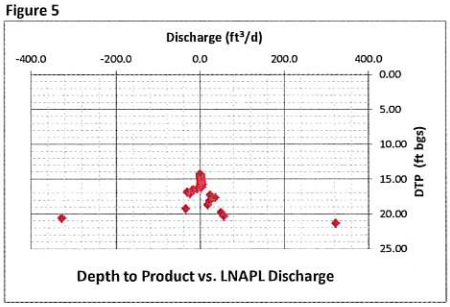
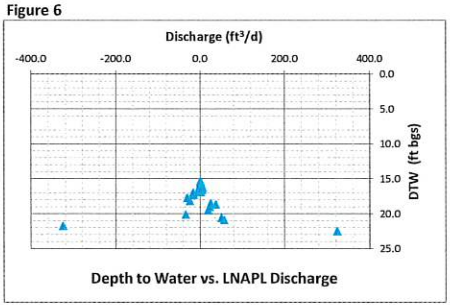


Figure 5



Depth to Product vs. LNAPL Discharge

Figure 6



Depth to Water vs. LNAPL Discharge

Figure 7

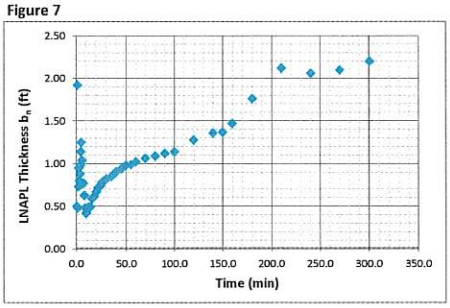
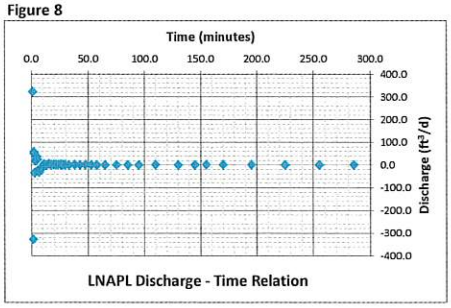


Figure 8



LNAPL Discharge - Time Relation

Figure 9

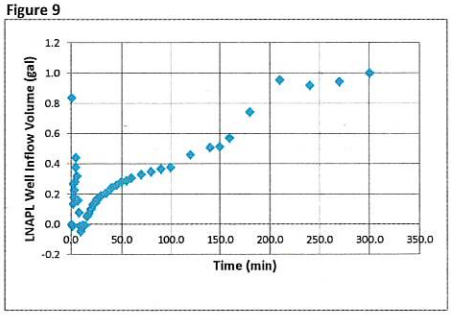
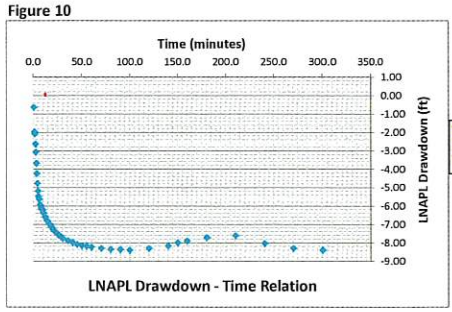


Figure 10



LNAPL Drawdown - Time Relation

t (min)	s_n (ft)
12	0.115
12	0

von Gonten, Susan, NMENV

From: Geissler, Jared C. <jcgeissler@terracon.com>
Sent: Thursday, July 17, 2014 9:47 AM
To: von Gonten, Susan, NMENV
Cc: Hillier, Mark R.; Williams, J. Kyle; Schneider, Daniel F.
Subject: RE: Fairview Station - bail down tests
Attachments: API LNAPL Transmissivity WorkBook (MW-3).xlsm; MW-3 - Transmissivity Workbook.pdf

Here is the PDF of the work book Susan. I have appended the excel version as well. Let me know if you have need anything else.

