

AP - 59

ANNUAL MONITORING REPORT

YEAR(S):

2008

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 | ▲ Fax: 505.266-0745

March 9, 2009

2009 MAR 13 PM 2 08

Brad Jones
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: 2008 Annual Ground Water Monitoring Report
Vacuum F-35 SWD, Sec 35, T17S, R35E, Unit "F", and
Vacuum G-35 SWD, Sec 35, T17S, R35E, Unit "G"
NMOCD Case #: AP-59

Dear Mr. Jones,

R.T. Hicks Consultants, Ltd is pleased to submit this 2008 Annual Ground Water Monitoring Report for the F-35 & G-35 SWD site located in the Vacuum Salt Water Disposal System (SWD). This report consists of the following sections:

1. A table summarizing all laboratory results and depth to ground water at the site, including this past year.
2. Graphs showing chemical concentration over time for chloride and TDS.

An Abatement Plan Amendment Proposal was submitted to NMOCD on May 23, 2008. The AP Amendment Proposal is pending NMOCD approval and quarterly ground water monitoring continues at the site.

ROC is the service provider (agent) for the Vacuum Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Vacuum SWD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

Thank you for your consideration of this annual summary information. If you have any questions, please contact us at 505-266-5004, or Hack Conder at ROC, 575-393-9174.

Sincerely,
R.T. Hicks Consultants



Katie Lee
Project Scientist

Copy: Rice Operating Company
Edward Hansen, NMOCD Santa Fe

Vacuum F-35 SWD

Table 1: chemistry over time

<i>Well Name</i>	<i>Date</i>	<i>DTW (ft)</i>	<i>Chloride (mg/L)</i>	<i>Sulfate (mg/L)</i>	<i>TDS (mg/L)</i>	<i>Benzene (mg/L)</i>	<i>Toluene (mg/L)</i>	<i>EthylBenzene (mg/L)</i>	<i>Total Xylenes (mg/L)</i>
MMV-1	1/10/2002	58.00	5200	5	9425	0.050	0.053	0.050	0.0900
MMV-1	5/15/2002	XXX	3720	3.2	7050	0.744	0.207	0.510	0.3090
MMV-1	8/19/2002	XXX	3630	10.7	6040	0.705	0.172	0.112	0.0760
MMV-1	11/11/2002	XXX	3720	2.8	6020	1.210	0.343	0.835	0.4310
MMV-1	2/28/2003	XXX	2200	26.2	4040	0.909	0.840	0.321	0.1240
MMV-1	6/5/2003	XXX	2300	20.3	4180	0.632	0.134	0.061	0.0670
MMV-1	8/21/2003	XXX	2060	4.9	4000	0.617	0.360	0.202	0.1920
MMV-1	11/19/2003	XXX	2000	5.1	3760	0.797	0.301	0.264	0.2480
MMV-1	2/18/2004	58.20	1819	0.19	3932	0.349	0.038	0.121	0.0270
MMV-1	5/27/2004	58.50	1759	8.7	4008	0.726	0.176	0.268	0.2150
MMV-1	9/7/2004	58.20	1040	19.9	3000	0.429	0.221	0.143	0.2247
MMV-1	11/24/2004	57.81	1260	51	2740	0.0489	0.313	0.209	0.2507
MMV-1	3/21/2005	57.18	1220	110	2210	2.200	1.610	0.848	1.2830
MMV-1	5/11/2005	XXX	1490	24.6	2970	686	451	374	176.2000
MMV-1	8/15/2005	58.40	1340	69.5	2890	0.819	0.393	0.666	0.5840
MMV-1	10/25/2005	57.45	1080	72.7	2540	0.779	0.243	0.394	0.3062
MMV-1	1/23/2006	57.38	886	88.2	2080	0.447	0.222	0.28	0.3006
MMV-1	4/25/2006	57.58	1420	62.5	3040	0.227	0.0956	0.174	0.1614
MMV-1	8/3/2006	57.69	1810	17	2680	0.349	0.108	0.213	0.201
MMV-1	10/24/2006	XXX	1460	45.2	3190	0.462	0.489	0.230	0.745
MMV-1	1/9/2007	XXX	1510	67.2	2980	0.486	0.577	0.185	0.333
MMV-1	5/23/2007	XXX	1500	44.4	2850	0.557	0.387	0.323	0.681
MMV-1	9/19/2007	XXX	1380	23.2	2902	0.902	0.706	0.562	1.140
MMV-1	11/19/2007	XXX	1260	44.2	2642	0.719	0.203	0.429	0.665

