

1R - 487

GENERAL CORRESPONDENCE

YEAR(S):

2010

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Monday, January 11, 2010 4:35 PM
To: Hack Conder
Cc: Katie Jones; 'Hall, Sharon'
Subject: RE: ROC Hobbs N-6 (1R-487) MW Replacement Request - Additional Information Requested

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has reviewed your request of January 6, 2010, regarding the above-reference site. At this time, the OCD is requesting additional information:

1. Any groundwater chemistry data for the site older than 2002;
2. Any groundwater chemistry data of the nearby wells at a deeper depth (i.e., similar depth as MW-3).

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

P.S.: At a minimum, MW-3 must be sampled for at least 3 additional quarters (i.e., to obtain eight quarters of below standards for BTEX).

P.P.S: Please use the OCD case # (1R-487) on all future correspondence regarding this site.

From: Hall, Sharon [mailto:Sharon.Hall@arcadis-us.com]
Sent: Wednesday, January 06, 2010 3:34 PM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; Katie Jones
Subject: ROC Hobbs N-6 MW Replacement Request

Ed,
Respectfully submitted on behalf of ROC is the attached replacement request for MW-3 at the Hobbs N-6 site. Please let Hack or me know if you have any questions or require additional information.
Regards,
Sharon

Sharon Hall | Associate Vice President | Sharon.Hall@arcadis-us.com

ARCADIS U.S., Inc. | 1004 N. Big Spring St., Suite 300 | Midland, Texas 79701
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1R-487

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CERTIFIED MAIL
RETURN RECEIPT NO. 7002 2410 0001 5813 3807

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

ENVIRONMENTAL

RE: Request to Replace Groundwater Monitoring Well MW-3
N-6 Pipeline Leak, West County Road Site
Hobbs SWD System
Unit N SEC. 5 & 6, T19S, R38E, Lea County, New Mexico

Date:
January 6, 2010

Dear Mr. Hansen:

Contact:
Sharon E. Hall

On behalf of Rice Operating Company (ROC), ARCADIS respectfully requests your approval to replace monitoring well MW-3 (completed five feet above the contact with the Triassic red-beds) and install a new monitoring well MW-3R (to be completed in the upper Ogallala Formation).

Phone:
432 687-5400

Email:
shall@arcadis-us.com

Site Geology, Geochemistry, and Background

Our ref:
MT000821.0001

The Ogallala Formation is the shallow source of groundwater at the N-6 site. Depth to groundwater at the site is approximately 40 feet below ground surface (bgs). The Ogallala consists of predominantly sandstone and fine-grained eolian siltstone and clay and coarse fluvial conglomerate. The Ogallala Formation unconformably overlies Triassic red-beds.

Generally, total dissolved solids (TDS) and sulfate concentrations in groundwater yielded from the Ogallala in southern Lea County range from 400-600 milligrams per liter (mg/L) and 40-215 mg/L, respectively. Water yielded from the Triassic red-beds exhibit a different geochemistry than that of the Ogallala. TDS and sulfate concentrations in groundwater yielded from the Triassic red-beds range from 635-800 mg/L and 200-335 mg/L, respectively. (Groundwater Report 6; Geology and Ground-water Conditions in Southern Lea County, New Mexico; Nicholson and Clebsch).

MW-3 was drilled to a depth of 165 feet bgs and encountered the red-bed at a depth of 160 feet bgs. The well is screened from a depth of 105 feet to 155 feet bgs, within

Imagine the result

five feet of the top of the red-bed. The other wells at the site are screened at the top of the Ogallala aquifer in the primary water bearing unit. They are generally screened from a depth of approximately 30 to 55 feet bgs.

At the N-6 site, the source of chloride impact was removed in 1994 and groundwater recovery to remove chlorides was initiated in 1996, yet MW-3 continues to exhibit elevated chloride, total dissolved solids (TDS) and sulfate concentrations.

Chloride, TDS and sulfate concentrations in MW-3 are markedly higher than the other wells at the site and are strongly indicative of naturally occurring geochemical conditions at the base of the Ogallala where it overlies the Triassic red-beds. The sulfate concentration in this well is in excess of 400 mg/L as compared to an average of approximately 89 mg/L in the other wells at the site. The TDS concentration is 6,560 mg/L as compared to an average of 588 mg/L in the other wells at the site. A summary of the November 2009 chloride, TDS and sulfate results is attached. Also attached are historical laboratory result summaries for the monitoring wells and inactive water well.

Monitor Well Replacement Request

ROC requests your approval to plug MW-3 and replace it with a newly installed MW-3R. MW-3 will be plugged and MW-3R installed by a New Mexico licensed driller. MW-3R will be drilled to a depth of 60 feet bgs, constructed of 4-inch Schedule 40 PVC casing, and screened in the Ogallala with 0.02 inch slot size from a depth of 30 to 55 feet bgs. MW-3R will be sampled at the time of installation and quarterly with the other wells at the site.