Sincerely,

Jared C. Geissler; PE, CHMM
Project Environmental Engineer I Environmental Department
Terracon Consultants, Inc.
10625 West I-70 Frontage Rd. Suite 3 I Wheat Ridge, CO 80033
D [303] 454-5214 I P [303] 423-3300 I F [303] 423 3353 I M [303] 995 8091
jcgeissler@terracon.com I terracon.com


Please consider the environment before printing this e-mail

From: von Gonten, Susan, NMENV [mailto:susan.vongonten@state.nm.us]
Sent: Thursday, July 17, 2014 9:32 AM
To: Geissler, Jared C.
Cc: Hillier, Mark R.; Williams, J. Kyle; Schneider, Daniel F.
Subject: RE: Fairview Station - bail down tests

Good morning Jared,

Kindly submit a copy the transmissivity workbook. A pdf via email is acceptable.

Thank you,
Susan

Susan von Gonten, C.P.G.
Project Manager/Remedial Action Program
NMED Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505
Voice: (505) 476-4389
Facsimile: (505) 476-4374
http://www.nmenv.state.nm.us/ust/ustbtop.html

From: Geissler, Jared C. [mailto:jcgeissler@terracon.com]
Sent: Thursday, July 17, 2014 8:17 AM
To: von Gonten, Susan, NMENV; Schneider, Daniel F.
Cc: Hillier, Mark R.; Williams, J. Kyle
Subject: RE: Fairview Station - bail down tests

Thank you for your time today to discuss the Fairview Station site. I will check with our field person regarding MW-3 data.

Also, I will send you an email tomorrow clarifying our calculations regarding the free product thickness and any info that may be useful for MW-3 regarding the data at the bottom of the field sheet.

Best wishes,

Dan

Daniel F. Schneider, P.E., C.H.M.M.
Principal I Environmental Department Manager

Terracon
10625 W. I-70 Frontage Rd N, Ste 3 I Wheat Ridge, CO 80033
D (303) 454-5247 I C (303) 748-5725 I F (303) 423-3353
dfschneider2@terracon.com I terracon.com

From: von Gonten, Susan, NMENV [mailto:susan.vongonten@state.nm.us]
Sent: Thursday, June 19, 2014 4:37 PM
To: Schneider, Daniel F.
Subject: Fairview Station - bail down tests

Good afternoon Dan,

Per your request, attached is the paper: Determination of a Realistic Estimate of the Actual Formation Product Thickness Using Monitor Wells: A Field Bailout Test by Thomas S. Gurszczenski.

Thanks,
Susan

Susan von Gonten, CPG
Geologist/Remedial Action Program
NMED Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505
Voice: (505) 476-4389
Facsimile: (505) 476-4374
http://www.nmenv.state.nm.us/ust/ustbtop.html

Terracon provides environmental, facilities, geotechnical, and materials consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

API LNAPL Transmissivity Workbook

Calculation of LNAPL Transmissivity from Baildown Test Data

STEP 1: RESET OUTPUT SUMMARY

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STEP 3: CHOOSE WELL CONDITIONS

STEP 4: LNAPL TRANSMISSIVITY SUMMARY

Mean LNAPL Transmissivity (ft^2/d)

0.25

Standard Deviation (ft^2/d)

NA

Coefficient of Variation

NA

Well Designation:	MW-3	Example E1
Date:	4-Apr-14	

Ground Surface Elev (ft msl)	0.0	Enter These Data	**Drawdown Adjustment (ft)**
Top of Casing Elev (ft msl)	0.0		
Well Casing Radius, r_c (ft):	0.083	r_{e1}	0.018
Well Radius, r_w (ft):	0.333		
LNAPL Specific Yield, S_y:	0.175		
LNAPL Density Ratio, ρ_r:	0.780		
Top of Screen (ft bgs):	10.0		
Bottom of Screen (ft bgs):	25.0		
LNAPL Baildown Vol. (gal.):	3.0		
Effective Radius, r_{e3} (ft):	0.158	Calculated Parameters	
Effective Radius, r_{e2} (ft):	0.148		
Initial Casing LNAPL Vol. (gal.):	0.02		
Initial Filter LNAPL Vol. (gal.):	0.04		