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Vacuum F-35 SWD

Table 1: chemistry over time

Well Name	Date	DTW (ft)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	EthylBenzene (mg/L)	Total Xylenes (mg/L)
MW-1	2/15/2008	XXX	1240	49.7	2650	0.305	0.099	0.218	0.563
MW-1	6/3/2008	58.38	1460	25.4	2840	<0.002	<0.002	<0.002	<0.006
MW-1	7/28/2008	XXX	1120	35	2510	0.051	0.023	0.066	0.172
MW-1	10/23/2008	59.12	1150	27	2580	0.193	0.013	0.232	0.526
MW-2	6/6/2006	52.57	97.6	63.3	724	<0.001	<0.001	<0.001	<0.001
MW-2	8/3/2006	52.66	96	66	723	<0.001	<0.001	<0.001	<0.001
MW-2	10/24/2006	52.77	89.1	67.2	598	<0.001	<0.001	<0.001	<0.001
MW-2	1/9/2007	52.91	101	69.4	590	<0.001	<0.001	<0.001	<0.001
MW-2	5/23/2007	53.12	88.3	61	512	<0.001	<0.001	<0.001	<0.001
MW-2	9/19/2007	53.33	100	71.7	587	<0.002	<0.002	<0.002	<0.006
MW-2	11/18/2007	53.41	96	85.7	571	<0.002	<0.002	<0.002	<0.006
MW-2	2/4/2008	53.49	100	60.6	652	<0.002	<0.002	<0.002	<0.006
MW-2	4/28/2008	53.50	96	79.8	604	<0.002	<0.002	<0.002	<0.006
MW-2	7/28/2008	53.68	96	62	586	<0.001	<0.001	<0.001	<0.003
MW-2	10/23/2008	53.84	100	77.7	710	<0.001	<0.001	<0.001	<0.003

