1R – 289

2013 AGWMR

FEB 2014

2013 ANNUAL GROUNDWATER MONITORING REPORT

COOPER-JAL UNIT SOUTH INJECTION STATION
CASE NO. 1R289, OGRID NO. 4323
NW/4, NW/4, SE/4, SECTION 24, T-24-S, R-36-E
LATITUDE: N 32° 12’ 7.3” LONGITUDE: W 103° 12’ 59.9”
LEA COUNTY, NEW MEXICO

Prepared For:

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Houston, TX 77002

FEBRUARY 2014
REF. NO. 039123 (10)

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Section 1.0 Introduction

This Annual Groundwater Monitoring Report presents groundwater data collected during the 2013 reporting period by Conestoga-Rovers & Associates (CRA) on behalf of Chevron Environmental Management Company (CEMC) at the Cooper-Jal Unit South Injection Station (hereafter referred to as the "Site"). Groundwater sampling events were performed on May 16 and on October 7-8, 2013. One recovery and two groundwater monitoring wells were installed and one monitoring well was plugged and abandoned in late September 2013. Aquifer testing activities were performed on October 2, 3 and 4, 2013.

The Site is located on Lea County Road J7, approximately 5.5 miles northwest of Jal, New Mexico and situated in Unit Letter J, northwest quarter (NW/4) of the northwest quarter (NW/4) of the southeast quarter (SE/4), Section 24, Township 24 South, Range 36 East, Lea County, New Mexico. The Site is relatively flat and improved with bermed, above-ground storage tanks (ASTs), hardened caliche roadways and oil and gas production equipment that includes four production wells. Land use in the vicinity of the Site is undeveloped rangeland vegetated with indigenous grass, livestock ranching and oil and gas production. The topography slopes southeast toward Monument Draw located approximately 7.5 miles southeast of the Site. A Site Location Map is presented as Figure 1.

Site assessment activities were initiated in 1993 when Environmental Spill Control, Inc. (ESCI) of Hobbs, New Mexico performed a subsurface assessment of an unlined earthen emergency produced water overflow pit that was located adjacent to the west edge of the Site. During the investigation, five boreholes were advanced to depths ranging from 15 feet to 100 feet below ground surface (bgs). The investigation revealed the presence of hydrocarbon-affected soil. In 1996, Texaco Exploration and Production, Inc. (Texaco) filed a notice of intent to close the pit with the New Mexico Oil Conservation Division (NMOCD). Approximately 1,248 cubic yards of hydrocarbon-affected material were removed from the pit. During the closure activities, the excavation was lined with approximately 1,091 cubic yards of imported clay and backfilled with 3,360 cubic yards of imported caliche. Texaco submitted a pit closure report to the NMOCD in December 1996.

In 1997, the NMOCD requested additional assessment activities to define the vertical extent of affected soil beneath the pit. Assessment activities performed by Highlander Environmental Corporation revealed elevated soil chloride concentrations. In October 1997, monitor well MW-1 was installed near the former pit. Groundwater samples collected from the well contained chloride concentrations above the New Mexico Water Quality Control Commission (NMWQCC) Human Health Standards for Groundwater. Assessment activities performed through May 1998 included the installation of 14 monitor wells. In 1998, electromagnetic (EM-34) terrain conductivity surveys were performed to identify areas of elevated soil chloride concentrations.

In June 1998, Texaco prepared a groundwater corrective action plan to mitigate chloride concentrations and to provide plume containment by extracting groundwater from the affected groundwater-bearing unit. Assessment activities performed in 1999 included the installation of wells MW-11, RW-1 and RW-2. Monitor wells MW-12 and MW-13 were installed in 2001. Semi-annual groundwater monitoring activities and annual reporting to the NMOCD for this Site have been performed by CRA since 2005.

On September 30, 2013, two (2) monitor wells (MW-6R and MW-14) and one (1) recovery well (RW-2R) were installed at the Site. In addition, one (1) monitor well (MW-6) was plugged and abandoned on September 30, 2013. Aquifer testing, including the pumping of RW-2R, was performed on October 2-4, 2013.