ROC was the service provider (agent) for the Hobbs SWD System and has no ownership of any portion of the pipeline, well or facility. The Hobbs SWD System was owned by a consortium of oil producers, System Parties, who provide operating capital on a percentage ownership/usage basis. The Hobbs SWD System has been abandoned.

Thank you for your consideration concerning this request. Should you have any questions regarding this request, please do not hesitate to contact Hack Conder (575 393-9174) or me.

ARCADIS

Mr. Edward Hansen
January 6, 2010

Very truly yours,

ARCADIS

Sharon E. Hall

Sharon E. Hall
Associate Vice President

attachments:

Hobbs N-6 Geochemical Data
Groundwater Monitoring Results Tables

cc: Hack Conder - ROC

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
Bio Sparge #1	40.90	65.70	16.1	25	12/6/2005	92.6	608	0.0323	0.0209	0.107	0.0825	54.4
Bio Sparge #1	43.33	65.70	14.5	45	3/1/2006	105	912	0.44	0.0357	0.168	0.1195	XXX
Bio Sparge #1	41.08	65.70	16	50	6/5/2006	171	858	0.544	0.0125	1.142	0.03479	45
Bio Sparge #1	39.90	65.70	16.8	70	9/12/2006	142	1010	1.15	0.0283	0.207	0.04044	33.2
Bio Sparge #1	39.92	63.75	15.5	50	11/15/2006	283	1450	1.06	0.0298	0.159	0.0772	28.6
Bio Sparge #1	40.47	63.74	15.1	50	3/14/2007	427	2040	1.19	0.0402	0.323	0.0958	24.2
Bio Sparge #1	42.59	63.74	13.7	50	6/12/2007	346	1580	0.569	0.00923	0.146	0.0891	24.7
Bio Sparge #1	42.45	63.74	13.8	45	9/18/2007	428	1804	1.88	0.026	0.394	0.202	13.2
Bio Sparge #1	44.18	63.74	12.7	45	12/6/2007	500	1997	1.31	0.001	0.255	0.11	66.1
Bio Sparge #1	XXX	63.74	XXX	XXX	3/4/2008	550	2070	<0.001	<0.001	<0.001	<0.003	105
Bio Sparge #1	43.29	63.74	13.3	45	5/29/2008	810	2590	0.025	0.124	0.318	0.197	99.2
Bio Sparge #1	43.40	63.74	13.2	45	9/5/2008	710	2270	0.736	0.004	0.238	0.117	58
Bio Sparge #1	43.10	63.74	13.4	45	12/15/2008	580	2070	0.347	0.004	0.188	0.09	76.8
Bio Sparge #1	43.21	63.74	13.3	XXX	3/16/2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Bio Sparge #1	47.34	63.74	10.7	XXX	6/9/2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Bio Sparge #1	48.20	63.74	10.1	XXX	9/15/2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Bio Sparge #1	48.36	63.74	10	XXX	11/20/2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX

All concentrations in milligrams per liter

XXX= Well contained emulsion and could not be purged/sampled

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
Bio Sparge #2	42.59	73.32	20	60	11/15/2006	81.8	522	0.0373	0.00314	0.0404	0.0994	107
Bio Sparge #2	41.4	71.59	19.6	60	3/14/2007	64.5	444	0.00274	0.000935	0.00225	0.00282	74.4
Bio Sparge #2	41.8	71.59	19.4	60	6/12/2007	83.8	546	0.00179	0.00119	0.002	0.0011	75.9
Bio Sparge #2	41.65	71.59	19.5	60	9/18/2007	108	588	<0.001	<0.001	<0.001	<0.003	111
Bio Sparge #2	41.5	71.59	19.6	60	12/6/2007	108	571	0.001	<0.001	0.002	<0.003	97.5
Bio Sparge #2	41.78	71.08	19	60	3/4/2008	100	553	0.002	<0.001	0.004	<0.003	113
Bio Sparge #2	42.06	71.08	18.9	60	5/29/2008	100	605	0.002	<0.001	0.002	<0.003	99.6
Bio Sparge #2	42.35	71.08	18.7	60	9/5/2008	88	511	0.008	<0.001	0.002	<0.003	101
Bio Sparge #2	42.46	71.08	18.6	60	12/15/2008	92	568	0.005	<0.001	0.001	<0.003	96.3
Bio Sparge #2	42.81	70.83	18.2	60	3/16/2009	88	497	<0.001	<0.001	<0.001	<0.003	85.9
Bio Sparge #2	42.92	70.83	18.1	60	6/9/2009	88	530	<0.001	<0.001	<0.001	<0.003	79.8
Bio Sparge #2	43.41	70.83	17.8	60	9/15/2009	92	533	<0.001	<0.001	<0.001	<0.003	83.7
Bio Sparge #2	43.61	70.83	17.7	69	11/19/2009	92	568	<0.001	<0.001	<0.001	<0.003	76.2