Enter Data Here

	Time (min)	DTP (ft btoc)	DTW (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	Water Table Depth (ft)	LNAPL Drawdown s_n (ft)	Average Time (min)	LNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)	DTP (ft bgs)	DTW (ft bgs)	LNAPL Volume (gallons)	Ave. r_e (ft)
Initial Fluid Levels:	0	22.60	22.7	22.60	22.7	22.62					0.10					
Enter Test Data:	0.5	22.00	22.50	22.00	22.50	22.11	-0.62				0.50				0	0.158
	1.0	20.65	22.57	20.65	22.57	21.07	-1.97	0.8	322.340	-1.29	1.92	0.158	21.33	22.54	0.84	0
	1.5	20.55	21.03	20.55	21.03	20.66	-2.07	1.3	-326.880	-2.02	0.48	0.158	20.60	21.80	-0.01	0.079
	2.0	20.00	20.73	20.00	20.73	20.16	-2.62	1.8	56.750	-2.34	0.73	0.158	20.28	20.88	0.14	0.158
	2.5	19.55	20.50	19.55	20.50	19.76	-3.07	2.3	49.940	-2.84	0.95	0.158	19.78	20.62	0.27	0.238
	3.0	18.95	19.75	18.95	19.75	19.13	-3.67	2.8	-34.050	-3.37	0.80	0.158	19.25	20.13	0.18	0.317
	3.5	18.39	19.27	18.39	19.27	18.58	-4.23	3.3	18.160	-3.95	0.88	0.158	18.67	19.51	0.22	0.396
	4.0	17.85	18.83	17.85	18.83	18.07	-4.77	3.8	22.700	-4.50	0.98	0.158	18.12	19.05	0.28	0.475
	4.5	17.44	18.58	17.44	18.58	17.69	-5.18	4.3	36.320	-4.97	1.14	0.158	17.65	18.71	0.38	0.554
	5.0	17.15	18.40	17.15	18.40	17.43	-5.47	4.8	24.970	-5.32	1.25	0.158	17.30	18.49	0.44	0.634
	6.0	17.00	18.04	17.00	18.04	17.23	-5.62	5.5	-23.835	-5.54	1.04	0.158	17.08	18.22	0.32	0.752
	7.0	16.68	17.45	16.68	17.45	16.85	-5.94	6.5	-30.645	-5.78	0.77	0.158	16.84	17.75	0.16	0.911
	8.0	16.52	17.15	16.52	17.15	16.66	-6.10	7.5	-15.890	-6.02	0.63	0.158	16.60	17.30	0.08	1.069
	9.0	16.41	16.89	16.41	16.89	16.52	-6.21	8.5	-17.025	-6.15	0.48	0.158	16.47	17.02	-0.01	1.228
	10.0	16.26	16.68	16.26	16.68	16.35	-6.36	9.5	-6.810	-6.28	0.42	0.158	16.34	16.79	-0.05	1.386
	12.0	16.03	16.52	16.03	16.52	16.14	-6.59	11.0	3.972	-6.47	0.49	0.158	16.15	16.60	-0.01	1.624
	14.0	15.83	16.32	15.83	16.32	15.94	-6.79	13.0	0.000	-6.69	0.49	0.158	15.93	16.42	-0.01	1.940
	16.0	15.65	16.24	15.65	16.24	15.78	-6.97	15.0	5.675	-6.88	0.59	0.158	15.74	16.28	0.05	2.257
	18.0	15.51	16.13	15.51	16.13	15.65	-7.11	17.0	1.702	-7.04	0.62	0.158	15.58	16.19	0.07	2.574
	20.0	15.35	16.02	15.35	16.02	15.50	-7.27	19.0	2.837	-7.19	0.67	0.158	15.43	16.08	0.10	2.891
	22.0	15.24	15.96	15.24	15.96	15.40	-7.38	21.0	2.837	-7.32	0.72	0.158	15.30	15.99	0.13	3.208
	24.0	15.13	15.87	15.13	15.87	15.29	-7.49	23.0	1.135	-7.43	0.74	0.158	15.19	15.92	0.14	3.524
	26.0	15.03	15.81	15.03	15.81	15.20	-7.59	25.0	2.270	-7.54	0.78	0.158	15.08	15.84	0.17	3.841
	28.00	14.95	15.75	14.95	15.75	15.13	-7.67	27.0	1.135	-7.63	0.80	0.158	14.99	15.78	0.18	4.158
	30.00	14.86	15.68	14.86	15.68	15.04	-7.76	29.0	1.135	-7.71	0.82	0.158	14.91	15.72	0.19	4.475
	35.00	14.75	15.60	14.75	15.60	14.94	-7.87	32.5	0.681	-7.81	0.85	0.158	14.81	15.64	0.21	5.029
	40.00	14.64	15.55	14.64	15.55	14.84	-7.98	37.5	1.362	-7.92	0.91	0.158	14.70	15.58	0.24	5.821
	45.00	14.55	15.49	14.55	15.49	14.76	-8.07	42.5	0.681	-8.02	0.94	0.158	14.60	15.52	0.26	6.613
	50.00	14.48	15.46	14.48	15.46	14.70	-8.14	47.5	0.908	-8.10	0.98	0.158	14.52	15.48	0.28	7.405
	55.00	14.44	15.43	14.44	15.43	14.66	-8.18	52.5	0.227	-8.16	0.99	0.158	14.46	15.45	0.29	8.197