Section 2.0 Regulatory Framework

2.1 New Mexico Oil Conservation Division

The NMOCD guidelines require groundwater to be analyzed for potential contaminants as defined by the NMWQCC regulations. In addition, the NMWQCC regulations present the Human Health Standards for Groundwater and Other Standards for Domestic Water Supply. The constituent of concern (COC) in affected groundwater at the Site is chloride. In this report, groundwater analytical results for chloride and four additional analytes are compared to the NMWQCC standards as shown in the following table:

Analyte	***NMWQCC Standard for Groundwater (mg/L)***
Fluoride[1]	1.6
Nitrate (NO_3 as N)[1]	10
Chloride[2]	250
Sulfate (SO_4)[2]	600
Total Dissolved Solids (TDS)[2]	1,000

Notes:

1) [1]NMWQCC Human Health Standards per NMAC 20.6.2.3103A

2) [2]NMWQCC Other Standards for Domestic Water Supply per NMAC 20.6.2.3103B

Section 2.2 New Mexico Office of the State Engineer

The New Mexico Office of the State Engineer (NMOSE) governs water usage in the State of New Mexico. Applications for permit to appropriate groundwater were submitted by Texaco in October 1999 and were approved with specific conditions in June 2008. A total of 65 acre-feet (ac-ft.) per annum from two on-Site recovery wells (RW-1 and RW-2) was granted by the NMOSE for environmental remediation purposes. Usage of groundwater was granted by the NMOSE under well permits CP-884 (RW-2; 32.5 ac-ft. per annum) and CP-885 (RW-1; 32.5 ac-ft. per annum).

NMOSE Permit CP-884 and CP-884-POD2

On September 15, 2009, an Application for Permit to Change the Location of recovery well RW-2 (CP-884) was submitted to the NMOSE (form WR-06), due to a compromised casing rendering it non-functional as a recovery well. The application was approved for permit (CP-884-POD2) in correspondence dated April 22, 2010 with the condition that a Proof of Completion of Well or an Extension of Time be submitted to the NMOSE no later than April 30, 2012. Permit CP-884- POD2 supersedes permit CP-884. Recovery well RW-2 will be retained for monitoring use only. On June 14, 2012, an Application for an Extension of Time in which to Perfect an Appropriation of Underground Water (NMOSE form: WR-13) for permit (CP-884-POD 2) was submitted to the NMOSE for approval. The extension was approved by the NMOSE in correspondence dated September 3, 2013, with the condition that a Proof of Completion of Well or an Extension of Time be submitted to the NMOSE on or before April 30, 2015. Drilling of recovery well RW-2R, associated with permit number CP-884-POD 2 was completed on September 30, 2013. Proof of Completion of Well will be submitted to the NMOSE, Roswell, New Mexico office on or before April 30, 2015.

NMOSE Permit CP-885

On June 15, 2010, an Application for an Extension of Time in which to Perfect an Appropriation of Underground Water for permit CP-885 was submitted to the NMOSE (form WR-13) in association with RW-1. The application was requested because the well for the CP-885 was drilled but not yet equipped. The extension was approved by the NMOSE in correspondence dated August 9, 2010, with the condition that a Proof of Completion of Well or an Extension of Time be submitted to the NMOSE no later than June 30, 2013. An additional Application for Extension of Time for which to Perfect an Appropriation of Underground Water for permit CP-885 was submitted to the NMOSE (form WR-13) on June 24, 2013. The extension was approved by the NMOSE in correspondence dated July 23, 2013, with the condition that a Proof of Completion of Well or an Extension of Time be submitted to the NMOSE on or before June 30, 2016.

NMOSE Permit CP-1188

On August 14, 2013, an Application for Permit to Drill a Well with no Consumptive Use of Water (form WR-07) was submitted to the NMOSE for approval to install two exploratory monitor wells at the Site. On August 20, 2013, the permit was approved by the NMOSE; subsequently a permit number (CP-1188) was issued. Monitor wells (MW-6R and MW-14) were installed and completed on September 30, 2013. In accordance with the conditions of approval, the wells can only be tested for 10 cumulative days, and the wells are to be plugged on or before August 31, 2014, unless a permit to use the water is acquired from the NMOSE, Roswell, New Mexico office. In addition, a Well Record and Log (OSE for WR-20) shall be filed within twenty (20) days after completion of drilling but no later than August 31, 2014.

Section 3.0 Groundwater Sampling and Analysis

Groundwater at the Site is monitored with a network of 18 monitor wells and 3 recovery wells, in accordance with the *Work Plan for Plume Delineation and Modification to Proposed Groundwater Monitoring Schedule* (Larson & Associates, November 18, 1998). Five wells (MW-8, MW-9, MW-9A, MW-10 and MW-11) were sampled during the first semi-annual monitoring event performed on May 16, 2013. All wells were sampled during the second semi-annual monitoring event performed on October 7-8 , 2013. A Site Details Map is presented as Figure 2.