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
Bio Sparge #3	41.65	70.8	18.9	65	12/5/2007	576	1553	0.062	<0.001	0.069	0.021	73.7
Bio Sparge #3	41.53	70.8	19	65	3/4/2008	500	1410	0.037	0.001	0.115	0.032	68.3
Bio Sparge #3	41.82	70.8	18.8	65	5/29/2008	384	1074	0.006	<0.001	0.005	<0.003	79.4
Bio Sparge #3	42.09	70.8	18.7	65	9/5/2008	580	1480	0.01	<0.001	0.051	<0.003	106
Bio Sparge #3	42.19	70.8	18.6	65	12/15/2008	540	1440	0.007	0.001	0.014	<0.003	69.5
Bio Sparge #3	42.45	69.58	17.6	60	3/16/2009	480	1320	0.021	<0.001	0.024	<0.003	67
Bio Sparge #3	42.64	69.58	17.5	60	6/9/2009	420	1340	0.013	<0.001	0.023	<0.003	63.3
Bio Sparge #3	42.76	69.58	17.4	60	9/15/2009	352	1160	0.02	<0.001	<0.001	<0.003	63.8
Bio Sparge #3	42.89	69.58	17.3	60	11/19/2009	400	1160	0.038	<0.001	<0.001	<0.003	61

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
IWW	40.42	98.25	58.98	176.95	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
IWW	40.79	98.18	37.3	111.91	3/14/2003	239	XXX	0.004	<0.001	<0.001	<0.001	110
IWW	40.45	98.24	37.56	112.69	6/27/2003	40.7	465	<0.001	<0.001	<0.001	<0.001	102
IWW	40.43	98.2	37.78	113.34	9/22/2003	42.5	493	<0.001	<0.001	<0.001	<0.001	79.6
IWW	40.33	98.23	37.8	113.42	12/18/2003	52	485	<0.002	<0.002	<0.002	<0.006	38.6
IWW	41.75	98.23	82.96	248.9	3/15/2004	487	1130	0.00619	<0.001	<0.001	<0.001	130
IWW	40.12	98.22	37.93	113.81	5/27/2004	40.8	474	<0.001	<0.001	<0.001	<0.001	100
IWW	41.93	98.2	57.4	172.19	9/8/2004	78	583	<0.001	<0.001	<0.001	<0.001	89.6
IWW	39.71	98.2	59.66	178.98	11/23/2004	88.3	XXX	<0.001	<0.001	<0.001	<0.001	82.5
IWW	39.01	98.2	XXX	250	3/29/2005	419	1010	<0.001	<0.001	<0.001	<0.001	81
IWW	39.39	50	XXX	21	6/28/2005	85.3	510	<0.001	<0.001	<0.001	<0.001	73.5
IWW	39.6	98.2	59.8	185	12/6/2005	49	498	<0.001	<0.001	<0.001	<0.001	64.2
IWW	39.83	98.2	59.5	180	2/28/2006	41.9	532	<0.001	<0.001	<0.001	<0.001	60.3
IWW	40.2	98.2	59.2	180	6/5/2006	44.5	494	<0.001	<0.001	<0.001	<0.001	61.1
IWW	39.76	98.2	59.6	180	9/12/2006	38.8	528	<0.001	<0.001	<0.001	<0.001	80.7
IWW	39.61	98.20	59.8	180	11/14/2006	43.7	434	<0.001	<0.001	<0.001	<0.001	78.1
IWW	40.13	97.90	58.9	180	3/14/2007	35.2	538	<0.001	<0.001	<0.001	<0.001	66.7
IWW	40.5	97.90	58.5	180	6/11/2007	40.1	490	<0.001	<0.001	<0.011	<0.001	74.7
IWW	40.49	97.90	58.6	180	9/18/2007	48	606	0.006	<0.001	<0.001	<0.003	91.9
IWW	40.58	97.90	58.5	200	12/5/2007	44	505	<0.001	<0.001	<0.001	<0.003	87.5
IWW	40.93	97.90	58.1	200	3/4/2008	40	526	<0.001	<0.001	<0.001	<0.003	90.1
IWW	41.16	97.90	57.9	200	5/29/2008	44	556	<0.001	<0.001	<0.001	<0.003	82.6
IWW	41.38	97.90	57.7	200	9/5/2008	44	534	<0.001	<0.001	<0.001	<0.003	85
IWW	41.61	97.90	57.4	200	12/16/2008	48	574	<0.001	<0.001	<0.001	<0.003	74
IWW	41.76	97.90	57.3	200	3/16/2009	40	480	<0.001	<0.001	<0.001	<0.003	82.8
IWW	41.96	97.90	55.94	200	6/9/2009	40	505	<0.001	<0.001	<0.001	<0.003	73.2
IWW	42.06	97.90	57	200	9/15/2009	88	554	<0.001	<0.001	<0.001	<0.003	75.8
IWW	42.21	97.90	56.8	200	11/20/2009	44	447	<0.001	<0.001	<0.001	<0.003	68.5