Vacuum F-35 SWD

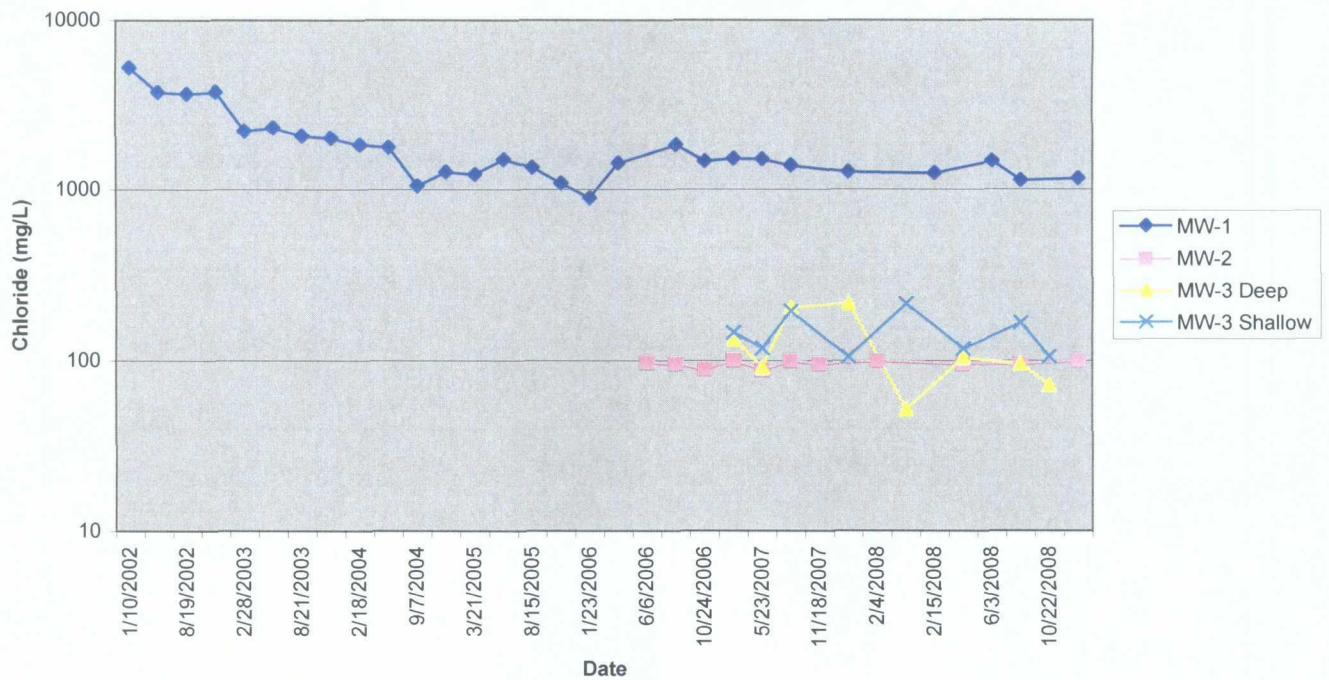
Table 1: chemistry over time

<i>Well Name</i>	<i>Date</i>	<i>DTW (ft)</i>	<i>Chloride (mg/L)</i>	<i>Sulfate (mg/L)</i>	<i>TDS (mg/L)</i>	<i>Benzene (mg/L)</i>	<i>Toluene (mg/L)</i>	<i>EthylBenzene (mg/L)</i>	<i>Total Xylenes (mg/L)</i>
MMW-3 Deep	1/9/2007	52.35	133	86.9	500	<0.001	0.0103	<0.001	<0.001
MMW-3 Deep	5/23/2007	52.50	91.9	47.5	452	<0.001	0.00241	<0.001	<0.001
MMW-3 Deep	9/19/2007	52.82	204	72.8	772	<0.002	<0.002	<0.002	<0.006
MMW-3 Deep	11/19/2007	52.82	216	64.6	735	<0.002	<0.002	<0.002	<0.006
MMW-3 Deep	2/5/2008	52.92	52	59.8	393	<0.002	<0.002	<0.002	<0.006
MMW-3 Deep	4/28/2008	52.93	104	65.2	485	<0.002	<0.002	<0.002	<0.006
MMW-3 Deep	7/28/2008	53.12	96	52	510	<0.001	<0.001	<0.001	<0.003
MMW-3 Deep	10/22/2008	53.31	72	160	665	<0.001	<0.001	<0.001	<0.003
MMW-3 Shallow	1/9/2007	52.35	144	99	512	<0.001	0.0150	<0.001	<0.001
MMW-3 Shallow	5/23/2007	52.50	117	56.9	494	<0.001	0.00130	<0.001	<0.001
MMW-3 Shallow	9/19/2007	52.82	192	73.5	789	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	11/19/2007	52.82	104	66.3	467	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	2/5/2008	52.92	212	60.6	821	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	4/28/2008	52.93	116	63.1	502	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	7/28/2008	53.12	164	58	650	<0.001	<0.001	<0.001	<0.003
MMW-3 Shallow	10/22/2008	53.31	104	74.3	690	<0.001	<0.001	<0.001	<0.003