60.00	14.4	15.42	14.40	15.42	[redacted]	14.62	-8.22	[redacted]	57.5	0.681	-8.20	1.02	0.158	14.42	15.43	0.31	8.989
70.00	14.32	15.38	14.32	15.38	[redacted]	14.55	-8.30	[redacted]	65.0	0.454	-8.26	1.06	0.158	14.36	15.40	0.33	10.177
80.00	14.27	15.36	14.27	15.36	[redacted]	14.51	-8.35	[redacted]	75.0	0.340	-8.32	1.09	0.158	14.30	15.37	0.35	11.761
90.00	14.25	15.37	14.25	15.37	[redacted]	14.50	-8.37	[redacted]	85.0	0.340	-8.36	1.12	0.158	14.26	15.37	0.37	13.345
100.00	14.23	15.37	14.23	15.37	[redacted]	14.48	-8.39	[redacted]	95.0	0.227	-8.38	1.14	0.158	14.24	15.37	0.38	14.929
120.00	14.32	15.60	14.32	15.60	[redacted]	14.60	-8.30	[redacted]	110.0	0.794	-8.34	1.28	0.158	14.28	15.49	0.46	17.305
140.00	14.46	15.82	14.46	15.82	[redacted]	14.76	-8.16	[redacted]	130.0	0.454	-8.23	1.36	0.158	14.39	15.71	0.51	20.473
150.00	14.63	16.00	14.63	16.00	[redacted]	14.93	-7.99	[redacted]	145.0	0.113	-8.07	1.37	0.158	14.55	15.91	0.51	22.848
160	14.73	16.20	14.73	16.20	[redacted]	15.05	-7.89	[redacted]	155.0	1.135	-7.94	1.47	0.158	14.68	16.10	0.57	24.432
180	14.92	16.68	14.92	16.68	[redacted]	15.31	-7.70	[redacted]	170.0	1.646	-7.79	1.76	0.158	14.83	16.44	0.74	26.808
210	15.01	17.13	15.01	17.13	[redacted]	15.48	-7.61	[redacted]	195.0	1.362	-7.65	2.12	0.158	14.97	16.91	0.96	30.768
240	14.60	16.66	14.60	16.66	[redacted]	15.05	-8.02	[redacted]	225.0	-0.227	-7.81	2.06	0.158	14.81	16.90	0.92	35.520
270	14.33	16.43	14.33	16.43	[redacted]	14.79	-8.29	[redacted]	255.0	0.151	-8.15	2.10	0.158	14.47	16.55	0.94	40.272
300	14.22	16.42	14.22	16.42	[redacted]	14.70	-8.40	[redacted]	285.0	0.378	-8.34	2.20	0.158	14.28	16.43	1.00	45.024
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
			#N/A	#N/A	[redacted]	#N/A	#N/A	[redacted]	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
													0.117				