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
2	40.2	52.18	7.78	23.36	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	40.34	52.11	7.65	22.75	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	40.61	52.2	7.53	22.6	3/14/2003	53.2	XXX	0.003	0.001	0.006	0.004	109
2	40.29	52.13	7.69	23.08	6/27/2003	40.8	499	<0.001	<0.001	<0.001	<0.001	112
2	40.26	52.14	7.75	23.27	9/22/2003	31.9	504	<0.001	<0.001	<0.001	<0.001	88.8
2	40.39	52.13	7.66	22.99	12/18/2003	44	458	<0.002	<0.002	<0.002	<0.006	37.7
2	41.53	52.13	6.92	20.76	3/15/2004	39	484	0.00458	<0.001	0.00236	0.001929	108
2	40.3	52.12	7.71	23.15	5/27/2004	31.9	481	0.000448	<0.001	0.000482	<0.001	89.4
2	41.69	52.24	6.86	20.57	9/8/2004	70.9	577	0.0289	0.00219	0.0126	0.00837	91.4
2	39.4	52.24	8.35	25.04	11/22/2004	58.1	XXX	0.0238	0.00269	0.0239	0.01051	90.2
2	38.73	52.24	XXX	32	3/29/2005	39.1	444	0.00169	<0.001	0.00151	0.00101	93.6
2	39.12	55	XXX	31.4	6/28/2005	42.4	515	<0.001	<0.001	<0.001	<0.001	100
2	39.21	55	XXX	31	9/6/2005	49.5	517	<0.001	<0.001	<0.001	<0.001	69.5
2	39.3	52.24	8.4	30	12/6/2005	58	380	0.00325	<0.001	<0.001	<0.001	107
2	39.56	52.24	8.2	25	2/28/2006	29.5	538	<0.001	<0.001	<0.001	<0.001	56.3
2	39.97	52.24	8	25	6/5/2006	38.5	552	<0.001	<0.001	<0.001	<0.001	76.6
2	39.44	52.24	8.3	25	9/11/2006	31.1	428	<0.001	<0.001	<0.001	<0.001	92
2	39.47	52.24	8.3	30	11/14/2006	33.6	442	j[0.000709]	<0.001	j[0.00609]	<0.001	91.7
2	39.89	52.24	8	30	3/13/2007	34.5	422	0.00134	<0.001	<0.001	<0.001	81.5
2	40.26	52.24	7.8	30	6/12/2007	33.3	444	j (0.000649)	0.0016	j (0.000792)	ND	77.6
2	40.22	52.24	7.8	25	9/18/2007	36	512	0.056	0.012	0.054	0.037	100
2	40.35	52.24	7.7	25	12/6/2007	40	454	<0.001	<0.001	<0.001	<0.003	92.7
2	40.71	52.24	7.5	25	3/3/2008	36	442	<0.001	<0.001	<0.001	<0.003	98.4
2	40.29	52.24	7.8	25	5/28/2008	32	523	<0.001	<0.001	<0.001	<0.003	83.2
2	40.56	52.24	7.6	25	9/8/2008	52	455	<0.001	<0.001	<0.001	<0.003	131
2	41.43	52.24	7	25	12/15/2008	40	493	0.001	<0.001	0.002	<0.003	98
2	41.61	52.55	7.1	25	3/16/2009	40	492	0.005	<0.001	0.004	<0.003	91.9
2	41.78	52.55	7	25	6/9/2009	36	516	0.003	0.001	<0.001	<0.003	81.5
2	41.87	52.55	6.9	25	9/14/2009	40	500	0.001	0.004	0.007	0.023	85
2	41.96	52.55	6.9	25	11/19/2009	40	425	<0.001	<0.001	<0.001	<0.003	75.8