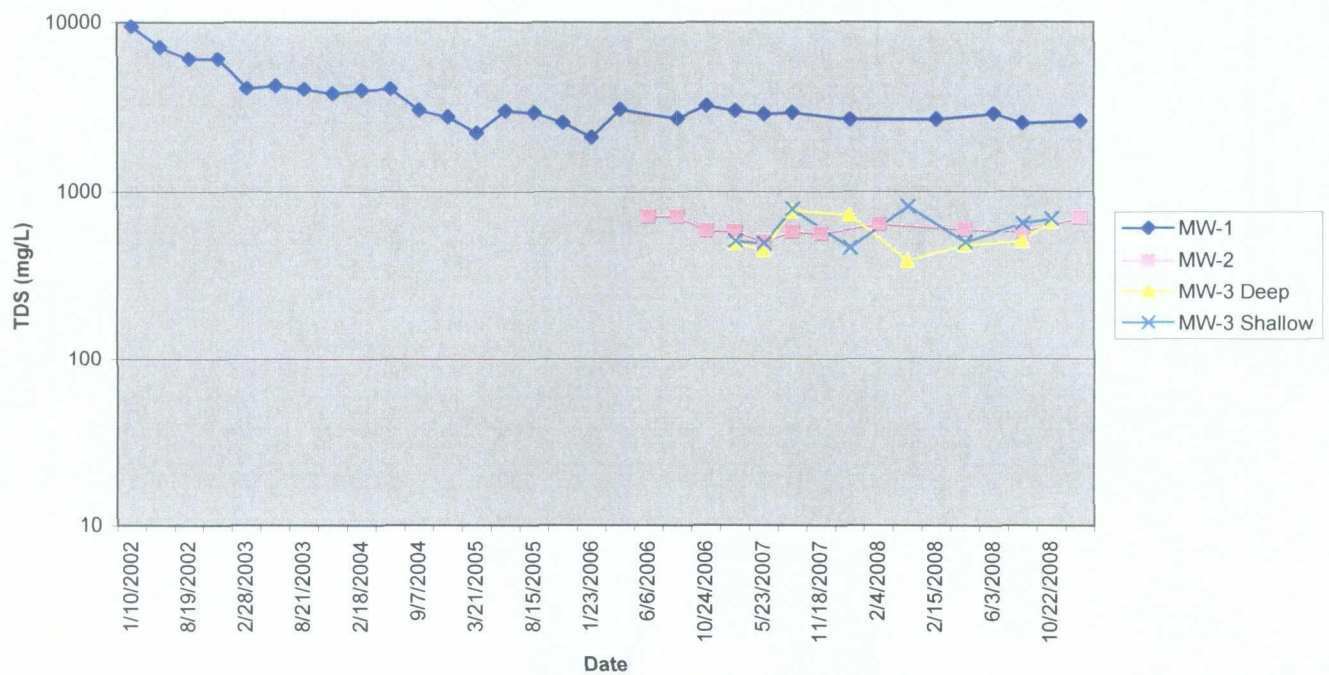
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**F-35 SWD
Chloride Over Time**



**F-35 SWD
TDS Over Time**



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505-266-5004

Ground Water Chemistry

Rice Operating Company
2008 Annual Reports

Vacuum F-35 SWD

3/9/2009

Vacuum G-35 SWD

Table 1: chemistry over time

<i>Well Name</i>	<i>Date</i>	<i>DTW (ft)</i>	<i>Chloride (mg/L)</i>	<i>Sulfate (mg/L)</i>	<i>TDS (mg/L)</i>	<i>Benzene (mg/L)</i>	<i>Toluene (mg/L)</i>	<i>EthylBenzene (mg/L)</i>	<i>Total Xylenes (mg/L)</i>
MMW-1	1/10/2002	53.60	568	23	1284	0.011	0.0220	0.034	0.0550
MMW-1	5/15/2002	52.89	1950	2.1	3260	0.414	0.0570	0.131	0.0650
MMW-1	8/19/2002	53.02	1950	7	3850	0.705	0.5980	0.209	0.2530
MMW-1	11/11/2002	53.08	3630	5.8	6740	0.921	0.0780	0.154	0.1310
MMW-1	2/28/2003	53.06	2730	24.6	4770	0.713	0.0100	0.018	0.0270
MMW-1	5/22/2003	53.20	3860	5.3	7320	0.583	0.0020	0.120	0.0270
MMW-1	8/21/2003	53.21	5010	3.5	8850	0.689	0.0040	0.307	0.0320
MMW-1	11/19/2003	53.29	1930	20.9	3590	0.012	0.0020	0.090	0.0030
MMW-1	2/18/2004	53.30	2579	1.49	5000	0.059	<0.002	0.350	0.0070
MMW-1	5/27/2004	52.90	1899	2.15	4188	1.170	0.3080	0.357	0.3190
MMW-1	9/7/2004	52.60	4700	17.7	8270	1.110	0.0525	0.346	0.1382
MMW-1	11/24/2004	52.91	5200	799	10400	0.881	0.0226	0.133	0.0717
MMW-1	3/21/2005	52.40	5750	136	9190	2.760	0.2470	0.399	0.2862
MMW-1	5/11/2005	XXX	5890	9.75	10700	2490	466	672	693
MMW-1	8/15/2005	52.35	4430	126	6960	1.070	0.2260	0.396	0.2417
MMW-1	10/25/2005	52.51	2360	166	4420	0.799	0.0607	0.146	0.0839
MMW-1	1/23/2006	52.46	1960	80.5	3540	0.141	J[0.00537]	0.078	0.0229
MMW-1	4/25/2006	52.70	1540	67.4	3280	0.749	0.0143	0.093	0.0282
MMW-1	8/3/2006	52.88	110	24.9	2175	0.130	<0.001	0.0303	.0045
MMW-1	10/25/2006	52.88	1350	45.2	2800	0.394	0.0204	0.0774	0.0438
MMW-1	1/9/2007	53.08	873	34.6	1950	0.188	<0.001	0.0883	0.00764
MMW-1	5/24/2007	53.20	873	41.2	1820	0.143	0.00735	0.0664	0.0227
MMW-1	9/20/2007	53.37	800	22.2	1738	0.189	0.004	0.082	0.029
MMW-1	11/20/2007	53.39	320	35.3	969	0.003	<0.002	<0.002	<0.006

