

AP - 104

2012 AGWMR

04 / 17 / 2013

October 18, 2012 to determine if those wells were downgradient from the margins of the contaminant plumes.

4.2 POTENTIOMETRIC SURFACE AND GRADIENT

Fluid level measurements collected during 2012 are tabulated in Table 1. Elevations of tops of casings were recorded in feet above mean sea level (famsl). Elevations of the potentiometric surface were calculated in famsl. The range of elevations on the potentiometric surface during the first semi-annual monitoring event April 10, 2012 was from 3858.65 famsl (TW-15) to 3857.60 famsl (TW-9). The map of elevations of the potentiometric surface during the first semi-annual monitoring event is in Figure 3. The direction of flow of groundwater was northeast. The calculated magnitude of the gradient was 0.0018 ft./ft.

The range of elevations of the potentiometric surface during the monitoring event on October 18, 2012 was from 3859.09 famsl (TW-15) to 3857.79 famsl (TW-20). The map of elevations of the potentiometric surface on October 18, 2012 is in Figure 4. Elevations of the potentiometric surface in TW-9 and TW-11 were not used in the construction of this map, because depths to water in those wells were inaccurately measured. Figure 4 depicts the direction of flow of groundwater on October 18, which was also to the northeast. The calculated magnitude of the gradient was 0.0015 ft./ft.

Directions of gradient for the potentiometric surface were northeast during 2012, as they have been since 2009. Magnitude of the gradient became slightly shallower—from 0.0018ft./ft. to 0.0015 ft./ft. on April 10 and October 18, 2012, respectively. Comparison of gauging data from the two monitoring events in October 2011 and October 2012 indicates the potentiometric surface increased in elevation in all wells measured during both monitoring events—TW-10, TW-11, TW-13 and TW-14. The range of increase was from 1.02 ft. to 2.34 ft. The average increase among those wells was 1.54 feet.

4.3 RESULTS OF ANALYSES OF DISSOLVED-PHASE CONTAMINANTS IN GROUNDWATER

Samples of groundwater were collected from wells TW-10, TW-13 and TW-14 during monitoring events conducted on April 10 and October 18, 2012. Samples also were collected from TW-9, TW-20 and RW-3 on October 18, 2012. A cumulative table of all available results of analyses of groundwater samples collected at the Buckeye Vacuum Field Unit Site is in Table 2. Chemicals of concern (COCs) are in columns across the top of the table. Standards established by the NMWQCC are below the names of analytes. Analytical results for the first monitoring event April 10, 2012, are in map form on Figure 5. Analytical results of the second monitoring event, October 18, 2012, are in map form on Figure 6.

Trends of concentrations of chemicals of concern over time are in Appendix A. Copies of signed analytical reports and chains-of-custody are attached in Appendix B. Dissolved chloride and TDS were present in all the samples collected from wells TW-10 and RW-3 during 2012 at concentrations above the NMWQCC standards of 250 mg/L and 1000 mg/L, respectively. Dissolved chloride in TW-10 increased from 302 mg/L to 425 mg/L during 2012. TDS in TW-10 decreased from 1080 mg/L to 1020 mg/L. Dissolved chloride levels in RW-3 increased from 392 mg/L to 1050 mg/L from

10-18-11 to 10-18-12. TDS RW-3 increased from 823 mg/L on 10-18-11 to 2910 mg/L on 10-18-12. Increases in TW-10 and RW-3 were the sharpest of the year. The long-term trends in concentrations of dissolved chloride and TDS in TW-10 and RW-3 continued to increase during 2012. Dissolved chloride in TW-13 decreased from 83.6 mg/L to 79.5 mg/L between April and October 2012. TDS in TW-13 decreased from 796 mg/L to 731 mg/L during the same period. Dissolved chloride in TW-14 increased from 40.2 mg/L to 49.7 mg/L between April and October 2012. TDS in TW-14 decreased from 527 mg/L to 525 mg/L between April and October 2012. Long-term trends of dissolved chloride and TDS in TW-13 and TW-14 decreased slightly during 2012 and remained below the NMWQCC standards. Dissolved chloride and TDS concentrations in TW-9 and TW-20 were below the NMWQCC standards during 2012. Those wells are considered to be downgradient of the portions of the chloride and TDS plumes exceeding the NMWQCC groundwater standards.

5.0 GROUNDWATER REMEDIATION AND PERFORMANCE

Concentrations of dissolved chloride and TDS in RW-3 increased in 2012 and remained above the NMWQCC standards despite intermittent pumping of water from RW-3 for use in the waterflood operation in the Buckeye Vacuum Field Production Unit. The duration and frequency of pumping from RW-3, while effectively removing dissolved chloride and TDS from the contaminant plume, may be insufficient to reduce concentrations below NMWQCC standards in a timely manner. Increasing the volume of groundwater recovered from RW-3 may be necessary to achieve those goals and is currently under consideration.

6.0 SUMMARY OF FINDINGS

Based on activities conducted at the Buckeye Vacuum Field Unit Site in 2012, CRA presents the following summary of findings:

- The first semi-annual groundwater monitoring event was conducted by CRA on April 10, 2012. Measurements of fluid levels were collected from TW-9, TW-10, TW-11, TW-13, TW-14, TW-15 and TW-19. Samples of groundwater were collected from TW-10, TW-13 and TW-14. Figure 3 depicts the direction of flow of groundwater on April 10, 2012 to be northeast. The calculated magnitude of the gradient was 0.0018 ft./ft.
- The second semi-annual monitoring event was conducted on October 18, 2012. Fluid levels were measured in wells TW-9, TW-10, TW-11, TW-13, TW-14, TW-15, TW-19 and TW-20. Samples of groundwater were collected from TW-9, TW-10, TW-13, TW-14, TW-20 and RW-3. Figure 4 depicts the direction of flow of groundwater also to be northeastward. The calculated magnitude of the gradient was 0.0015 ft./ft.
- Elevations of the potentiometric surface rose in all three monitor wells gauged in October 2011 and October 2012. The elevation of the potentiometric surface in those wells rose by an average of 1.54 feet during that period.
- Dissolved chloride and TDS were present at concentrations above the NMWQCC standards of 250 mg/L and 1000 mg/L, respectively, in all the samples collected from wells TW-10 and RW-3 during 2012. The trends in TW-10 and RW-3 continued to increase during 2012. The trends of dissolved chloride and TDS in TW-13 and TW-14 decreased slightly and remained below NMWQCC standards. Dissolved chloride and TDS concentrations in TW-9 and TW-20 were below the NMWQCC standards during 2012. Those wells are considered to be downgradient of the portions of the chloride and TDS plumes that exceed NMWQCC groundwater standards.
- The area impacted by dissolved chloride and TDS in groundwater exceeding the NMWQCC standards has been reduced by pumping groundwater from RW-3, since pumping began in 2001. The area remaining impacted above the groundwater standards, however, has expanded slightly during 2011 and 2012 to include TW-10.

7.0 PLANNED ACTIVITIES

Semi-annual gauging and sampling will be conducted in April and October of 2013. TW-9, TW-10, TW-13, TW-14, TW-20 and RW-3 will be included in the semi-annual monitoring plan. TW-9 and T-20 will be monitored until TW-10 again demonstrates downgradient delineation of the contaminant plumes. Monitoring will include measurements of fluid levels and collection of samples of groundwater. Dissolved chloride and TDS in all these wells will be analyzed according to analytical methods EPA300.0 and SM2540C, respectively.

Withdrawal of groundwater from RW-3 will continue for use in the water flood system of the Chevron Buckeye Vacuum Field Production Unit. Pump testing will be conducted in RW-3 to determine the extent to which groundwater removal can be increased to further reduce concentrations of dissolved chloride and TDS in RW-3 and the surrounding area.

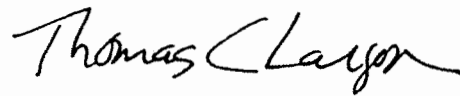
Results of the two semi-annual groundwater monitoring events at the Buckeye Vacuum Field Unit Site during 2013 will be summarized in an annual report for submission to the NMOCD. The report will include tabulated data from gauging activities, tabulated results of chemical analyses, maps of groundwater gradients, maps of concentrations of chemicals of concern for each monitoring event and recommendations to expedite the site toward closure. Activities conducted to determine the potential to increase the volume of groundwater pumped from RW-3 also will be reported.

All of which is Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES, INC.



John P. Schnable
Project Manager



Thomas C. Larson
Principal





RE: 2011 NAIP Aerial Photograph

Figure 2
SITE DETAILS MAP
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1, T18S-R34E, LEA COUNTY, NEW MEXICO
Chevron Environmental Management Company





Legend

- x- Fence
- Monitor Well Location
- ⊠ Recovery Well Location
- ⊕ Abandoned (Plugged) Well Location
- (3858.78) Elevation of Potentiometric Surface, ft
- Contour of Elevations (Interval = 0.50 ft)
- Direction of Groundwater Flow

Note: Potentiometric Surface Gradient = 0.0018

RE: 2011 NAIP Aerial Photograph



Figure 3
 MAP OF THE POTENTIOMETRIC SURFACE - APRIL 10, 2012
 BUCKEYE VACUUM FIELD UNIT SITE
 SECTION 1, T18S-R34E, LEA COUNTY, NEW MEXICO
 Chevron Environmental Management Company



Figure 4
 MAP OF THE POTENTIOMETRIC SURFACE - OCTOBER 18, 2012
 BUCKEYE VACUUM FIELD UNIT SITE
 SECTION 1, T18S-R34E, LEA COUNTY, NEW MEXICO
 Chevron Environmental Management Company



figure 5
DISTRIBUTION OF DISSOLVED CHLORIDE AND TOTAL DISSOLVED SOLIDS - APRIL 10, 2012
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1, T18S-R34E, LEA COUNTY, NEW MEXICO
Chevron Environmental Management Company, Houston, Texas

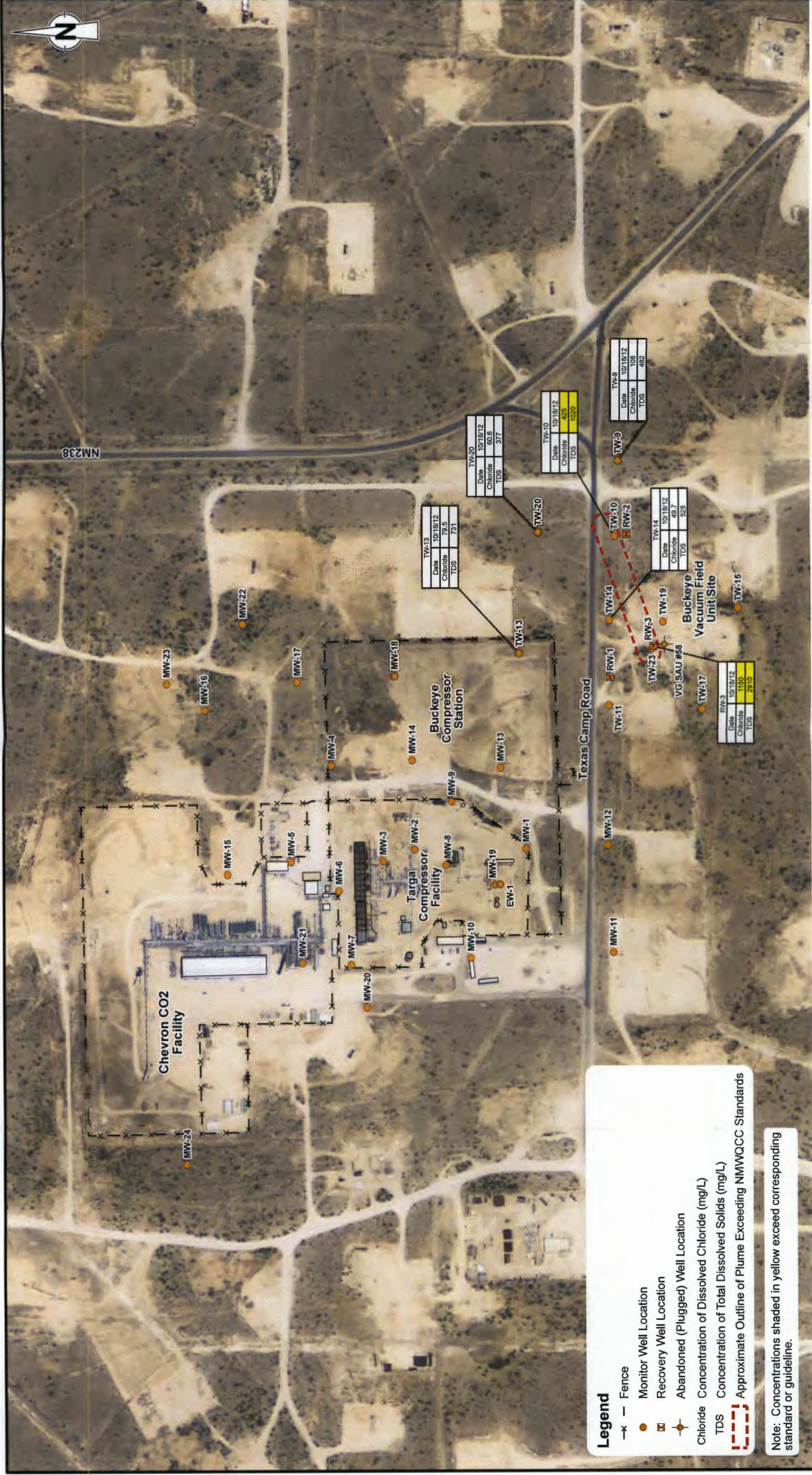
RE: 2011 NAIP Aerial Photograph



Note: Concentrations shaded in yellow exceed corresponding standard or guideline.