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
3	40.57	156.05	7.65	225.18	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	40.76	156.02	74.92	224.76	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	10.95	156.02	74.79	224.38	3/14/2003	5850	XXX	0.06	0.001	0.001	0.003	888
3	40.69	156.04	74.97	224.93	6/27/2003	5320	10700	0.013	<0.001	<0.001	0.001	1120
3	40.68	156.06	75.34	226.02	9/22/2003	5320	10900	0.008	<0.001	<0.001	0.001	1050
3	40.82	156.03	75.23	225.69	12/18/2003	5398	10512	0.018	<0.002	<0.002	<0.006	399
3	41.82	156.03	74.57	223.73	3/15/2004	5140	8990	0.0354	<0.001	0.000821	0.001646	793
3	40.83	156.05	75.23	225.71	5/27/2004	5230	8060	0.0131	0.000238	0.000248	0.000975	664
3	41.93	156.15	74.27	222.73	9/8/2004	5140	8600	0.0152	<0.001	0.00184	0.003572	762
3	39.64	156.15	75.73	227.19	11/23/2004	3890	XXX	0.0281	0.000202	0.000775	0.004491	683
3	38.73	156.15	XXX	235	3/29/2005	7300	14700	0.0805	<0.001	0.00291	0.00422	1030
3	39.35	156.15	XXX	39.35	6/28/2005	7280	8930	0.00619	<0.001	<0.001	<0.001	2760
3	39.43	155.78	XXX	40	9/6/2005	4660	7070	0.00566	<0.001	0.00219	0.00455	874
3	39.52	156.15	75.8	230	12/6/2005	7130	12100	0.0529	0.000572	0.00312	<0.001	848
3	39.82	156.15	75.6	230	2/28/2006	7270	15300	0.0315	0.00264	0.00535	<0.001	829
3	40.19	156.15	75.4	230	6/5/2006	7660	13600	0.0171	jj[0.000488]	0.00258	<0.001	914
3	39.8	156.15	75.6	225	9/12/2006	7390	13100	0.0107	jj[0.000587]	<0.001	<0.001	939
3	39.67	156.15	75.7	230	11/14/2006	6810	12600	0.00697	jj[0.000417]	jj[0.000413]	<0.001	901
3	42.15	156.68	9.4	30	3/14/2007	7810	13500	0.00177	jj[0.000597]	jj[0.000405]	<0.001	916
3	40.48	156.15	75.2	230	6/11/2007	9390	16100	0.0139	0.00168	0.00485	0.010056	1100
3	40.43	156.15	75.2	230	9/18/2007	7298	14814	0.028	0.001	<0.001	0.009	1010
3	40.5	156.15	75.2	320	12/5/2007	2700	5870	0.052	0.001	0.001	0.003	680
3	40.76	156.15	75	250	3/4/2008	7600	14100	0.014	<0.001	<0.001	<0.003	1110
3	40.97	156.15	75	250	5/29/2008	4100	8170	0.007	0.004	0.003	<0.003	592
3	41.26	156.15	75	250	9/5/2008	7600	15200	0.011	<0.001	<0.001	<0.003	978
3	41.42	156.15	75	250	12/15/2008	4250	8710	0.006	<0.001	<0.001	<0.003	600
3	41.6	156.15	74	250	3/16/2009	3750	7570	0.004	<0.001	<0.001	<0.003	527
3	41.79	156.15	74	250	6/9/2009	3750	7600	0.001	<0.001	<0.001	<0.003	522
3	41.91	156.15	74	250	9/15/2009	3700	7480	0.002	<0.001	<0.001	<0.003	492
3	42.05	156.15	74	250	11/20/2009	3250	6560	<0.001	<0.001	<0.001	<0.003	434