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Vacuum G-35 SWD

Table 1: chemistry over time

<i>Well Name</i>	<i>Date</i>	<i>DTW (ft)</i>	<i>Chloride (mg/L)</i>	<i>Sulfate (mg/L)</i>	<i>TDS (mg/L)</i>	<i>Benzene (mg/L)</i>	<i>Toluene (mg/L)</i>	<i>EthylBenzene (mg/L)</i>	<i>Total Xylenes (mg/L)</i>
MW-1	2/4/2008	53.68	540	23.1	1380	0.159	0.061	0.087	0.058
MW-1	4/29/2008	53.74	440	22.4	1150	0.109	0.020	0.074	0.038
MW-2	6/6/2006	52.08	17.4	24.7	286	<0.001	[10.000339]	[10.000385]	0.0044
MW-2	8/3/2006	52.18	19.3	24.9	309	<0.001	<0.001	<0.001	<0.001
MW-2	10/25/2006	52.35	13.4	22.8	264	<0.001	<0.001	<0.001	<0.001
MW-2	1/9/2007	52.56	13.7	21.7	322	<0.001	[10.000540]	<0.001	<0.001
MW-2	5/24/2007	52.66	17.2	20.1	254	<0.001	<0.001	<0.001	<0.001
MW-2	9/20/2007	52.84	16	25.6	262	<0.002	<0.002	<0.002	<0.006
MW-2	11/20/2007	52.86	16	25.0	283	<0.002	<0.002	<0.002	<0.006
MW-2	2/4/2008	52.95	16	23	296	<0.002	<0.002	<0.002	<0.006
MW-2	4/29/2008	53.01	16	23.8	283	<0.002	<0.002	<0.002	<0.006
MW-2	7/29/2008	53.15	16	24	312	<0.001	<0.001	<0.001	<0.003
MW-2	10/23/2008	53.36	16	24.6	386	<0.001	<0.001	<0.001	<0.003
MW-3 Deep	1/9/2007	52.77	313	46.5	830	<0.001	0.0136	<0.001	<0.001
MW-3 Deep	5/24/2007	52.90	648	34.7	1090	<0.001	[10.000320]	<0.001	<0.001
MW-3 Deep	9/20/2007	53.11	570	34.0	1442	<0.002	<0.002	<0.002	<0.006
MW-3 Deep	11/20/2007	53.15	570	42.5	1312	<0.002	<0.002	<0.002	<0.006
MW-3 Deep	2/5/2008	53.29	820	32.7	1710	<0.002	<0.002	<0.002	<0.006
MW-3 Deep	4/29/2008	53.31	930	36.7	1920	<0.002	<0.002	<0.002	<0.006
MW-3 Deep	7/29/2008	53.47	1010	40	2110	<0.001	<0.001	<0.001	<0.003
MW-3 Deep	10/22/2008	53.60	670	<10	1710	<0.001	<0.001	<0.001	<0.003