Legend

- x- Fence
- Monitor Well Location
- Recovery Well Location
- ⊕ Abandoned (Plugged) Well Location
- Chloride Concentration of Dissolved Chloride (mg/L)
- TDS Concentration of Total Dissolved Solids (mg/L)
- NS Not Sampled
- - - Approximate Outline of Plume Exceeding NMWQCC Standards



Legend

- x- Fence
- Monitor Well Location
- Recovery Well Location
- ⊕ Abandoned (Plugged) Well Location
- Chloride Concentration of Dissolved Chloride (mg/L)
- TDS Concentration of Total Dissolved Solids (mg/L)
- Approximate Outline of Plume Exceeding NMWQCC Standards

Note: Concentrations shaded in yellow exceed corresponding standard or guideline.

TABLE 1

**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-9	05/15/03	3988.69	129.01	3859.68
TW-9	11/18/03	3988.69	128.97	3859.72
TW-9	02/11/04	3988.69	128.62	3860.07
TW-9	05/27/04	3988.69	128.65	3860.04
TW-9	08/06/04	3988.69	128.64	3860.05
TW-9	03/03/05	3988.69	127.79	3860.90
TW-9	05/09/05	3988.69	128.67	3860.02
TW-9	11/01/05	3988.69	128.62	3860.07
TW-9	01/12/06	3988.69	129.05	3859.64
TW-9	04/03/06	3988.69	129.55	3859.14
TW-9	09/06/06	3988.69	129.20	3859.49
TW-9	10/03/06	3988.69	129.15	3859.54
TW-9	01/31/07	3988.69	126.39	3862.30
TW-9	04/23/07	3988.69	129.10	3859.59
TW-9	08/06/07	3988.69	128.98	3859.71
TW-9	10/02/07	3988.69	128.81	3859.88
TW-9	02/20/08	3988.69	128.92	3859.77
TW-9	05/21/08	3988.69	128.81	3859.88
TW-9	08/14/08	3988.69	129.58	3859.11
TW-9	10/09/08	3988.69	128.99	3859.70
TW-9	01/19/09	3988.69	130.05	3858.64
TW-9	04/09/09	3988.69	130.26	3858.43
TW-9	07/06/09	3988.69	130.36	3858.33
TW-9	09/28/09	3988.69	131.00	3857.69
TW-9	04/05/10	3988.69	131.10	3857.59
TW-9	10/04/10	3988.69	131.89	3856.80
TW-9	04/12/11	3988.69	132.28	3856.41
TW-9	04/10/12	3988.69	131.09	3857.60
TW-9	10/18/12	3988.69	127.89	3860.80
TW-10	05/15/03	3987.87	127.99	3859.88
TW-10	11/19/03	3987.87	128.11	3859.76
TW-10	02/11/04	3987.87	127.69	3860.18
TW-10	05/28/04	3987.87	127.66	3860.21
TW-10	08/06/04	3987.87	127.69	3860.18
TW-10	03/03/05	3987.87	126.80	3861.07
TW-10	05/09/05	3987.87	126.68	3861.19
TW-10	11/01/05	3987.87	127.54	3860.33
TW-10	04/03/06	3987.87	128.47	3859.40
TW-10	10/03/06	3987.87	128.17	3859.70
TW-10	04/23/07	3987.87	128.14	3859.73
TW-10	10/02/07	3987.87	127.86	3860.01
TW-10	05/21/08	3987.87	127.89	3859.98
TW-10	10/09/08	3987.87	128.09	3859.78
TW-10	04/09/09	3987.87	129.02	3858.85

TABLE 1

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SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-10	09/28/09	3987.87	129.76	3858.11
TW-10	04/05/10	3987.87	129.92	3857.95
TW-10	10/04/10	3987.87	130.41	3857.46
TW-10	04/12/11	3987.87	130.95	3856.92
TW-10	10/17/11	3987.87	132.12	3855.75
TW-10	04/10/12	3987.87	130.01	3857.86
TW-10	10/18/12	3987.87	129.78	3858.09
TW-11	05/15/03	3989.11	128.97	3860.14
TW-11	11/19/03	3989.11	129.14	3859.97
TW-11	02/11/04	3989.11	128.67	3860.44
TW-11	05/28/04	3989.11	128.39	3860.72
TW-11	08/05/04	3989.11	128.42	3860.69
TW-11	03/03/05	3989.11	127.56	3861.55
TW-11	05/09/05	3989.11	127.41	3861.70
TW-11	11/01/05	3989.11	128.11	3861.00
TW-11	04/03/06	3989.11	128.97	3860.14
TW-11	10/03/06	3989.11	128.98	3860.13
TW-11	04/23/07	3989.11	128.94	3860.17
TW-11	10/02/07	3989.11	128.66	3860.45
TW-11	05/22/08	3989.11	128.69	3860.42
TW-11	10/09/08	3989.11	128.91	3860.20
TW-11	04/09/09	3989.11	129.48	3859.63
TW-11	09/28/09	3989.11	130.01	3859.10
TW-11	04/05/10	3989.11	130.27	3858.84
TW-11	10/04/10	3989.11	130.59	3858.52
TW-11	04/12/11	3989.11	129.95	3859.16
TW-11	10/18/11	3989.11	131.46	3857.65
TW-11	04/10/12	3989.11	130.71	3858.40
TW-11	10/18/12	3989.11	127.80	3861.31
TW-13	05/15/03	3988.73	128.85	3859.88
TW-13	11/18/03	3988.73	128.89	3859.84
TW-13	02/11/04	3988.73	128.67	3860.06
TW-13	05/27/04	3988.73	128.67	3860.06
TW-13	08/06/04	3988.73	128.66	3860.07
TW-13	03/03/05	3988.73	127.74	3860.99
TW-13	05/09/05	3988.73	127.68	3861.05
TW-13	11/01/05	3988.73	128.43	3860.30
TW-13	04/03/06	3988.73	129.31	3859.42
TW-13	10/03/06	3988.73	129.13	3859.60
TW-13	04/23/07	3988.73	129.00	3859.73
TW-13	10/02/07	3988.73	128.76	3859.97
TW-13	05/21/08	3988.73	128.86	3859.87
TW-13	10/09/08	3988.73	128.96	3859.77

TABLE 1

**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-13	04/09/09	3988.73	129.70	3859.03
TW-13	09/28/09	3988.73	130.32	3858.41
TW-13	04/05/10	3988.73	130.56	3858.17
TW-13	10/04/10	3988.73	130.91	3857.82
TW-13	04/12/11	3988.73	131.45	3857.28
TW-13	10/17/11	3988.73	131.67	3857.06
TW-13	10/18/11	3988.73	131.57	3857.16
TW-13	04/10/12	3988.73	130.80	3857.93
TW-13	10/18/12	3988.73	130.55	3858.18
TW-14	05/15/03	3986.77	126.78	3859.99
TW-14	11/19/03	3986.77	127.28	3859.49
TW-14	02/11/04	3986.77	127.32	3859.45
TW-14	05/28/04	3986.77	126.44	3860.33
TW-14	08/05/04	3986.77	126.48	3860.29
TW-14	03/03/05	3986.77	125.55	3861.22
TW-14	05/09/05	3986.77	125.43	3861.34
TW-14	11/01/05	3986.77	126.24	3860.53
TW-14	04/03/06	3986.77	127.09	3859.68
TW-14	10/03/06	3986.77	127.05	3859.72
TW-14	04/23/07	3986.77	127.04	3859.73
TW-14	10/02/07	3986.77	126.67	3860.10
TW-14	05/22/08	3986.77	126.66	3860.11
TW-14	10/09/08	3986.77	126.98	3859.79
TW-14	04/09/09	3986.77	127.56	3859.21
TW-14	09/28/09	3986.77	128.22	3858.55
TW-14	04/05/10	3986.77	128.45	3858.32
TW-14	10/04/10	3986.77	128.77	3858.00
TW-14	04/12/11	3986.77	129.42	3857.35
TW-14	10/17/11	3986.77	129.75	3857.02
TW-14	04/10/12	3986.77	128.73	3858.04
TW-14	10/18/12	3986.77	128.48	3858.29
TW-15	05/15/03	3984.14	123.50	3860.64
TW-15	11/19/03	3984.14	123.76	3860.38
TW-15	02/11/04	3984.14	123.34	3860.80
TW-15	05/27/04	3984.14	123.06	3861.08
TW-15	08/05/04	3984.14	123.07	3861.07
TW-15	03/03/05	3984.14	122.18	3861.96
TW-15	05/09/05	3984.14	122.13	3862.01
TW-15	11/01/05	3984.14	122.68	3861.46
TW-15	01/12/06	3984.14	123.33	3860.81
TW-15	04/03/06	3984.14	123.65	3860.49
TW-15	09/06/06	3984.14	123.61	3860.53
TW-15	10/03/06	3984.14	123.59	3860.55

TABLE 1

**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-15	01/31/07	3984.14	123.33	3860.81
TW-15	04/23/07	3984.14	123.59	3860.55
TW-15	08/06/07	3984.14	123.58	3860.56
TW-15	10/02/07	3984.14	123.24	3860.90
TW-15	02/20/08	3984.14	123.40	3860.74
TW-15	05/21/08	3984.14	123.39	3860.75
TW-15	08/14/08	3984.14	123.77	3860.37
TW-15	10/09/08	3984.14	123.64	3860.50
TW-15	01/19/09	3984.14	124.03	3860.11
TW-15	04/09/09	3984.14	124.29	3859.85
TW-15	07/06/09	3984.14	124.28	3859.86
TW-15	09/28/09	3984.14	124.73	3859.41
TW-15	04/05/10	3984.14	125.08	3859.06
TW-15	10/04/10	3984.14	125.21	3858.93
TW-15	04/12/11	3984.14	125.70	3858.44
TW-15	04/10/12	3984.14	125.49	3858.65
TW-15	10/18/12	3984.14	125.05	3859.09
TW-17	05/15/03	3986.01	122.87	3863.14
TW-17	11/19/03	3986.01	125.64	3860.37
TW-17	02/11/04	3986.01	125.15	3860.86
TW-17	05/28/04	3986.01	124.89	3861.12
TW-17	08/05/04	3986.01	124.88	3861.13
TW-17	03/03/05	3986.01	124.06	3861.95
TW-17	05/09/05	3986.01	123.97	3862.04
TW-17	11/01/05	3986.01	124.50	3861.51
TW-17	04/03/06	3986.01	125.40	3860.61
TW-17	10/03/06	3986.01	125.45	3860.56
TW-17	04/23/07	3986.01	125.43	3860.58
TW-17	10/02/07	3986.01	125.19	3860.82
TW-17	05/22/08	3986.01	125.20	3860.81
TW-17	10/09/08	3986.01	125.48	3860.53
TW-17	04/09/09	3986.01	126.00	3860.01
TW-17	09/28/09	3986.01	126.51	3859.50
TW-17	04/05/10	3986.01	126.79	3859.22
TW-17	10/04/10	3986.01	126.92	3859.09
TW-17	10/18/12	3986.01	127.01	3859.00
TW-19	05/15/03	3985.70	121.80	3863.90
TW-19	11/19/03	3985.70	126.25	3859.45
TW-19	02/11/04	3985.70	125.31	3860.39
TW-19	05/27/04	3985.70	125.11	3860.59
TW-19	08/05/04	3985.70	125.14	3860.56
TW-19	03/03/05	3985.70	124.26	3861.44
TW-19	05/09/05	3985.70	124.02	3861.68

TABLE 1

**CUMULATIVE SUMMARRY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-19	11/01/05	3985.70	124.79	3860.91
TW-19	04/03/06	3985.70	125.66	3860.04
TW-19	10/02/06	3985.70	125.78	3859.92
TW-19	04/23/07	3985.70	126.25	3859.45
TW-19	10/02/07	3985.70	125.28	3860.42
TW-19	05/22/08	3985.70	125.34	3860.36
TW-19	10/09/08	3985.70	125.80	3859.90
TW-19	04/09/09	3985.70	126.24	3859.46
TW-19	09/28/09	3985.70	126.84	3858.86
TW-19	04/05/10	3985.70	127.09	3858.61
TW-19	10/04/10	3985.70	127.42	3858.28
TW-19	04/12/11	3985.70	127.90	3857.80
TW-19	04/10/12	3985.70	127.50	3858.20
TW-19	10/18/12	3985.70	127.40	3858.30
TW-20	05/15/03	3988.40	129.07	3859.33
TW-20	11/18/03	3988.40	128.93	3859.47
TW-20	02/11/04	3988.40	128.69	3859.71
TW-20	05/27/04	3988.40	128.69	3859.71
TW-20	08/06/04	3988.40	128.67	3859.73
TW-20	03/03/05	3988.40	127.79	3860.61
TW-20	05/09/05	3988.40	127.69	3860.71
TW-20	11/01/05	3988.40	128.74	3859.66
TW-20	04/03/06	3988.40	129.59	3858.81
TW-20	10/03/06	3988.40	129.20	3859.20
TW-20	04/23/07	3988.40	129.12	3859.28
TW-20	10/02/07	3988.40	128.84	3859.56
TW-20	05/21/08	3988.40	128.84	3859.56
TW-20	10/09/08	3988.40	128.98	3859.42
TW-20	04/09/09	3988.40	130.15	3858.25
TW-20	09/28/09	3988.40	130.97	3857.43
TW-20	04/05/10	3988.40	131.01	3857.39
TW-20	10/04/10	3988.40	131.66	3856.74
TW-20	04/12/11	3988.40	132.13	3856.27
TW-20	10/18/12	3988.40	130.61	3857.79
TW-23	05/15/03	3984.58	124.42	3860.16
TW-23	11/19/03	3984.58	125.95	3858.63
TW-23	02/11/04	3984.58	124.16	3860.42
TW-23	05/27/04	3984.58	123.94	3860.64
TW-23	08/05/04	3984.58	124.03	3860.55
TW-23	03/03/05	3984.58	123.10	3861.48
TW-23	05/09/05	3984.58	122.98	3861.60
TW-23	11/01/05	3984.58	123.71	3860.87
TW-23	01/12/06	3984.58	124.06	3860.52