All concentrations in milligrams per liter

ROC Hobbs N-6 Leak

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
4	42.42	56.65	9.24	27.74	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
4	42.6	56.66	9.14	27.42	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
4	42.84	56.63	8.96	26.89	3/14/2003	84.2	XXX	<0.001	<0.001	<0.001	<0.001	123
4	42.58	56.65	9.14	27.43	6/27/2003	62	520	<0.001	<0.001	<0.001	0.002	138
4	42.66	56.7	9.16	27.5	9/22/2003	65	569	<0.001	<0.001	<0.001	<0.001	123
4	42.69	56.67	9.12	27.38	12/18/2003	64	547	<0.002	<0.002	<0.002	<0.006	44.8
4	43.77	56.67	8.42	25.27	3/15/2004	124	560	0.00103	<0.001	<0.001	<0.001	127
4	42.65	56.65	9.14	27.42	5/27/2004	49.6	484	<0.001	<0.001	<0.001	<0.001	107
4	43.92	56.71	8.31	24.94	9/8/2004	49.6	492	0.00142	<0.001	<0.001	<0.001	114
4	41.26	56.71	10.04	30.13	11/23/2004	55.2	XXX	<0.001	<0.001	<0.001	<0.001	99.2
4	40.85	56.71	XXX	32	3/29/2005	47	424	<0.001	<0.001	<0.001	<0.001	101
4	41.32	61.65	XXX	40	6/28/2005	44.8	519	<0.001	<0.001	<0.001	<0.001	102
4	41.42	61.65	XXX	40	9/6/2005	69.7	523	<0.001	<0.001	<0.001	<0.001	92.5
4	41.58	56.71	9.8	30	12/6/2005	40.4	370	<0.001	<0.001	<0.001	<0.001	82.2
4	41.84	56.71	9.7	30	2/28/2006	39.7	556	<0.001	<0.001	<0.001	<0.001	71.7
4	42.27	56.71	9.4	30	6/5/2006	59.2	476	<0.001	<0.001	<0.001	<0.001	76.2
4	41.66	56.71	9.8	30	9/11/2006	65.7	588	<0.001	<0.001	<0.001	<0.001	87
4	41.63	56.71	9.8	30	11/14/2006	93.4	498	<0.001	<0.001	<0.001	<0.001	90.8
4	42.15	56.68	9.4	30	3/13/2007	95.3	528	<0.001	<0.001	<0.001	<0.001	82.7
4	42.59	56.68	9.2	30	6/11/2007	69.9	516	<0.001	<0.001	<0.001	<0.001	77.6
4	42.53	56.68	9.2	30	9/18/2007	84	604	<0.001	<0.001	<0.001	<0.003	93.2
4	42.65	56.68	9.1	30	12/6/2007	120	588	<0.001	<0.001	<0.001	<0.003	99.7
4	42.98	56.68	8.9	30	3/3/2008	128	609	<0.001	<0.001	<0.001	<0.003	115
4	43.19	56.68	8.8	30	5/28/2008	84	639	<0.001	<0.001	<0.001	<0.003	98.7
4	43.47	56.68	8.6	30	9/8/2008	192	768	<0.001	<0.001	<0.001	<0.003	130
4	43.67	56.68	8.5	30	12/15/2008	152	683	<0.001	<0.001	<0.001	<0.003	90.6
4	43.84	56.72	8.4	30	3/17/2009	152	614	<0.001	<0.001	<0.001	<0.003	89.8
4	44.21	56.72	8.1	30	6/10/2009	128	646	<0.001	<0.001	<0.001	<0.003	71.1
4	44.33	56.72	8.1	30	9/14/2009	136	594	<0.001	<0.001	<0.001	<0.003	72.9
4	44.28	56.72	8.1	30	11/19/2009	132	614	<0.001	<0.001	<0.001	<0.003	68.1

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
5	38.66	51.29	8.2	24.62	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	38.82	51.18	8.01	24.04	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	39.04	51.18	7.89	23.67	3/14/2003	39	XXX	<0.001	<0.001	<0.001	<0.001	105
5	38.81	51.21	8.06	24.18	6/27/2003	35.4	513	<0.001	<0.001	<0.001	0.002	120
5	51.2	38.77	8.11	24.35	9/22/2003	33.7	508	<0.001	<0.001	<0.001	<0.001	88.2
5	38.91	51.19	8.01	24.05	12/18/2003	56	474	<0.002	<0.002	<0.002	<0.006	39.4
5	40	51.19	7.3	21.92	3/15/2004	762	1620	0.0107	<0.001	0.000543	0.000876	216
5	38.9	51.19	8.02	24.07	5/27/2004	33.7	473	<0.001	<0.001	<0.001	<0.001	94
5	40.18	51.31	7.23	21.7	9/8/2004	35.4	517	<0.001	<0.001	<0.001	<0.001	79.4
5	38.12	51.31	8.57	25.72	11/23/2004	57.3	XXX	<0.001	<0.001	<0.001	<0.001	85.4
5	37.3	51.31	XXX	32	3/29/2005	35	449	<0.001	<0.001	<0.001	<0.001	83.1
5	XXX	XXX	XXX	XXX	6/28/2005	38.1	504	<0.001	<0.001	<0.001	<0.001	95.8
5	37.74	51.07	XXX	26.11	9/6/2005	66.8	488	<0.001	<0.001	<0.001	<0.001	103
5	37.8	51.31	8.8	30	12/6/2005	29.6	442	0.00044	<0.001	<0.001	<0.001	67
5	38.11	51.31	8.6	30	2/28/2006	27.9	504	<0.001	<0.001	<0.001	<0.001	62.8
5	38.48	51.31	8.3	30	6/5/2006	37.8	484	<0.001	<0.001	<0.001	<0.001	69
5	38.08	51.31	8.6	30	9/11/2006	39	596	<0.001	<0.001	<0.001	<0.001	81.2
5	37.94	51.31	8.7	30	11/14/2006	30.2	430	<0.001	<0.001	<0.001	<0.001	85
5	38.33	51.30	8.4	30	3/13/2007	36.2	420	<0.001	<0.001	<0.001	<0.001	78
5	38.82	51.30	8.1	30	6/11/2007	35.2	454	<0.001	<0.001	<0.001	<0.001	71.8
5	38.78	51.30	8.1	30	9/18/2007	40	574	<0.001	<0.001	<0.001	<0.003	89.6
5	38.85	51.30	8.1	30	12/6/2007	32	484	<0.001	<0.001	<0.001	<0.003	91.4
5	39.15	51.30	7.9	30	3/4/2008	40	472	<0.001	<0.001	<0.001	<0.003	93.6
5	39.41	51.30	7.7	30	5/28/2008	40	517	<0.001	<0.001	<0.001	<0.003	90
5	39.66	51.30	7.6	30	9/8/2008	60	560	<0.001	<0.001	<0.001	<0.003	157
5	39.86	51.30	7.4	30	12/15/2008	40	538	<0.001	<0.001	<0.001	<0.003	92.8
5	39.98	51.30	7.4	30	3/16/2009	40	508	<0.001	<0.001	<0.001	<0.003	85
5	40.34	51.30	7.1	30	6/10/2009	136	607	<0.001	<0.001	<0.001	<0.003	78.3
5	40.32	51.30	7.1	30	9/14/2009	40	504	<0.001	<0.001	<0.001	<0.003	75.9
5	40.43	51.30	7.1	30	11/19/2009	40	455	<0.001	<0.001	<0.001	<0.003	65