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Vacuum G-35 SWD

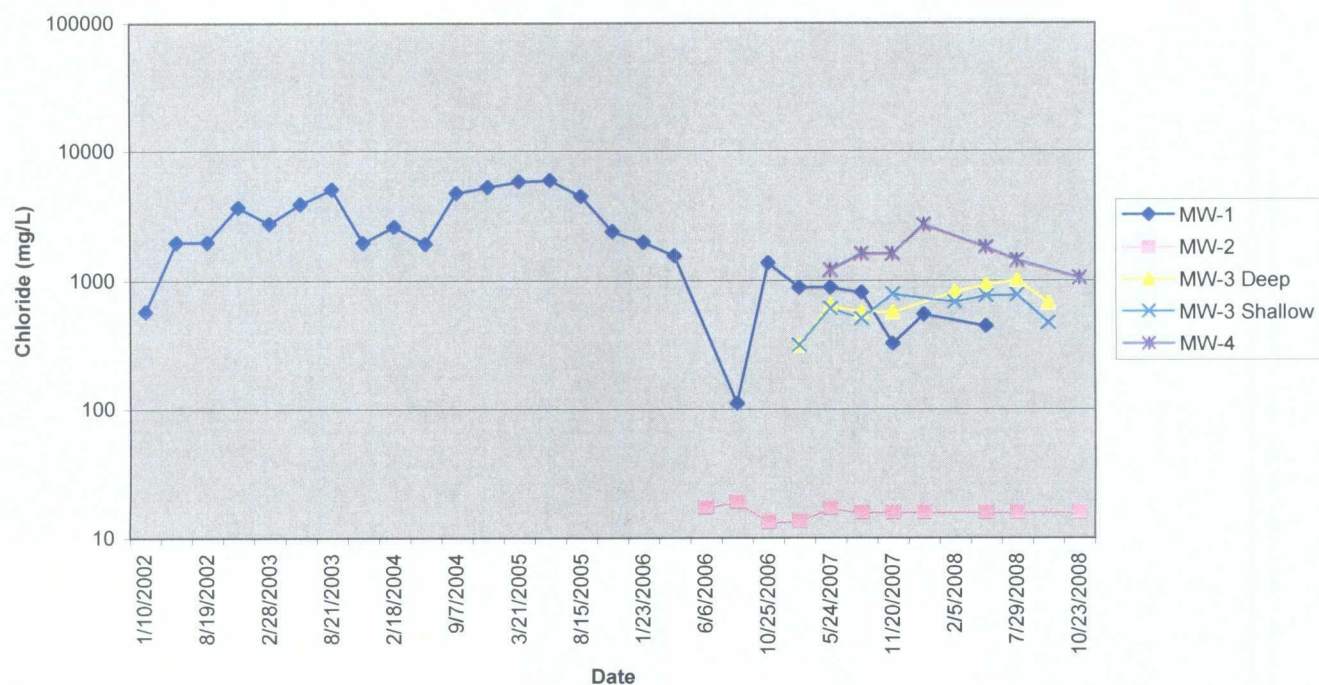
Table 1: chemistry over time

<i>Well Name</i>	<i>Date</i>	<i>DTW (ft)</i>	<i>Chloride (mg/L)</i>	<i>Sulfate (mg/L)</i>	<i>TDS (mg/L)</i>	<i>Benzene (mg/L)</i>	<i>Toluene (mg/L)</i>	<i>EthylBenzene (mg/L)</i>	<i>Total Xylenes (mg/L)</i>
MMW-3 Shallow	1/9/2007	52.77	311	48.9	804	<0.001	0.0191	<0.001	<0.001
MMW-3 Shallow	5/24/2007	52.90	599	34.5	1070	<0.001	[0.000380]	<0.001	<0.001
MMW-3 Shallow	9/20/2007	53.11	500	39.1	1373	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	11/20/2007	53.15	776	40.4	1670	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	2/5/2008	53.29	670	34.3	1590	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	4/29/2008	53.31	750	31.8	1790	<0.002	<0.002	<0.002	<0.006