TABLE 1

**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
TW-23	04/03/06	3984.58	124.52	3860.06
TW-23	09/06/06	3984.58	124.52	3860.06
TW-23	10/02/06	3984.58	124.81	3859.77
TW-23	01/31/07	3984.58	124.12	3860.46
TW-23	04/23/07	3984.58	126.02	3858.56
TW-23	08/06/07	3984.58	124.64	3859.94
TW-23	10/02/07	3984.58	124.20	3860.38
TW-23	02/20/08	3984.58	124.19	3860.39
TW-23	05/22/08	3984.58	124.25	3860.33
TW-23	08/14/08	3984.58	124.76	3859.82
TW-23	10/09/08	3984.58	124.85	3859.73
TW-23	01/19/09	3984.58	125.21	3859.37
TW-23	04/09/09	3984.58	125.09	3859.49
TW-23	07/06/09	3984.58	125.14	3859.44
TW-23	09/28/09	3984.58	125.67	3858.91
TW-23	04/05/10	3984.58	125.90	3858.68
TW-23	10/04/10	3984.58	126.14	3858.44
TW-23	04/12/11	3984.58	126.62	3857.96
RW-2	05/15/03	3987.04	Not gauged--pump in well	
RW-2	11/18/03	3987.04	Not gauged--pump in well	
RW-2	02/11/04	3987.04	Not gauged--pump in well	
RW-2	05/28/04	3987.04	126.82	3860.22
RW-2	08/06/04	3987.04	126.81	3860.23
RW-2	03/03/05	3987.04	126.90	3860.14
RW-2	05/09/05	3987.04	125.84	3861.20
RW-2	11/01/05	3987.04	Not gauged--pump in well	
RW-2	04/03/06	3987.04	127.61	3859.43
RW-2	10/03/06	3987.04	127.33	3859.71
RW-2	04/23/07	3987.04	127.40	3859.64
RW-2	10/02/07	3987.04	126.97	3860.07
RW-2	05/21/08	3987.04	127.02	3860.02
RW-2	10/09/08	3987.04	127.25	3859.79
RW-2	04/09/09	3987.04	128.25	3858.79
RW-2	09/28/09	3987.04	128.93	3858.11
RW-2	04/05/10	3987.04	129.06	3857.98
RW-2	10/04/10	3987.04	129.56	3857.48
RW-3	05/15/03	NG	Not gauged--pump in well	
RW-3	11/18/03	NG	Not gauged--pump in well	
RW-3	02/11/04	NG	Not gauged--pump in well	
RW-3	05/27/04	3984.18	123.50	3860.68
RW-3	08/06/04	3984.18	123.58	3860.60
RW-3	03/03/05	3984.18	122.67	3861.51
RW-3	05/09/05	3984.18	122.54	3861.64

TABLE 1

**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

<i>Monitoring Well ID</i>	<i>Date Gauged</i>	<i>Elevation of TOC (famsl)</i>	<i>Depth To Water (fbtoc)</i>	<i>Elevation of Potentiometric Surface (famsl)</i>
RW-3	11/01/05	3984.18	126.72	3857.46
RW-3	04/03/06	NG	Not gauged--pump in well	
RW-3	10/03/06	NG	Not gauged--pump in well	
RW-3	05/22/08	NG	Not gauged--pump in well	
RW-3	10/09/08	NG	Not gauged--pump in well	
RW-3	04/09/08	NG	Not gauged--pump in well	
RW-3	09/28/09	NG	Not gauged--pump in well	
RW-3	04/05/10	NG	Not gauged--pump in well	
RW-3	10/04/10	NG	Not gauged--pump in well	
RW-3	04/12/11	NG	Not gauged--pump in well	
RW-3	10/18/11	NG	Not gauged--pump in well	
RW-3	04/10/12	NG	Not gauged--pump in well	
RW-3	10/18/12	NG	Not gauged--pump in well	

Notes:

1. TOC--top of casing
2. famsl--feet above mean sea level
3. fbtoc--feet below top of casing
4. NG--not gauged

TABLE 2

**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L) 250	1,000
TW-9	05/15/03		120	
TW-9	11/18/03		442	892
TW-9	02/11/04		420	972
TW-9	05/27/04		88.2	461
TW-9	08/06/04		49.0	385
TW-9	03/03/05		44.5	239
TW-9	05/09/05		53.7	378
TW-9	10/27/05		89.9	431
TW-9	01/12/06		49.6	325
TW-9	04/05/06		46.7	321
TW-9	10/02/06		54.5	319
TW-9	01/31/07		73.0	309
TW-9	04/24/07		58.8	324
TW-9	08/06/07		65.2	320
TW-9	10/03/07		54.6	322
TW-9	02/20/08		65.5	342
TW-9	05/21/08		72.5	331
TW-9	08/14/08		78.0	351
TW-9	10/09/08		71.5	371
TW-9	01/19/09		82.6	388
TW-9	04/13/09		76.7	376
TW-9	07/06/09		75.4	417
TW-9	10/01/09		75.4	356
TW-9	10/18/12		108.0	482
TW-10	05/15/03		44.3	
TW-10	11/19/03		59.1	369
TW-10	02/11/04		52.9	372
TW-10	05/28/04		39.9	344
TW-10	08/06/04		45.4	354
TW-10	03/03/05		33.0	226
TW-10	10/27/05		71.0	372
TW-10	04/05/06		87.4	406
TW-10	10/03/06		66.6	375
TW-10	04/24/07		81.0	389
TW-10	10/03/07		85.6	385
TW-10	05/21/08		88.1	408
TW-10	10/09/08		91.1	456
TW-10	04/13/09		148	532
TW-10	10/01/09		158	622
TW-10	04/05/10		158	
TW-10	10/04/10		181	
TW-10	04/12/11		282	1070
TW-10	10/18/11	155.00	337	750

TABLE 2

**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L)	
			250	1,000
TW-10	04/10/12	162.00	302	1080
TW-10	10/18/12		425	1020
TW-11	05/15/03		35.4	
TW-11	11/19/03		25.3	307
TW-11	02/11/04		83.8	610
TW-11	05/28/04		27.0	274
TW-11	08/05/04		30.1	269
TW-11	03/03/05		28.4	174
TW-11	10/27/05		31.8	260
TW-11	04/05/06		34.8	269
TW-11	10/03/06		35.1	265
TW-11	04/24/07		42.3	285
TW-11	10/04/07		47.0	388
TW-11	05/22/08		39.3	256
TW-11	10/13/08		33.0	269
TW-11	04/14/09		49.3	270
TW-11	10/01/09		44.3	289
TW-13	05/15/03		39.0	
TW-13	11/18/03		64.3	560
TW-13	02/11/04		83.8	610
TW-13	05/27/04		84.5	625
TW-13	08/06/04		74.8	596
TW-13	03/03/05		90.0	502
TW-13	10/26/05		75.1	485
TW-13	04/06/06		60.3	429
TW-13	10/03/06		93.5	546
TW-13	04/25/07		140	921
TW-13	10/04/07		45.2	892
TW-13	05/21/08		47.1	614
TW-13	10/13/08		81.7	798
TW-13	04/14/09		129	1,000
TW-13	10/01/09		48.5	709
TW-13	04/05/10		92.6	
TW-13	10/04/10		54.7	
TW-13	04/12/11		94.5	976
TW-13	10/18/11	175.00	90.8	698
TW-13	04/10/12	148.00	83.6	796
TW-13	10/18/12		79.5	731
TW-14	05/15/03		65.0	
TW-14	11/19/03		25.4	368
TW-14	02/11/04		29.6	339

TABLE 2

**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L)	
			250	1,000
TW-14	05/28/04		30.3	346
TW-14	08/05/04		32.7	347
TW-14	03/03/05		87.9	340
TW-14	10/27/05		73.9	419
TW-14	04/05/06		71.1	421
TW-14	10/03/06		69.6	424
TW-14	04/24/07		94.6	444
TW-14	10/04/07		70.7	425
TW-14	05/22/08		85.2	421
TW-14	10/13/08		98.1	463
TW-14	04/14/09		192	600
TW-14	10/01/09		154	727
TW-14	04/05/10		93.8	
TW-14	10/04/10		73.2	
TW-14	04/12/11		65.7	642
TW-14	10/18/11	160.00	33.2	482
TW-14	04/10/12	174.00	40.2	527
TW-14	10/18/12		49.7	525
TW-15	05/15/03		88.6	
TW-15	11/19/03		561	1,132
TW-15	02/11/04		419	908
TW-15	05/27/04		93.4	439
TW-15	08/05/04		102	545
TW-15	03/03/05		189	577
TW-15	05/09/05		184	711
TW-15	10/27/05		155	569
TW-15	01/12/06		144	486
TW-15	04/05/06		125	557
TW-15	10/02/06		119	503
TW-15	01/31/07		159	480
TW-15	04/25/07		197	594
TW-15	08/06/07		154	502
TW-15	10/04/07		136	636
TW-15	02/20/08		139	502
TW-15	05/21/08		132	483
TW-15	08/14/08		119	498
TW-15	10/13/08		123	547
TW-15	01/19/09		108	477
TW-15	04/14/09		87.1	446
TW-15	07/06/09		66.5	432
TW-15	10/01/09		59.6	389

TABLE 2

**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L) 250	1,000
TW-17	05/15/03		31.9	
TW-17	11/19/03		26.7	295
TW-17	02/11/04		24.9	294
TW-17	05/28/04		26.7	302
TW-17	08/05/04		29.4	306
TW-17	03/03/05		178	565
TW-17	10/26/05		59.9	362
TW-17	04/05/06		36.1	294
TW-17	10/03/06		29.8	296
TW-17	04/24/07		32.9	311
TW-17	10/04/07		30.8	310
TW-17	05/22/08		31.2	281
TW-17	10/13/08		28.0	303
TW-17	04/14/09		36.8	304
TW-17	10/01/09		30.0	314
TW-17	04/05/10		27.9	
TW-17	10/04/10		16.7	
TW-19	05/15/03		35.4	
TW-19	11/19/03		28.3	325
TW-19	02/11/04		23.7	387
TW-19	05/27/04		33.6	287
TW-19	08/05/04		42.8	344
TW-19	03/03/05		54.2	224
TW-19	10/27/05		39.0	293
TW-19	04/06/06		40.5	308
TW-19	10/02/06		33.2	290
TW-19	04/24/07		37.3	287
TW-19	10/03/07		33.7	293
TW-19	05/22/08		33.5	275
TW-19	10/13/08		28.8	277
TW-19	04/13/09		27.8	278
TW-19	10/01/09		29.5	296
TW-20	05/15/03		35.4	
TW-20	11/18/03		26.5	328
TW-20	02/11/04		25.2	353
TW-20	05/27/04		27.1	316
TW-20	08/06/04		31.8	338
TW-20	03/03/05		25.3	232
TW-20	10/26/05		53.7	351
TW-20	04/06/06		34.3	329
TW-20	10/03/06		39.4	310
TW-20	04/24/07		38.2	324

TABLE 2

**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L)	
			250	1,000
TW-20	10/03/07		36.8	340
TW-20	05/21/08		41.7	315
TW-20	10/09/08		38.1	338
TW-20	04/13/09		43.3	330
TW-20	10/01/09		40.5	345
TW-20	10/18/12		60.6	377
TW-23	05/15/03		1440	
TW-23	11/19/03		300	964
TW-23	02/11/04		117	603
TW-23	05/27/04		617	1,710
TW-23	08/05/04		919	2,000
TW-23	03/03/05		656	1,680
TW-23	05/09/05		835	2,680
TW-23	10/27/05		284	1,460
TW-23	01/12/06		272	1,090
TW-23	04/06/06		35.2	1,070
TW-23	10/02/06		253	1,070
TW-23	01/31/07		144	626
TW-23	04/25/07		346	1,260
TW-23	08/06/07		260	1,030
TW-23	10/03/07		228	1,110
TW-23	02/20/08		196	944
TW-23	05/22/08		317	1,300
TW-23	01/19/09		177	882
TW-23	04/14/09		53.7	456
TW-23	07/06/09		48.2	445
TW-23	10/01/09		42.3	462
RW-2	05/28/04		30.4	306
RW-2	08/06/04		34.6	354
RW-2	03/03/05		32.4	244
RW-2	10/27/05		264	600
RW-2	04/07/06		244	767
RW-2	10/03/06		49.8	325
RW-2	04/25/07		64.3	331
RW-2	10/03/07		58.5	346
RW-2	05/21/08		63.9	350
RW-2	10/09/08		77.0	371
RW-2	04/13/09		82.4	382
RW-2	10/01/09		240.0	691
RW-3	05/27/04		338	854
RW-3	08/06/04		700	1,620