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
6	40.7	52.98	1.96	5.89	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6	40.87	53.02	1.94	5.83	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6	41.1	53	1.9	5.71	3/14/2003	42.5	XXX	<0.001	<0.001	<0.001	<0.001	96.6
6	40.81	53.03	1.95	5.86	6/27/2003	35.4	743	<0.001	<0.001	<0.001	<0.001	97.5
6	40.79	52.97	1.98	5.95	9/22/2003	39	484	<0.001	<0.001	<0.001	<0.001	88.4
6	40.93	53	1.96	5.9	12/18/2003	44	452	<0.002	<0.002	<0.002	<0.006	36.8
6	42.02	53	1.78	5.36	3/15/2004	222	692	0.0026	<0.001	<0.001	<0.001	94.2
6	40.91	53.01	1.97	5.91	5/27/2004	31.9	443	<0.001	<0.001	<0.001	<0.001	86.6
6	42.16	53.1	1.75	5.25	9/8/2004	53.2	488	<0.001	<0.001	<0.001	<0.001	85
6	39.62	53.1	2.16	6.47	11/23/2004	76.1	XXX	<0.001	<0.001	<0.001	<0.001	84
6	39.14	53.1	XXX	8	3/29/2005	97.8	473	<0.001	<0.001	<0.001	<0.001	81.1
6	39.6	54.49	XXX	7.6	6/28/2005	122	541	<0.001	<0.001	0.000812	0.002845	103
6	39.61	61.65	XXX	10.78	9/6/2005	40.4	442	<0.001	<0.001	<0.001	<0.001	23.4
6	39.75	53.1	2.1	7	12/6/2005	52.7	458	<0.001	<0.001	<0.001	<0.001	58.2
6	40.06	53.1	2.1	7	2/28/2006	59.2	552	<0.001	<0.001	<0.001	<0.001	67.6
6	40.53	53.1	2	10	6/5/2006	67.2	512	<0.001	<0.001	<0.001	<0.001	72.2
6	40.05	53.1	2.1	10	9/11/2006	67.6	552	<0.001	<0.001	<0.001	<0.001	101
6	39.88	53.1	2.1	8	11/14/2006	53.9	464	<0.001	<0.001	<0.001	<0.001	95.4
6	40.34	53.1	2	8	3/13/2007	57.7	466	<0.001	<0.001	<0.001	<0.001	90.3
6	40.78	53.1	2	8	6/11/2007	61.8	528	<0.001	<0.001	<0.001	<0.001	85.4
6	40.64	53.1	2	8	9/18/2007	72	566	<0.001	<0.001	<0.001	<0.002	105
6	40.85	53.10	2	8	12/6/2007	76	525	<0.001	<0.001	<0.001	<0.003	111
6	41.22	53.10	1.9	8	3/3/2008	76	536	<0.001	<0.001	<0.001	<0.003	110
6	41.47	53.10	1.9	8	5/28/2008	72	559	<0.001	<0.001	<0.001	<0.003	87.3
6	41.73	53.10	1.8	8	9/8/2008	124	668	<0.001	<0.001	<0.001	<0.003	128
6	41.91	53.10	1.8	8	12/15/2008	84	568	<0.001	<0.001	<0.001	<0.003	105
6	42.06	53.10	1.8	8	3/16/2009	76	550	<0.001	<0.001	<0.001	<0.003	98
6	42.26	53.10	1.7	8	6/9/2009	84	566	<0.001	<0.001	<0.001	<0.003	94.1
6	42.36	53.10	1.7	8	9/14/2009	72	546	<0.001	<0.001	<0.001	<0.003	81.5
6	42.49	53.10	1.7	8	11/19/2009	76	535	<0.001	<0.001	<0.001	<0.003	178