Figure 1

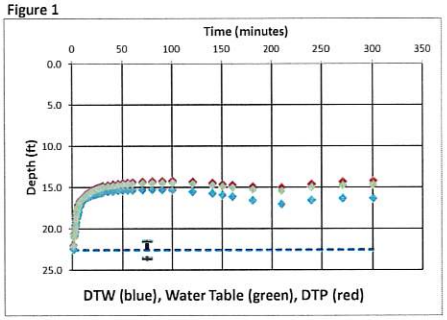
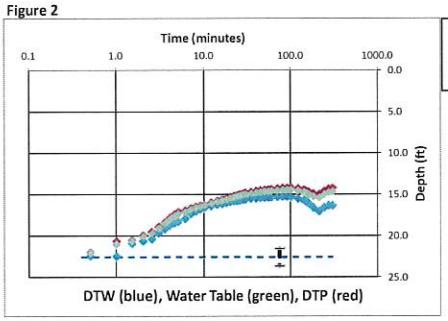


Figure 2



0.4	22.60
300	22.60
0.4	22.7
300	22.7

75.0	21.6	21.6
75.0	23.7	23.7

Figure 3

Q_n (ft³/d)	s_n (ft)
0	0
6	0.12

Drawdown Adjust.	
Δs_n (ft)	0.018

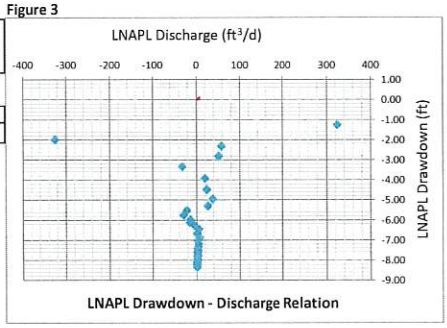


Figure 4

b_n	s_n
1.53	0
0	0.275

J-ratio	-0.180

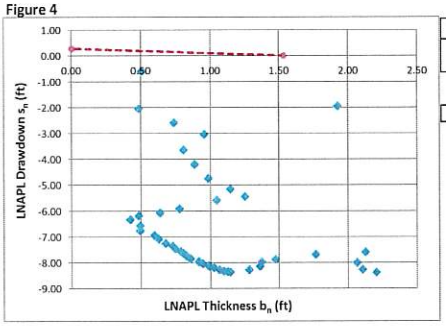


Figure 5

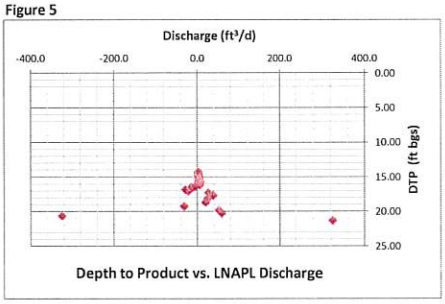