TABLE 2

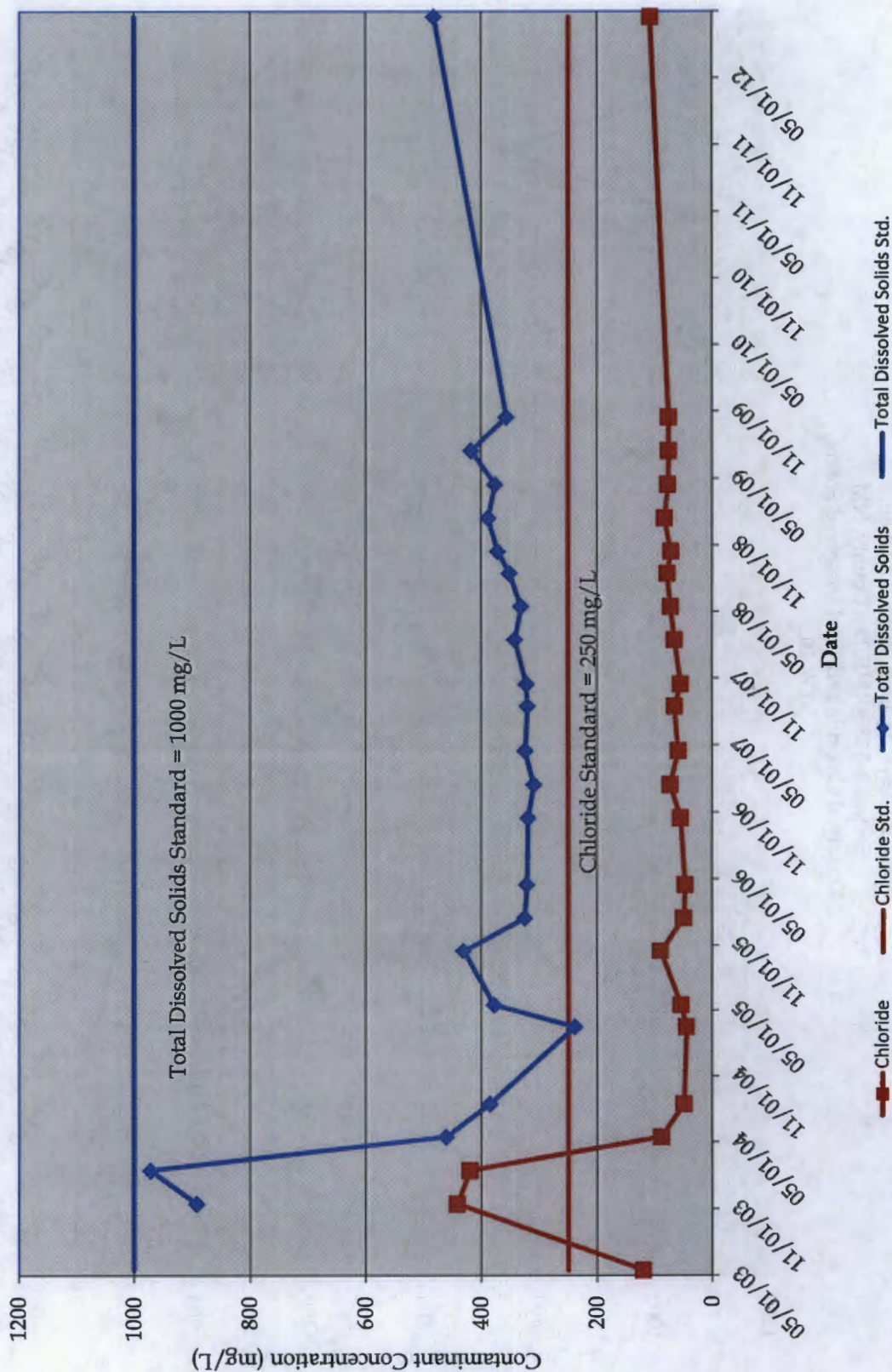
**CUMULATIVE SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER
BUCKEYE VACUUM FIELD UNIT SITE
SECTION 1-T18S-R34E, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Sample Depth (ft. below TOC)	Chloride (mg/L)	Total Dissolved Solids (mg/L)
			NMWQCC Remediation Standards (mg/L)	
			250	1,000
RW-3	03/03/05		873	1,710
RW-3	10/27/05		298	844
RW-3	04/07/06		791	1,700
RW-3	10/02/06		1,060	1,930
RW-3	04/24/07		1,100	2,090
RW-3	10/03/07		321	902
RW-3	05/22/08		820	1,390
RW-3	10/14/08		847	1,630
RW-3	04/13/09		1,250	2,740
RW-3	10/01/09		1,320	2,850
RW-3	04/05/10		892	
RW-3	10/04/10		1,350	
RW-3	04/12/11		664	1,770
RW-3	10/18/11		392	848
RW-3	10/18/12		1,150	2,910
Dup-1 (TW-10)	10/04/10		182	
Dup-1 (TW-11)	05/22/08		39.1	253
Dup-1 (TW-11)	10/13/08		39.3	284
Dup-100 (TW-14)	10/11/09		163	714
Dup-#1 (TW-14)	04/05/10		82.2	
Dup-#1 (TW-15)	04/14/09		95.2	450

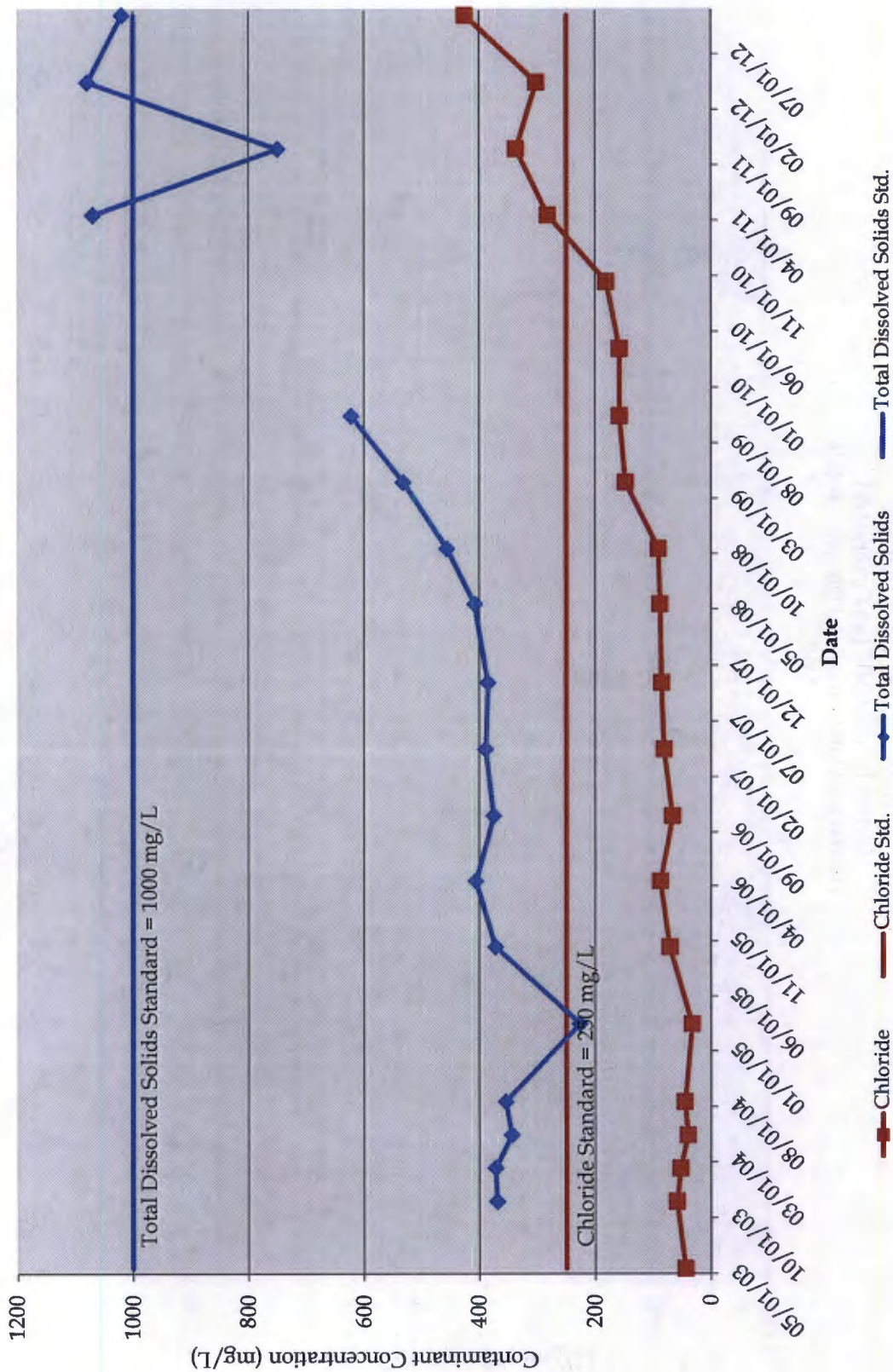
NOTES:

1. TOC--top of casing
2. mg/L--milligrams per liter
3. NMWQCC--New Mexico Water Quality Control Commission
4. NA--Not analyzed
5. Cells shaded yellow indicates concentration that exceeds NMWQCC standards

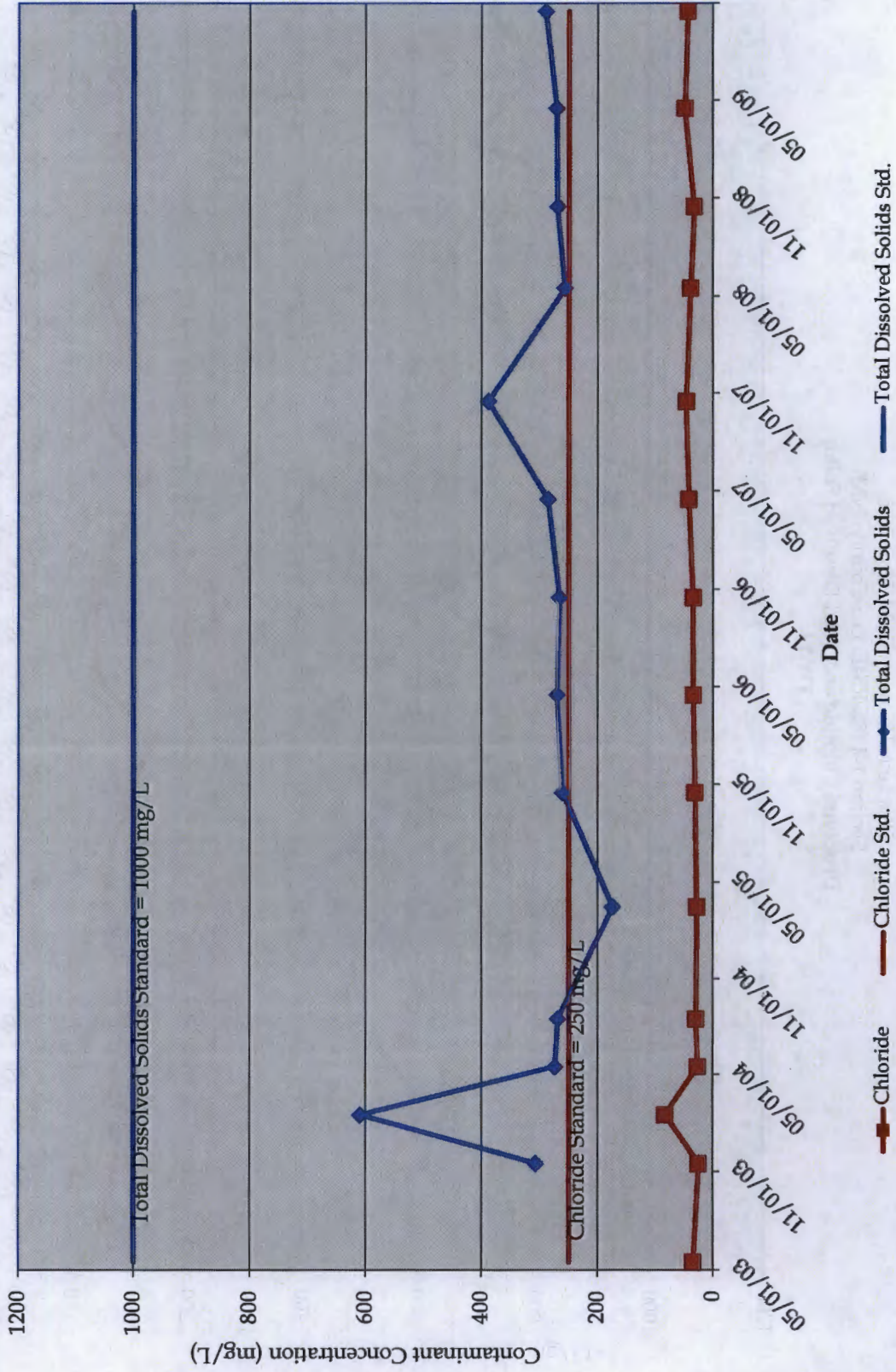
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-9