All concentrations in milligrams per liter

ROC Hobbs N-6

MW	Depth to Water feet	Total Depth feet	Well Volume gallons	Volume Purged gallons	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
7	40.74	47.2	1.03	3.1	8/14/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	40.94	47.17	0.99	2.98	12/6/2002	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	41.22	47.18	0.95	2.86	3/14/2003	266	XXX	0.001	<0.001	<0.001	<0.001	XXX
7	40.88	47.15	1	3	6/27/2003	222	802	<0.001	<0.001	<0.001	<0.001	122
7	40.86	47.11	1.01	3.05	9/22/2003	222	861	<0.001	<0.001	<0.001	<0.001	133
7	41.03	47.18	1	3	12/18/2003	208	827	<0.002	<0.002	<0.002	<0.006	110
7	42.17	47.18	0.81	2.44	3/15/2004	1080	2220	0.0131	<0.001	<0.001	<0.001	44.4
7	41	47.15	1	3	5/27/2004	213	986	<0.001	<0.001	<0.001	<0.001	220
7	42.34	47.25	0.79	2.36	9/8/2004	230	731	<0.001	<0.001	<0.001	<0.001	105
7	39.82	47.25	1.19	178.98	11/23/2004	188	XXX	<0.001	<0.001	<0.001	<0.001	111
7	39.33	47.25	XXX	4	3/29/2005	234	791	<0.001	<0.001	<0.001	<0.001	96.1
7	39.6	47	XXX	3.7	6/28/2005	216	783	<0.001	<0.001	0.00114	0.0038	96.9
7	39.86	47	XXX	3.5	9/6/2005	187	802	<0.001	<0.001	<0.001	<0.001	76.9
7	39.93	47.25	1.2	4	12/6/2005	201	670	<0.001	<0.001	<0.001	<0.0001	85.2
7	40.27	47.25	1.1	4	2/28/2006	202	876	<0.001	<0.001	<0.001	<0.001	72.4
7	40.63	47.25	1.1	10	6/5/2006	225	794	<0.001	<0.001	<0.001	<0.001	74
7	40.17	47.25	1.1	10	9/11/2006	202	710	<0.001	<0.001	<0.001	<0.001	77.9
7	40.01	47.25	1.2	7	11/14/2006	223	764	<0.001	<0.001	<0.001	<0.001	86.5
7	40.53	47.31	1.1	5	3/13/2007	206	724	<0.001	<0.001	<0.001	<0.001	79.9
7	40.92	47.31	1.0	5	6/11/2007	228	846	<0.001	<0.001	<0.001	<0.001	75.9
7	40.92	47.31	1.0	5	9/18/2007	252	868	<0.001	<0.001	<0.001	<0.003	97.7
7	41.03	47.31	1.0	5	12/6/2007	256	882	<0.001	<0.001	<0.001	<0.003	105
7	41.3	47.31	1.0	5	3/3/2008	260	876	<0.001	<0.001	<0.001	<0.003	111
7	41.56	47.31	0.9	5	5/28/2008	268	962	<0.001	<0.001	<0.001	<0.003	100
7	41.85	47.31	0.9	5	9/8/2008	260	894	<0.001	<0.001	<0.001	<0.003	100
7	41.99	47.31	0.9	5	12/15/2008	260	921	<0.001	<0.001	<0.001	<0.003	96.3
7	42.18	47.35	0.8	5	3/17/2009	256	886	<0.001	<0.001	<0.001	<0.003	87.2
7	42.35	47.35	0.8	5	6/10/2009	260	885	<0.001	<0.001	<0.001	<0.003	81.1
7	42.49	47.35	0.8	5	9/14/2009	260	908	<0.001	<0.001	<0.001	<0.003	73.7
7	42.61	47.35	0.8	5	11/19/2009	252	842	<0.001	<0.001	<0.001	<0.003	70.1

All concentrations in milligrams per liter

HOBBS N-6 GEOCHEMICAL DATA (milligrams per liter)

11/2009

Monitor Well	Chlorides	TDS	Sulfate
IWW	44	447	68.5
MW-2	40	425	75.8
MW-3	3250	6560	434
MW-4	132	614	68.1
MW-5	40	455	65
MW-6	76	535	178
MW-7	252	842	70.1