Figure 6

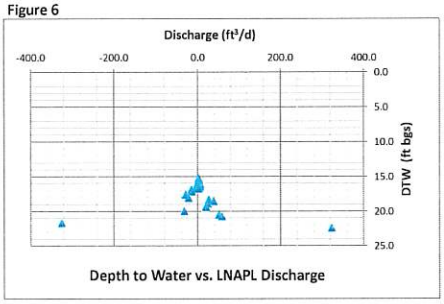


Figure 7

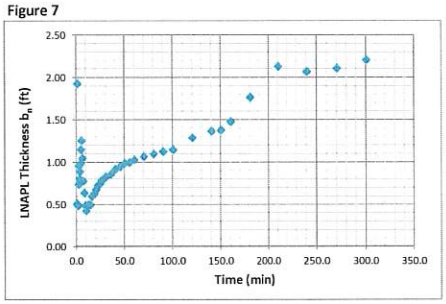


Figure 8

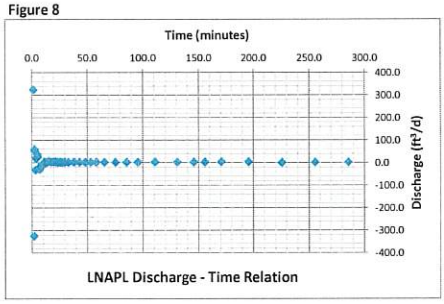


Figure 9

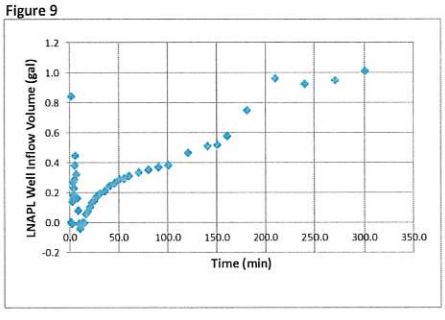
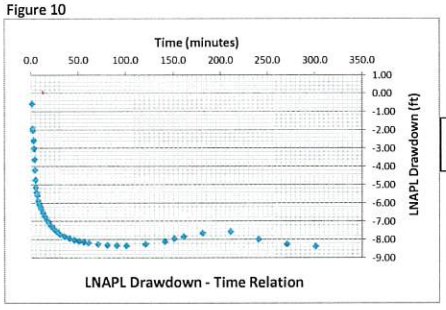


Figure 10



t (min)	s_n (ft)
12	0.115
12	0

Confined LNAPL Model:

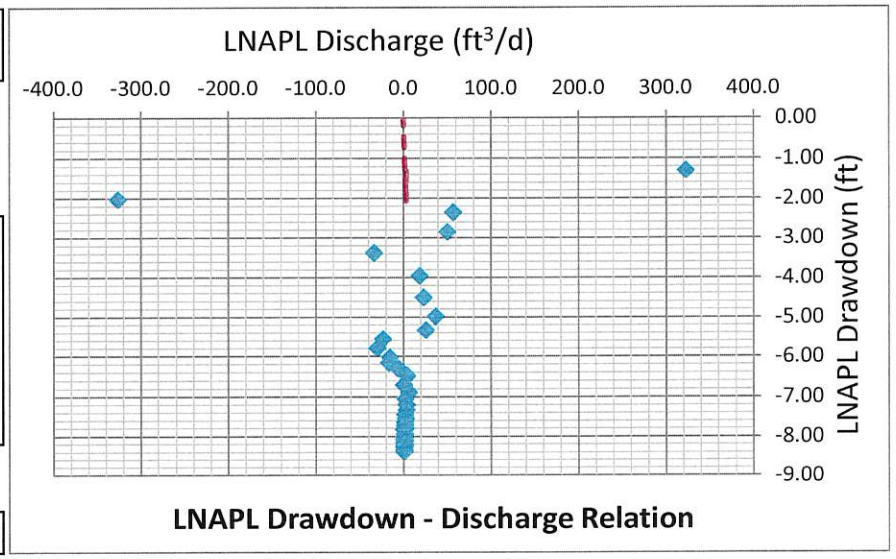
$$T_n = \frac{Q_n \ln(R/r_w)}{2\pi(1-\rho_r)(b_{nR} - b_{nW})}$$