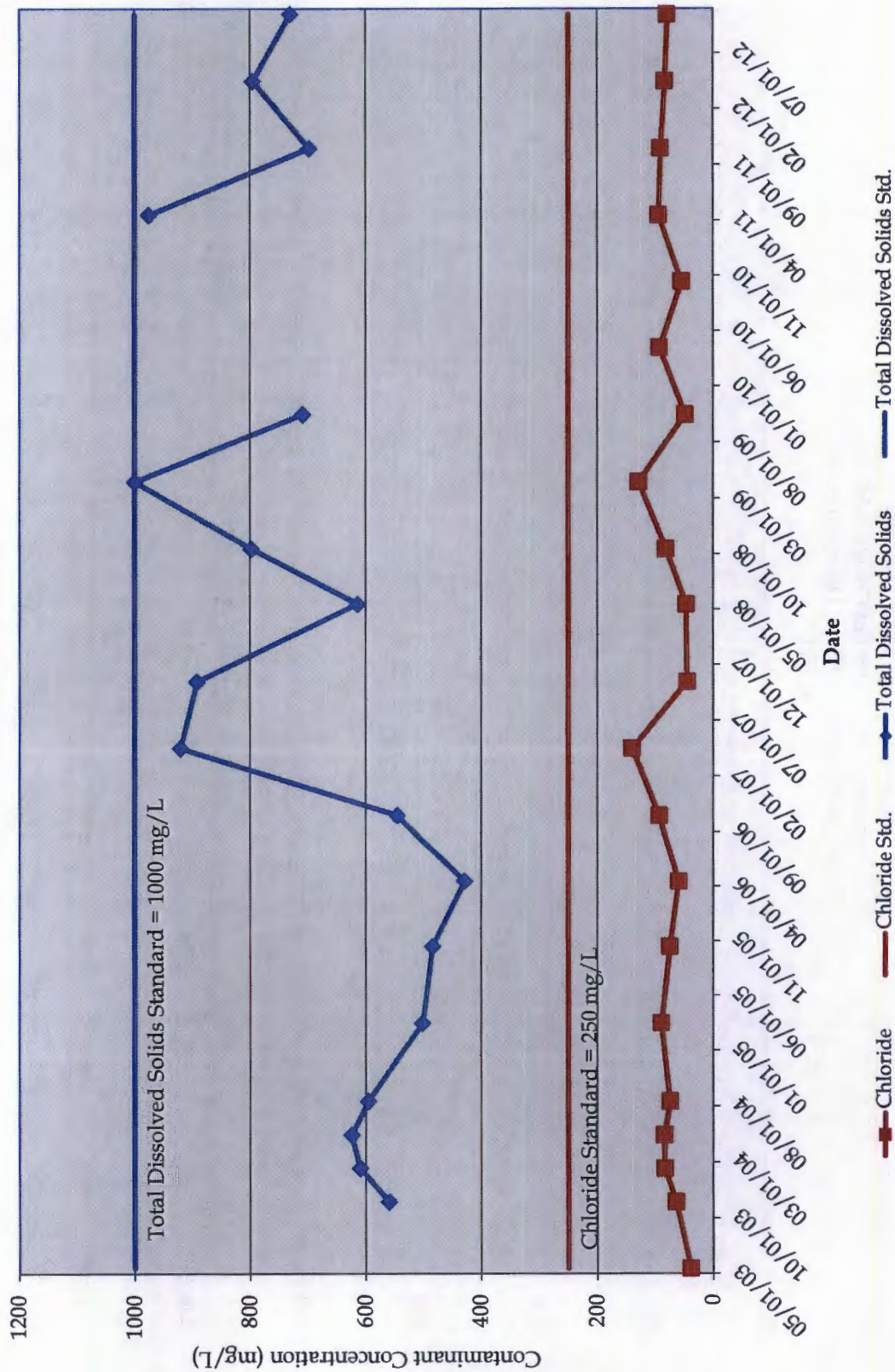
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-10



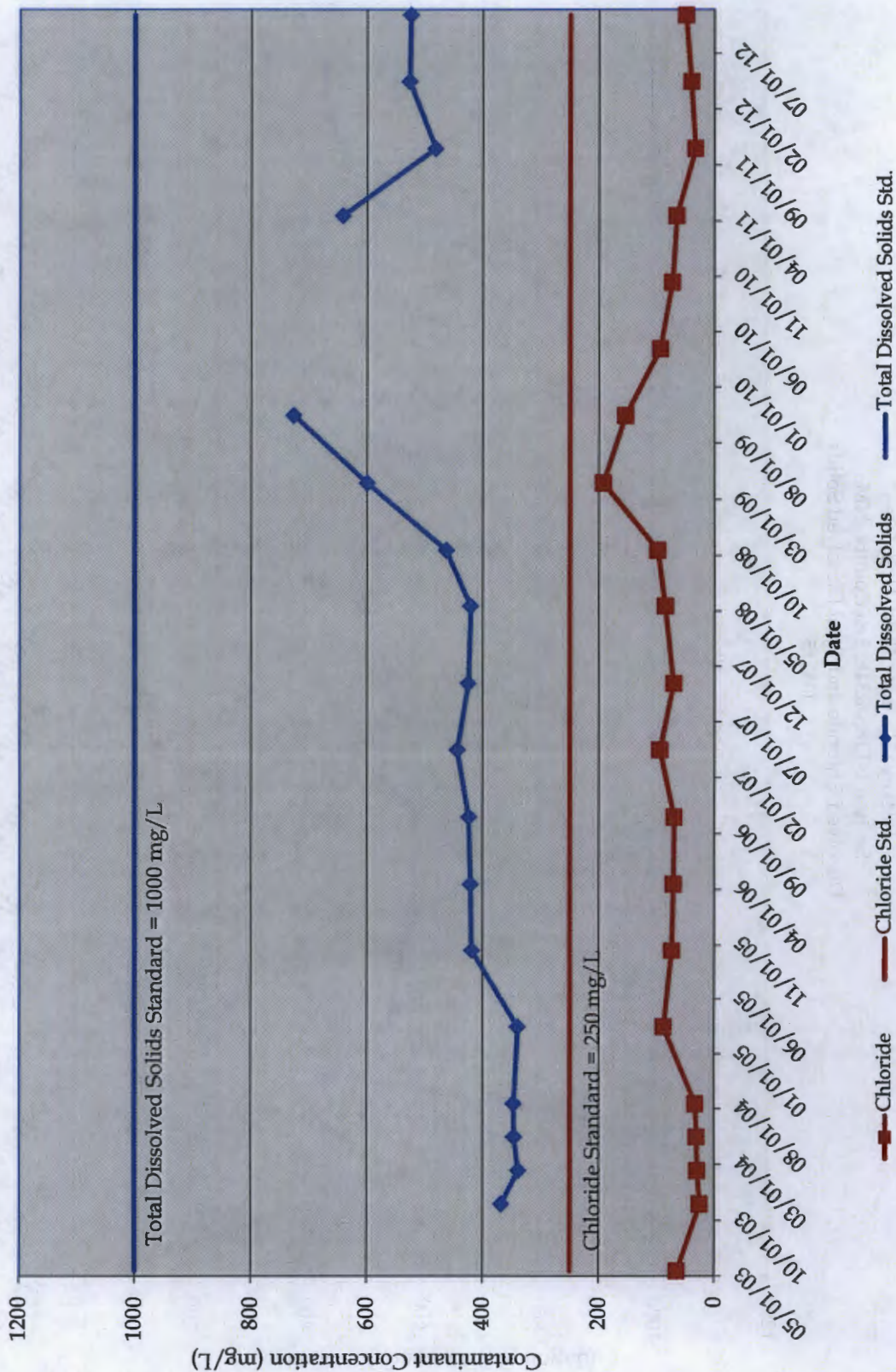
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-11



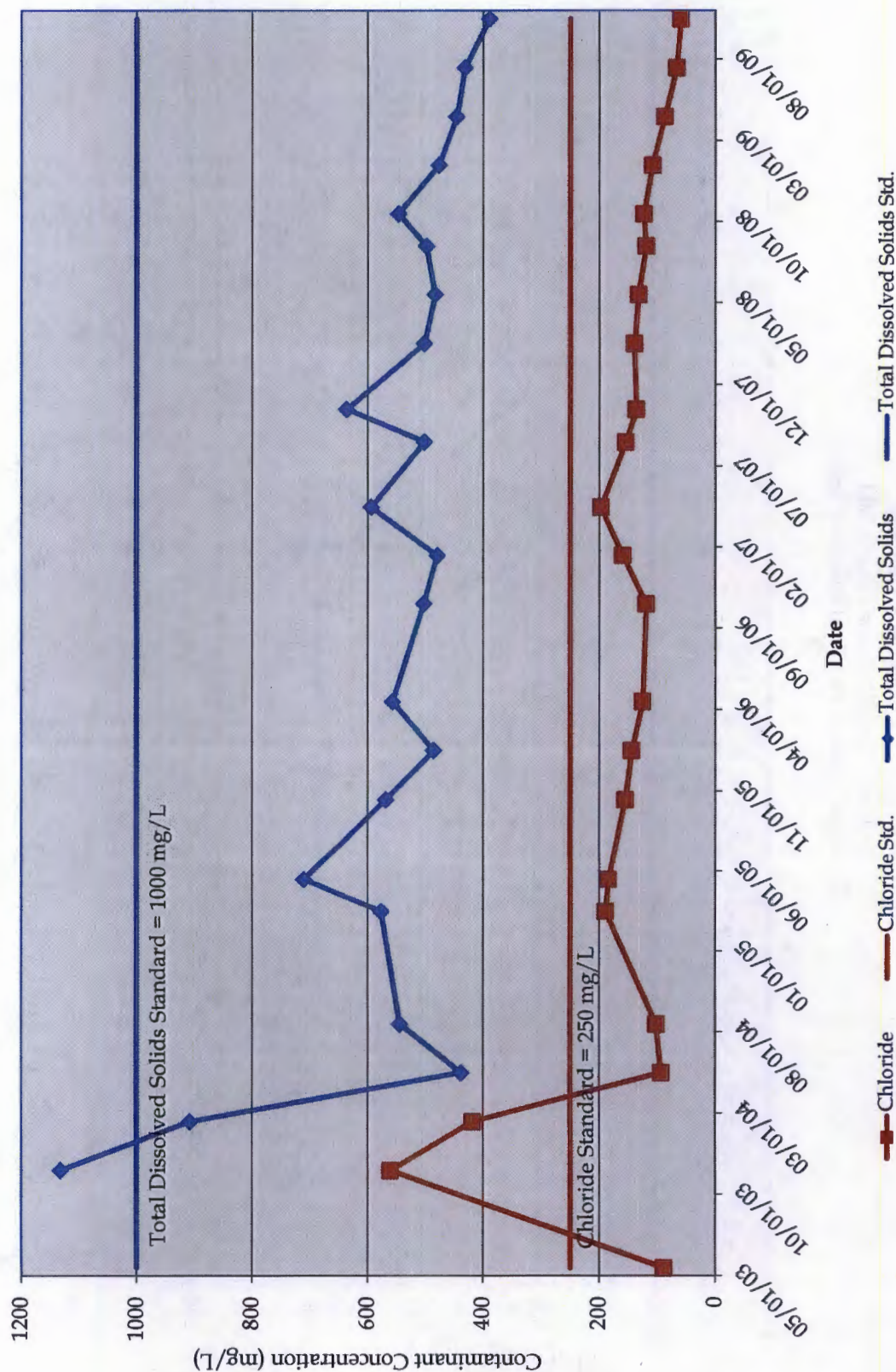
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-13