MMW-3 Shallow	7/29/2008	53.47	760	27	1870	<0.001	<0.001	<0.001	<0.003
MMW-3 Shallow	10/22/2008	53.60	464	68.6	1570	<0.001	<0.001	<0.001	<0.003
MMW-4	5/24/2007	52.98	1200	43.2	2050	0.0521	0.0582	0.0170	0.02819
MMW-4	9/20/2007	53.18	1600	17.8	3262	0.146	0.058	0.023	0.042
MMW-4	11/20/2007	53.21	1600	26	3256	0.036	0.034	0.01	0.017
MMW-4	2/4/2008	53.28	2680	9.94	5140	0.411	0.151	0.082	0.092
MMW-4	4/29/2008	53.33	1800	11.2	3370	0.529	0.222	0.150	0.176
MMW-4	7/29/2008	53.43	1420	20	2620	0.208	0.086	0.041	0.060
MMW-4	10/23/2008	53.52	1040	21.5	2110	0.189	0.137	0.078	0.109

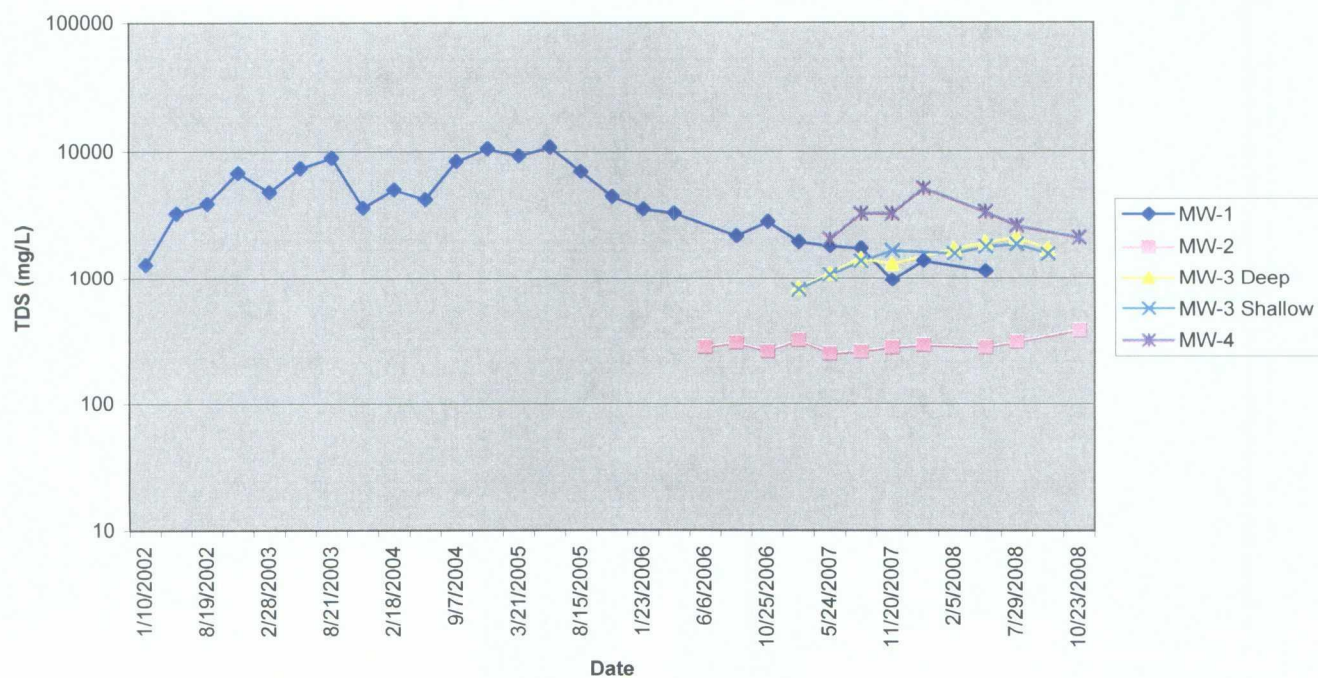
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**G-35 SWD
Chloride Over Time**



**G-35 SWD
TDS Over Time**



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Ground Water Chemistry

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