Well Designation:	MW-3
Date:	4-Apr-14

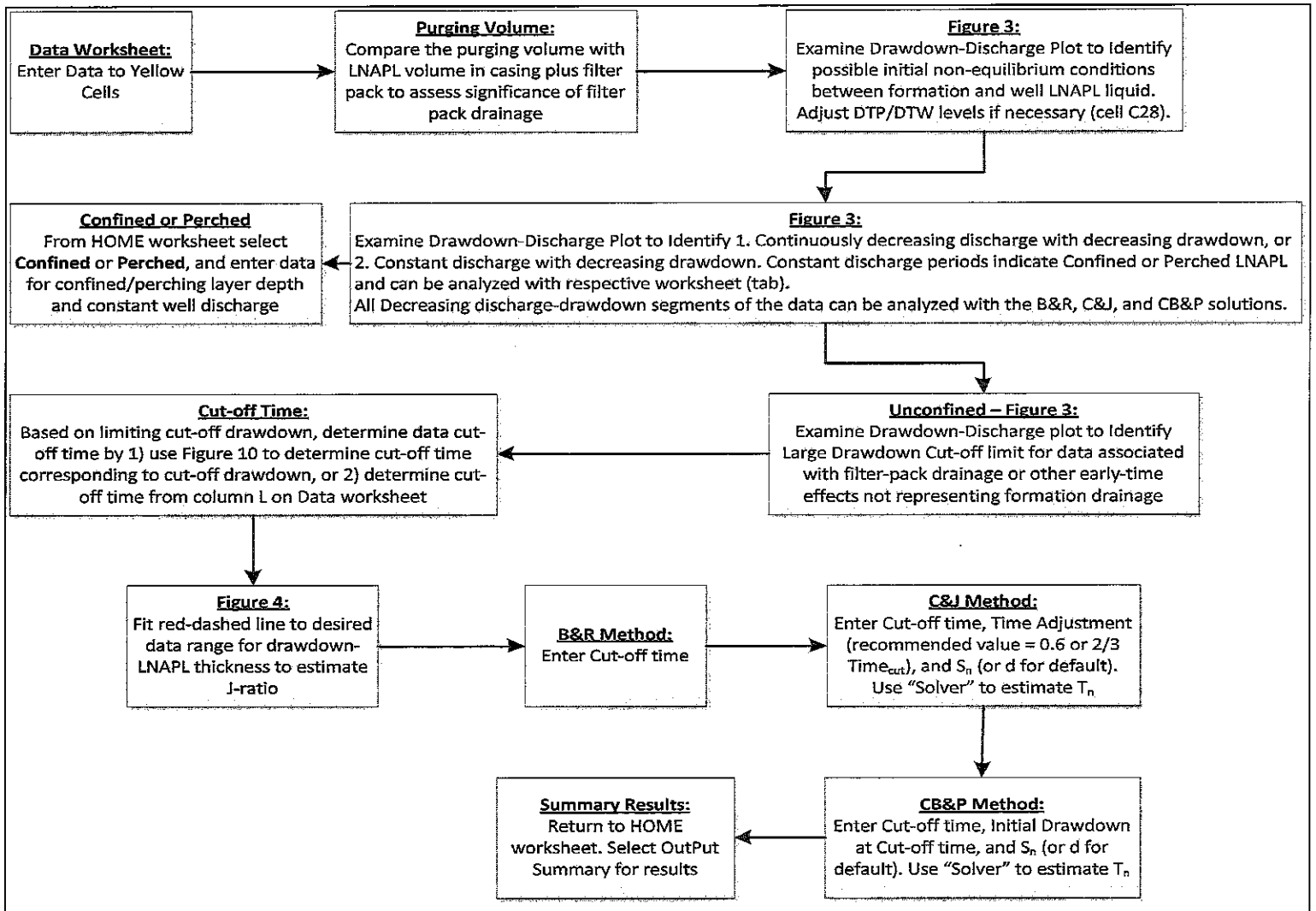
Depth to base of confining bed (ft bgs) [from boring log]:	30
Constant LNAPL discharge to well (ft^3/d):	3.53

Depth to top of screen (ft bgs):	10.0
Corrected water table elevation (ft bgs):	22.6
Limiting effective LNAPL thickness in well, b_{nW} (ft):	9.5
Limiting effective LNAPL drawdown, s_{nW} (ft):	-2.06
Initial LNAPL thickness, b_{nR} (ft):	0.1
Radius of influence ratio (from Bouwer and Rice), R/r_w:	0.4

LNAPL Transmissivity, T_n (ft^2/d):	**0.25**



LNAPL Drawdown - Discharge Relation



For further information see the *API LNAPL Transmissivity Workbook – User Guide*, API Publication XXXX (2012) and *The Standard Guide for Estimation of LNAPL Transmissivity* ASTM E2856-11, ASTM (2011).