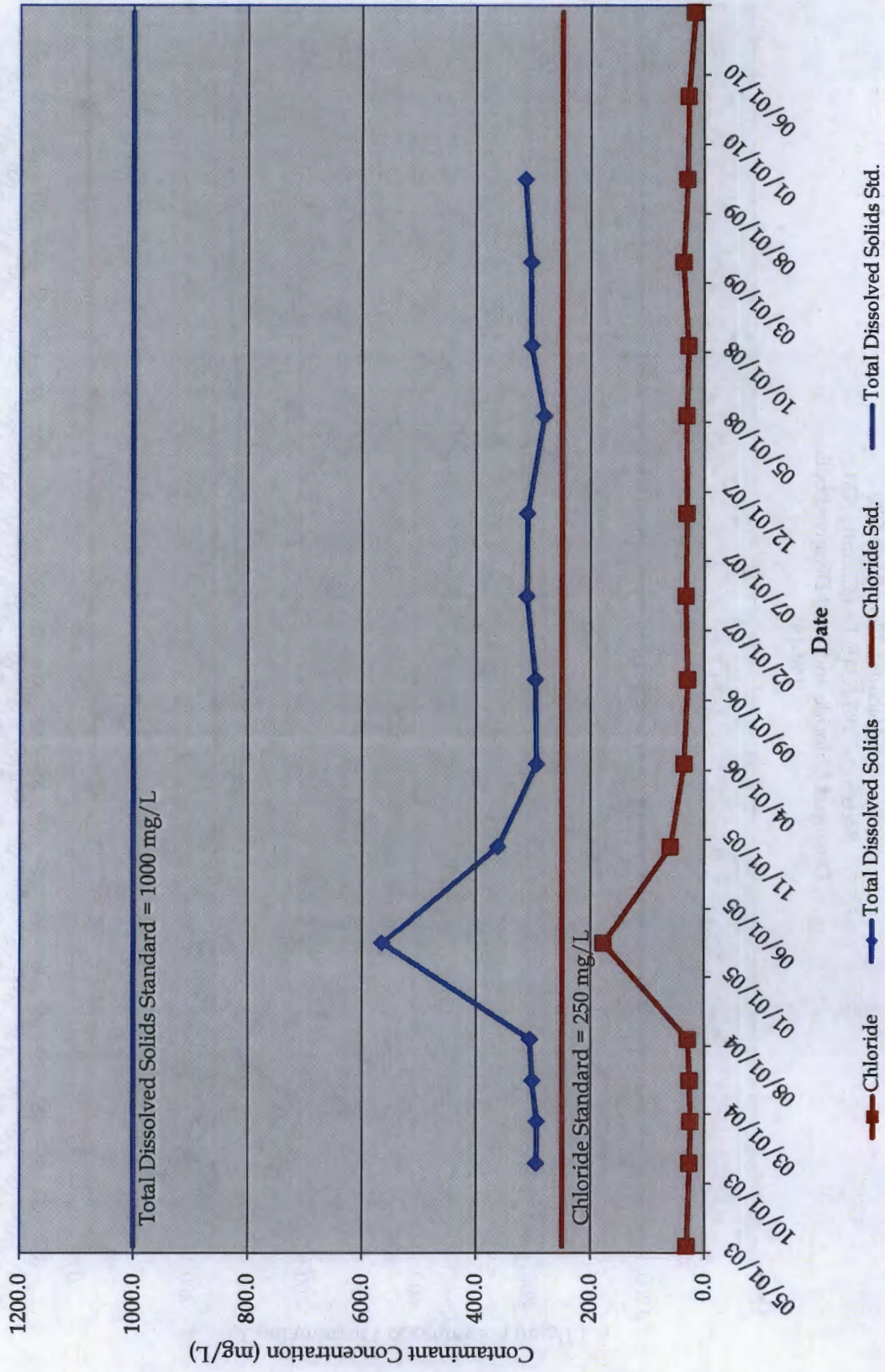
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-14



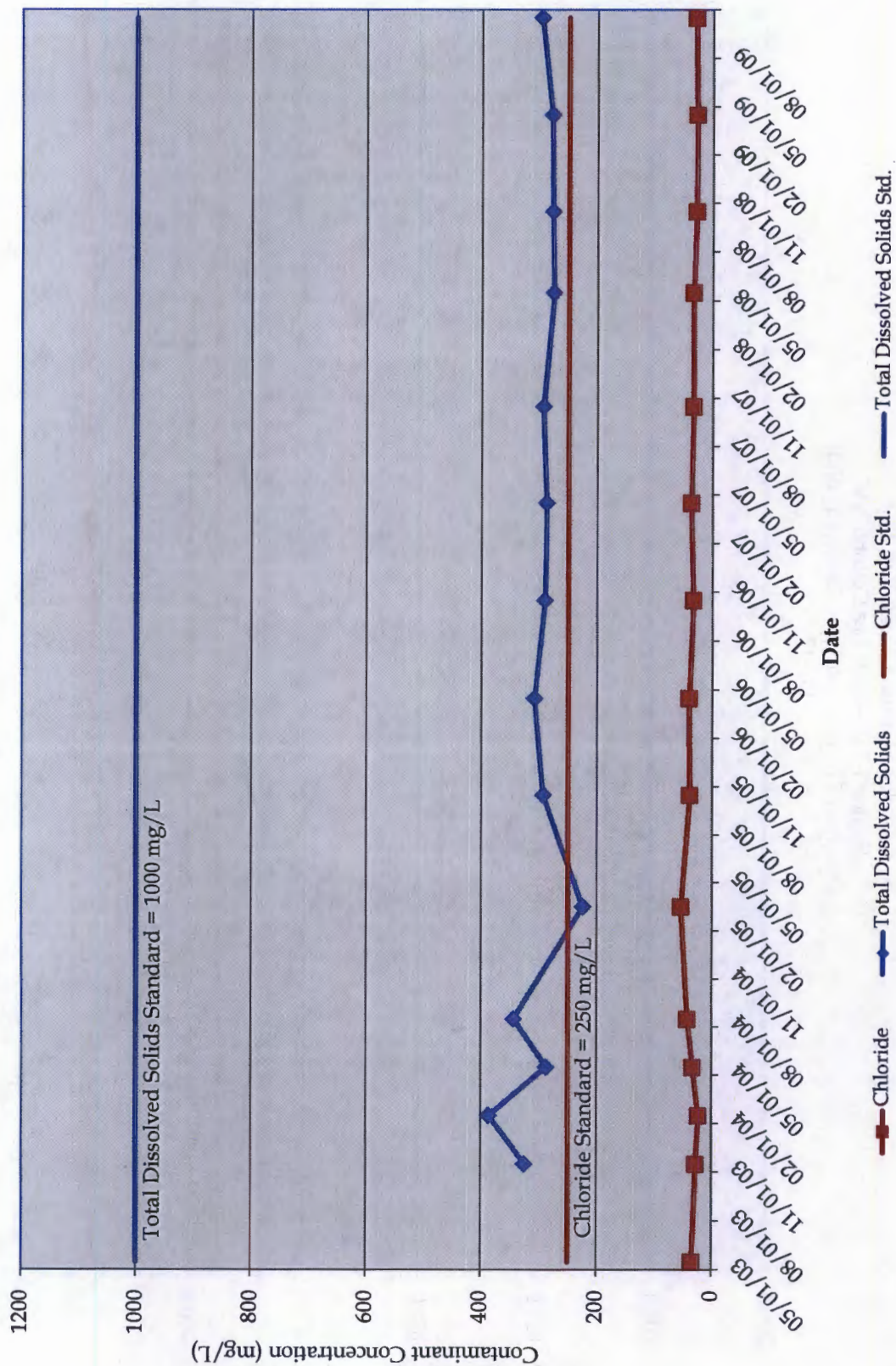
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-15



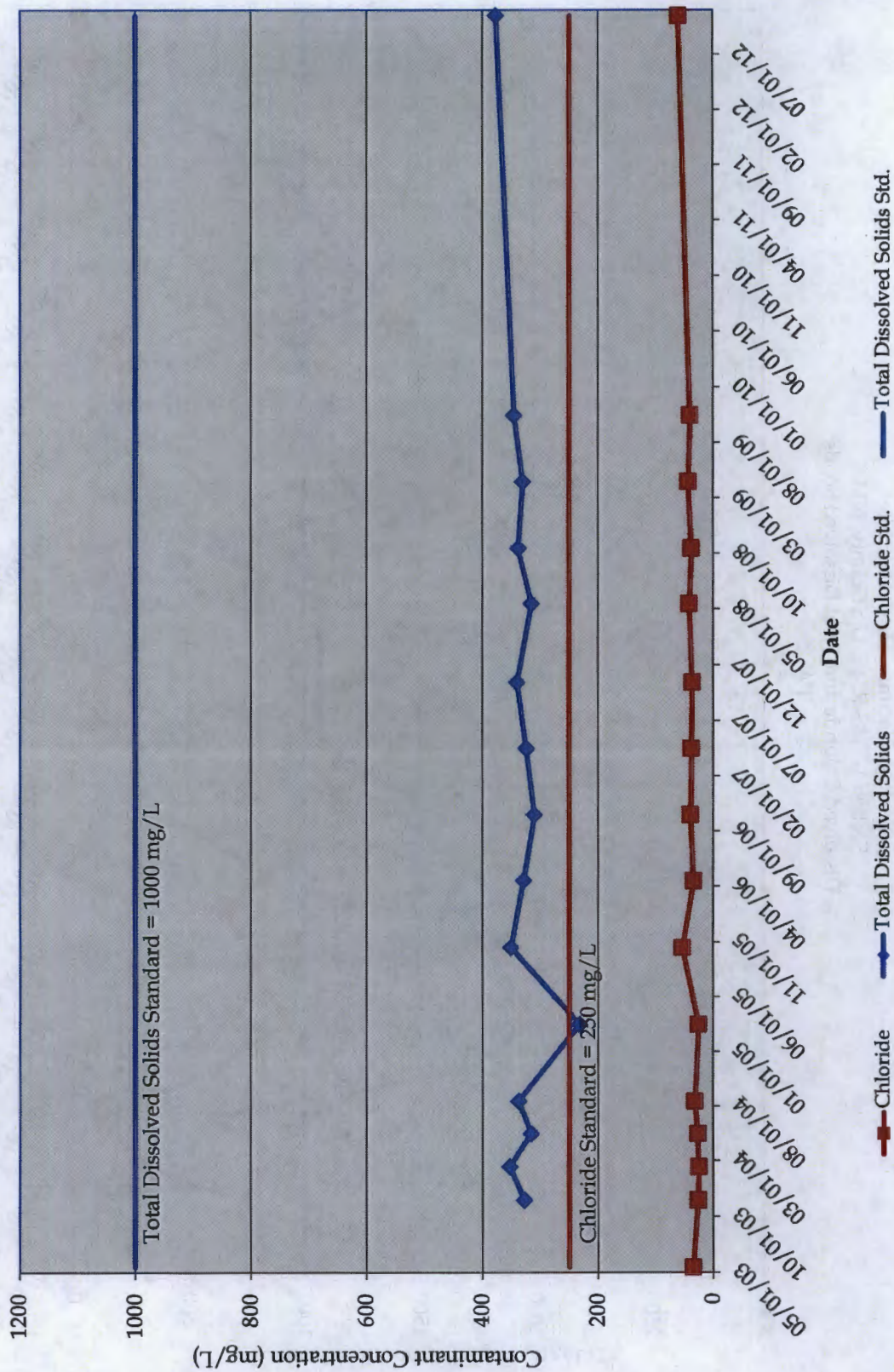
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-17



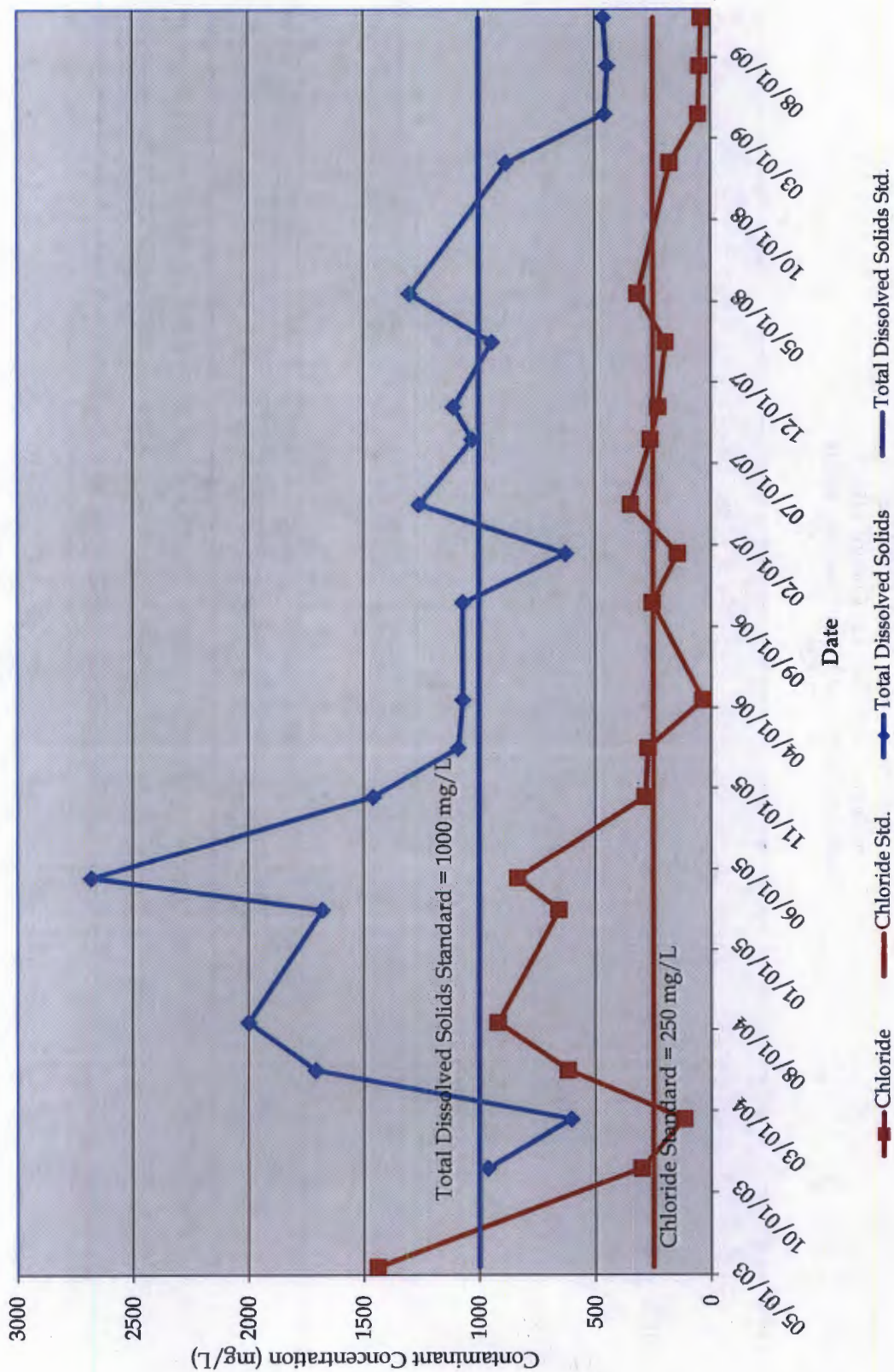
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-19



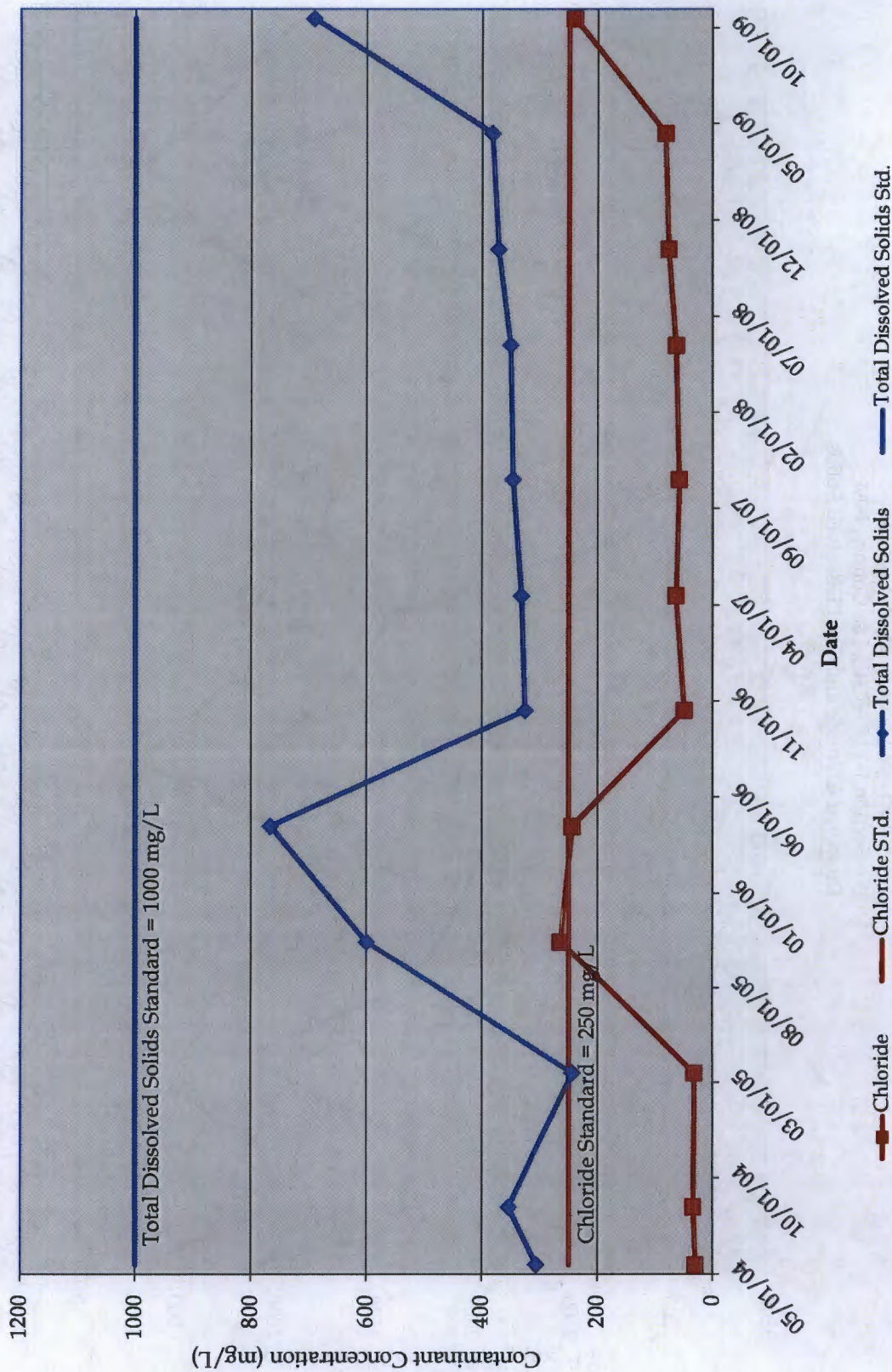
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-20



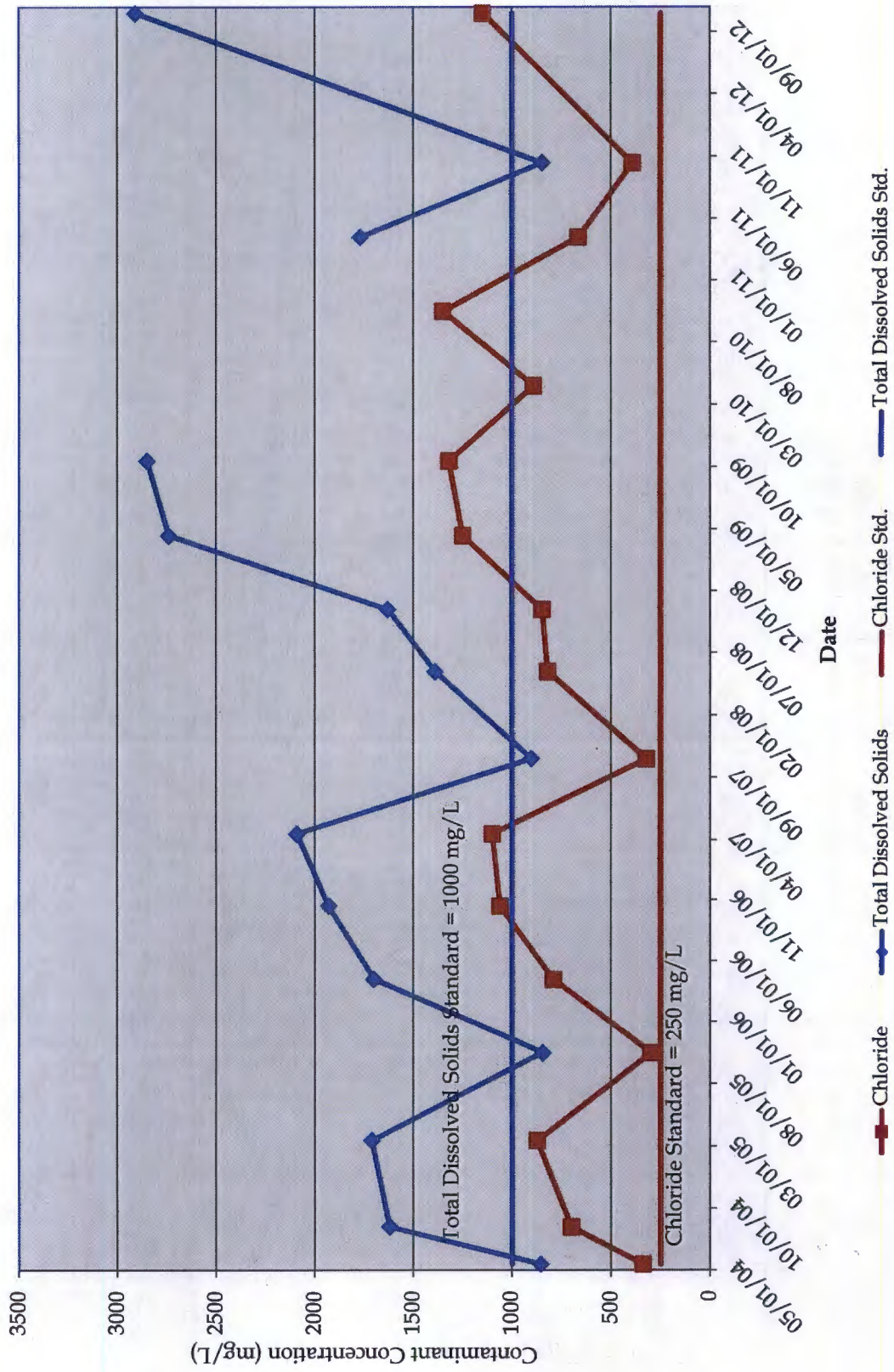
Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 TW-23



Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 RW-2



Chevron Environmental Management Company
 Buckeye Vacuum Field Unit Site
 Section 1-T18S-R34E, Lea County, NM
 Dissolved Chloride and Total Dissolved Solids
 RW-3



Analytical Report 440574

for

Conestoga Rovers & Associates

Project Manager: Claudia Ramos

Buckeye Vacumm

073015-2012-01

19-APR-12

Collected By: Client



Celebrating 20 Years of commitment to excellence in Environmental Testing Services



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AAL11), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)



19-APR-12

Project Manager: **Claudia Ramos**
Conestoga Rovers & Associates
2135 S Loop 250 W
Midland, TX 79703

Reference: XENCO Report No: **440574**
Buckeye Vacumm
Project Address: Buckeye, New Mexico

Claudia Ramos:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 440574. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 440574 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron II

Odessa Laboratory Manager

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Sample Cross Reference 440574



Conestoga Rovers & Associates, Midland, TX

Buckeye Vacumm

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TW-14	W	04-10-12 13:30		440574-001
TW-13	W	04-10-12 14:49		440574-002
TW-10	W	04-10-12 15:30		440574-003



CASE NARRATIVE

Client Name: Conestoga Rovers & Associates

Project Name: Buckeye Vacumm



Project ID: 073015-2012-01

Work Order Number: 440574

Report Date: 19-APR-12

Date Received: 04/12/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-885916 Inorganic Anions by EPA 300

E300

Batch 885916, Chloride recovered below QC limits in the Matrix Spike.

Samples affected are: 440574-002, -001, -003.

The Laboratory Control Sample for Chloride is within laboratory Control Limits



Certificate of Analysis Summary 440574

Conestoga Rovers & Associates, Midland, TX

Project Name: Buckeye Vacuum

Project Id: 073015-2012-01

Contact: Claudia Ramos

Project Location: Buckeye, New Mexico

Date Received in Lab: Thu Apr-12-12 12:10 pm

Report Date: 19-APR-12

Project Manager: Brent Barron II

Analysis Requested	Lab Id:	440574-001	440574-002	440574-003	
	Field Id:	TW-14	TW-13	TW-10	
	Depth:				
	Matrix:	WATER	WATER	WATER	
	Sampled:	Apr-10-12 13:30	Apr-10-12 14:49	Apr-10-12 15:30	
Inorganic Anions C1 by EPA 300/300.1 SUB: TX104704215	Extracted:	Apr-13-12 17:57	Apr-13-12 18:13	Apr-13-12 18:29	
	Analyzed:	Apr-13-12 17:57	Apr-13-12 18:13	Apr-13-12 18:29	
	Units/RL:	mg/L RL	mg/L RL	mg/L RL	
Chloride		40.2	83.6	302	0.500
TDS by SM2540C SUB: TX104704215	Extracted:	Apr-17-12 08:30	Apr-17-12 08:30	Apr-17-12 08:30	
	Analyzed:	mg/L RL	mg/L RL	mg/L RL	
	Units/RL:	527	796	1080	
Total dissolved solids		5.00	5.00	5.00	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Brent Barron II
Odessa Laboratory Manager

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238
2505 North Falkenburg Rd, Tampa, FL 33619
12600 West I-20 East, Odessa, TX 79765
6017 Financial Drive, Norcross, GA 30071
3725 E. Atlanta Ave, Phoenix, AZ 85040

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	

Project Name: Buckeye Vacuum

Work Order #: 440574

Analyst: TTE

Lab Batch ID: 885916

Sample: 620616-1-BKS

Date Prepared: 04/13/2012

Batch #: 1

Project ID: 073015-2012-01

Date Analyzed: 04/13/2012

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Units: mg/L											
Analytes	Inorganic Anions Cl by EPA 300/300.1										
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	<0.500	50.0	50.4	101	50.0	49.7	99	1	80-120	20	

Analyst: LBA

Lab Batch ID: 886031

Sample: 886031-1-BKS

Date Prepared: 04/17/2012

Batch #: 1

Date Analyzed: 04/17/2012

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
TDS by SM2540C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Total dissolved solids	<5.00	1000	1010	101	1000	1010	101	0	80-120	30

Relative Percent Difference RPD = $200 * [(C-F) / (C+F)]$
Blank Spike Recovery [D] = $100 * (C) / [B]$
Blank Spike Duplicate Recovery [G] = $100 * (F) / [E]$
All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries



Project Name: Buckeye Vacumm

Work Order #: 440574

Lab Batch #: 885916

Date Analyzed: 04/13/2012

QC- Sample ID: 440561-004 S

Reporting Units: mg/L

Project ID: 073015-2012-01

Analyst: TTE

Date Prepared: 04/13/2012

Batch #: 1

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	220	50.0	226	12	80-120	X

Lab Batch #: 885916

Date Analyzed: 04/13/2012

QC- Sample ID: 440597-001 S

Reporting Units: mg/L

Date Prepared: 04/13/2012

Analyst: TTE

Batch #: 1

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	21.9	50.0	67.9	92	80-120	

Matrix Spike Percent Recovery [D] = $100 \times (C-A)/B$
Relative Percent Difference [E] = $200 \times (C-A)/(C+B)$
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Buckeye Vacumm

Work Order #: 440574

Lab Batch #: 886031

Project ID: 073015-2012-01

Date Analyzed: 04/17/2012 08:30

Date Prepared: 04/17/2012

Analyst: LBA

QC- Sample ID: 440577-002 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	2490	2500	0	30	

Lab Batch #: 886031

Date Analyzed: 04/17/2012 08:30

Date Prepared: 04/17/2012

Analyst: LBA

QC- Sample ID: 440756-004 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	1070	1070	0	30	

Spike Relative Difference RPD $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

CHAIN OF CUSTODY RECORD

CHAIN OF CUSTODY RECORD
 Address: 2135 S. Loop 250 West, Midland, TX 79703 COC NO.: 33208 PAGE 1 OF 1
 Phone: 432-686-2000 Fax: 432-686-0186 (See Reverse Side for Instructions)

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 073015-2012-01						Laboratory Name: Xenco Laboratories								Lab Location: Alexey TX		SSOW ID:												
Project Name: Buckeye Vacuum						Lab Contact: Dan + Brian								Lab Quote No:		Cooler No:												
Project Location: Buckeye New Mexico																												
Chemistry Contact: Claudia Ramos																												
Sampler(s): Matt Hamby																												
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yyyy)	TIME (hh:mm)	Matrix Code (see back of COC)	Grab (g) or Comp (c)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	Etores 3x5-g, 1x25-g	Other: Ice	Total Containers/Sample	ANALYSIS REQUESTED (See Back of COC for Definitions)				MS/MSD Request		Carrier:		Airbill No:		Date Shipped:		COMMENTS/ SPECIAL INSTRUCTIONS:	
1	TW-14 04/10/12	4-10-12	1330	G	X										1	X	X	X										
2	TW-13 04/10/12	4-10-12	1449	G	X										1	X	X	X										
3	TW-10 04/10/12	4-10-12	1530	G	X										1	X	X	X										
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
TAT Required in business days (use separate COCs for different TATs): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Weeks ☐ Other:				Total Number of Containers:		Notes / Special Requirements: Corrected 13.0 / 12.5 C										Company		Date	Time									
				All Samples in Cooler must be on COC		RECEIVED BY Anabela Elvira										COMPANY Xenco		Date	Time									
RELINQUISHED BY Kelly Mortensen				DATE 4/12/12		TIME 12:10										COMPANY Xenco		Date	Time									
1.																		Date	Time									
2.																		Date	Time									
3.																		Date	Time									

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT -- ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE --- Fully Executed Copy (CRA)
YELLOW --- Receiving Laboratory Copy

PINK – Shipper

GOLDENROD – Sampling Crew

CRA Form: COC-10B (20110804)

**XENCO Laboratories**

Atlanta, Boca Raton, Corpus Christi, Dallas

Houston, Miami, Odessa, Philadelphia

Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist

Document No.: SYS-SRC

Revision/Date: No. 01, 5/27/2010

Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client:

C.R.A.

Date/Time:

4.12.12 12:10

Lab ID #:

440574

Initials:

AE**Sample Receipt Checklist**

1. Samples on ice?	Blue	<u>Water</u>	No	
2. Shipping container in good condition?	<u>Yes</u>	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	<u>N/A</u>	
4. Chain of Custody present?	<u>Yes</u>	No		
5. Sample instructions complete on chain of custody?	<u>Yes</u>	No		
6. Any missing / extra samples?	Yes	<u>No</u>		
7. Chain of custody signed when relinquished / received?	<u>Yes</u>	No		
8. Chain of custody agrees with sample label(s)?	<u>Yes</u>	No		
9. Container labels legible and intact?	<u>Yes</u>	No		
10. Sample matrix / properties agree with chain of custody?	<u>Yes</u>	No		
11. Samples in proper container / bottle?	<u>Yes</u>	No		
12. Samples properly preserved?	<u>Yes</u>	No	N/A	
13. Sample container intact?	<u>Yes</u>	No		
14. Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No		
15. All samples received within sufficient hold time?	<u>Yes</u>	No		
16. Subcontract of sample(s)?	<u>Yes</u>	No	N/A	
17. VOC sample have zero head space?	Yes	No	<u>N/A</u>	
18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs <u>12.5</u> °C	lbs °C	lbs °C	lbs °C	lbs °C

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that apply: ☒ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.

- ☐ Initial and Backup Temperature confirm out of temperature conditions
☐ Client understands and would like to proceed with analysis

Analytical Report 451047

for

Conestoga Rovers & Associates

Project Manager: John Schnable

Midland Odessa Discounted Fee Schedule

073015

01-NOV-12

Collected By: Client



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)



01-NOV-12

Project Manager: **John Schnable**
Conestoga Rovers & Associates
2135 S Loop 250 W
Midland, TX 79703

Reference: XENCO Report No: **451047**
Midland Odessa Discounted Fee Schedule
Project Address: New Mexico

John Schnable:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 451047. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 451047 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Nicholas Straccione

Project Manager

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Sample Cross Reference 451047



Conestoga Rovers & Associates, Midland, TX

Midland Odessa Discounted Fee Schedule

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TW9101812	W	10-18-12 10:00		451047-001
RW3101812	W	10-18-12 09:50		451047-002
TW20101812	W	10-18-12 11:07		451047-003
TW14101812	W	10-18-12 12:03		451047-004
TW13101812	W	10-18-12 13:15		451047-005
TW10101812	W	10-18-12 14:30		451047-006



CASE NARRATIVE

Client Name: Conestoga Rovers & Associates

Project Name: Midland Odessa Discounted Fee Schedule



Project ID: 073015

Work Order Number: 451047

Report Date: 01-NOV-12

Date Received: 10/19/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None



Certificate of Analysis Summary 451047

Conestoga Rovers & Associates, Midland, TX

Project Name: Midland Odessa Discounted Fee Schedule

Project Id: 073015

Contact: John Schnable

Project Location: New Mexico

Date Received in Lab: Fri Oct-19-12 10:31 am

Report Date: 01-NOV-12

Project Manager: Nicholas Straccione

Analysis Requested	Lab Id:	451047-001	451047-002	451047-003	451047-004	451047-005	451047-006
	Field Id:	TW9101812	RW3101812	TW20101812	TW14101812	TW13101812	TW10101812
	Depth:						
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	Sampled:	Oct-18-12 10:00	Oct-18-12 09:50	Oct-18-12 11:07	Oct-18-12 12:03	Oct-18-12 13:15	Oct-18-12 14:30
Inorganic Anions by EPA 300/300.1 SUB: E871002	Extracted:	Oct-20-12 13:21	Oct-20-12 14:09	Oct-20-12 14:25	Oct-20-12 14:41	Oct-20-12 14:58	Oct-20-12 15:14
	Analyzed:	Oct-20-12 13:21	Oct-20-12 14:09	Oct-20-12 14:25	Oct-20-12 14:41	Oct-20-12 14:58	Oct-20-12 15:14
	Units/RL:	mg/L RL 108 0.500	mg/L RL 1150 5.00	mg/L RL 60.6 0.500	mg/L RL 49.7 0.500	mg/L RL 79.5 0.500	mg/L RL 425 5.00
Chloride							
TDS by SM2540C SUB: E871002	Extracted:	Oct-23-12 18:00	Oct-23-12 18:00	Oct-23-12 18:00	Oct-23-12 18:00	Oct-23-12 18:00	Oct-23-12 18:00
	Analyzed:						
	Units/RL:	mg/L RL 482 5.00	mg/L RL 2910 5.00	mg/L RL 377 5.00	mg/L RL 525 5.00	mg/L RL 731 5.00	mg/L RL 1020 5.00
Total dissolved solids							

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Nicholas Straccione
Project Manager

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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(602) 437-0330	



BS / BSD Recoveries



Project Name: Midland Odessa Discounted Fee Schedule

Work Order #: 451047

Analyst: TTE

Lab Batch ID: 899287

Sample: 628923-1-BKS

Date Prepared: 10/20/2012

Batch #: 1

Project ID: 073015

Date Analyzed: 10/20/2012

Matrix: Water

Units: mg/L

Inorganic Anions by EPA 300/300.1

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Chloride	<0.500	50.0	49.6	99	50.0	49.8	100	0	80-120	20

Analyst: KUG

Lab Batch ID: 899482

Sample: 899482-1-BKS

Date Prepared: 10/23/2012

Batch #: 1

Date Analyzed: 10/23/2012

Matrix: Water

Units: mg/L

TDS by SM2540C

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TDS by SM2540C		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Total dissolved solids		<5.00	1000	1000	100	1000	999	100	0	80-120	30	

Relative Percent Difference RPD = $200 \cdot |(C-F)/(C+F)|$

Blank Spike Recovery [D] = $100 \cdot (C)/[B]$

Blank Spike Duplicate Recovery [G] = $100 \cdot (F)/[E]$

All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries



Project Name: Midland Odessa Discounted Fee Schedule

Work Order #: 451047

Lab Batch #: 899287

Date Analyzed: 10/20/2012

QC- Sample ID: 451047-006 S

Reporting Units: mg/L

Project ID: 073015

Analyst: TTE

Date Prepared: 10/20/2012

Batch #: 1

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	425	500	928	101	80-120	

Lab Batch #: 899287

Date Analyzed: 10/20/2012

QC- Sample ID: 451082-003 S

Reporting Units: mg/L

Date Prepared: 10/20/2012

Analyst: TTE

Batch #: 1

Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	142	100	246	104	80-120	

Matrix Spike Percent Recovery [D] = $100 \cdot (C-A)/B$
Relative Percent Difference [E] = $200 \cdot (C-A)/(C+B)$
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Midland Odessa Discounted Fee Schedule

Work Order #: 451047

Lab Batch #: 899482

Project ID: 073015

Date Analyzed: 10/23/2012 18:00

Date Prepared: 10/23/2012

Analyst: KUG

QC- Sample ID: 450987-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	577	578	0	30	

Lab Batch #: 899482

Date Analyzed: 10/23/2012 18:00

Date Prepared: 10/23/2012

Analyst: KUG

QC- Sample ID: 451009-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	2270	2260	0	30	

Spike Relative Difference RPD $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

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Serial #: 307596

Page 1 of 1

Company-City CRA - Midland		Phone (932) 686-0886							
Project Name-Location Buckeye Union		Project ID 073015							
Proj. State: TX, AL, FL, GA, LA, MS, NC, NJ, PA, SC, TN, UT Other NM		Proj. Manager (PM) John Schnable							
E-mail Results to EPM and Schnable@cracorp.com		Fax No: (932) 686-0186							
Invoice to Accounting Inc. Invoice with Final Report. Invoice must have a P.O.		Bill to: CRA - Chris Knight							
Quote/Pricing:		P.O. No: 4048445							
Reg Program: UST DRY-CLEAN Land-Fill Waste-Disp NPDES DW TRRP		QAPP Per-Contract CLP AGCEE NAVY DOE DOD USACE OTHER:							
Special DLs (GW DW QAPP MDLs RLS See Lab PM Included Call PM)		See P.O.							
Sampler Name Justin Miller		Signature [Signature]							
Sample ID	Sampling Date	Time	Depth in" m	Composite	Grab	# Containers	Container Size	Container Type	Preservatives
TW9 10/18/12	10-18-12	1000	W	X	X				
TW3 10/18/12	10-18-12	0950							
TW20 10/18/12		1107							
TW14 10/18/12		1203							
TW13 10/18/12		1315							
TW10 10/18/12		1450							
Relinquished by (Initials-and Sign) Date & Time Relinquished to (Initials and Sign) Date & Time 1) JN 10/18/12 10/18/12 10:36 2) 3) 4) 5) 6)									

Preservatives: Various (V), HCl pH<2 (H), H₂SO₄ pH<2 (S), HNO₃ pH<2 (N), Asbc Acid&NaOH (A), ZnAc&NaOH (Z), (Cool, <4C) (C), None (NA), See Label (L), Other (O).

CH (Z), (Cool, -40°C), Nolle (NA), See Label (E), Siller (S)

Conf. Type: Glass Amb (A), Glass Clear (C), Plastic (P), Various (V)

Matrix: Air (A), Product (P), Solid (S), Water (W) Liquid (L)

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Notice: Signature of this document and relinquishment of these samples constitutes a valid purchase order from client company to Xenco Laboratories and its affiliates, subcontractors and assigns under Xenco's standard terms and conditions of service unless previously negotiated under a fully executed client contract.



XENCO Laboratories



Prelogin/Nonconformance Report- Sample Log-In

Client: Conestoga Rovers & Associates

Acceptable Temperature Range: 0 - 6 degC

Date/ Time Received: 10/19/2012 10:31:00 AM

Air and Metal samples Acceptable Range: Ambient

Work Order #: 451047

Temperature Measuring device used :

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	4.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:	PH Device/Lot#:
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Checklist completed by: _____

Date: _____

Checklist reviewed by: _____

Date: _____