The stratification of chloride-impacted groundwater is monitored with selectively screened wells in the affected groundwater-bearing unit. Monitor wells MW-1 through MW-5, MW-7 through MW-10, MW-12 and MW-13 are screened across the basal 10 to 20 feet of the groundwater-bearing unit. These wells were drilled and completed to the Chinle Formation "Red Beds" underlying the Ogallala Aquifer and are referred to as the "deep wells" in this report. Wells MW-2A, MW-4A, MW-5A and MW-9A are screened across the water table interface with approximately five feet of screen above the water table and 15 feet of screen below the water table. These wells are referred to as the "shallow wells." Wells MW-6R, MW-11, MW-14, RW-1, RW-2 and RW-2R are screened across the entire saturated zone of the groundwater-bearing unit and are referred to as "fully penetrating" wells.

Static fluid levels were measured with an electronic interface probe to the nearest hundredth of a foot and recorded. In addition, a conductivity probe was used to record the conductivity levels every two feet in each well to evaluate the vertical distribution of chloride impacted groundwater. After recording conductivity levels, discreet samples were collected at the interval of highest conductivity using a Hydrosleeve™. Geochemical Water quality parameters (pH, temperature and conductivity) were recorded at the sampling depth. All non-disposable groundwater sampling equipment was decontaminated with a soap (Liquinox®) and potable water wash, a potable water rinse and a final

de-ionized water rinse. Laboratory-supplied sample containers were filled directly from the Hydrosleeve™.

Groundwater samples were placed on ice in insulated coolers and chilled to a temperature of approximately 4°C (40°F). The coolers were sealed for shipment and proper chain-of-custody documentation accompanied the samples to ALS Laboratory Group (ALS) in Houston, Texas for analysis of major cations, anions and TDS by various Environmental Protection Agency (EPA) Methods. Any fluids recovered and generated during the sampling event were containerized in a dedicated polyethylene tank located on Site and subsequently transported and disposed at an NMOCD-permitted salt water disposal (SWD), and CEMC approved facility by Nabors Well Services, LTD. (Nabors).

3.1 Potentiometric Surface and Gradient

Groundwater elevation data is presented in Table 1. Groundwater gradient maps for May 2013 and October 2013 are presented as Figures 3 and 4, respectively. Groundwater elevations ranged from 3,179.42 feet to 3,193.79 feet on May 16, 2013 and from 3,179.57 feet to 3,193.89 feet on October 7-8, 2013. Although the Site's network of wells is completed at various intervals (shallow, deep and fully penetrating), the groundwater elevations appear to be consistent with historical levels with groundwater flow to the southeast. The gradient observed in 2013 was 0.003 feet/foot for both May and October events.

3.2 Analytical Results

The 2013 analytical results generally fall within historical ranges for the two individual sampling strata. Higher chloride concentrations were observed in the basal portion of the Ogallala Aquifer, as reported in Table 2. An isoconcentration map of the chloride concentrations for the May 2013 groundwater monitoring event is presented as Figure 5. Chloride isoconcentration maps for the shallow and deep wells for October 2013 are presented as Figures 6 and 7, respectively. Copies of the certified analytical reports and chain-of-custody documentation are attached in Appendix A.

During the May 2013 sampling event, two monitor wells (MW-9A and MW-10) exceeded the NMWQCC groundwater standards for chloride; one monitor well (MW-9) exceeded the NMWQCC groundwater standard for fluoride; and two monitor wells (MW-9A and MW-10) exceeded the NMWQCC groundwater standards for TDS. No sampled wells (five total) exceeded the NMWQCC groundwater standards for sulfate or nitrates.

During the October 2013 sampling event, twelve wells (MW-1, MW-2, MW-4, MW-4A, MW-5, MW-7, MW-9A, MW-10, MW-13, RW-1, RW-2 and RW-2R) exceeded the NMWQCC groundwater standards for chloride; four wells (MW-4A, MW-6R, MW-9 and MW-14) exceeded the NMWQCC groundwater

standard for fluoride; twelve wells (MW-1, MW-2, MW-4, MW-4A, MW-5, MW-7, MW-9A, MW-10, MW-13, RW-1, RW-2 and RW-2R) exceeded the NMWQCC groundwater standards for TDS; and two wells (MW-4 and RW-2R) exceeded the NMWQCC groundwater standard for sulfate. No sampled wells exceeded the NMWQCC groundwater standard for nitrates.

Appendix B provides a historic trend graph analysis of groundwater concentrations (TDS, chlorides) over time for RW-1, RW-2, MW-1 and MW-3. The data indicates that concentrations exhibit some degree of variability over time. However, review of the historic data for the Site shows the chloride plume footprint has remained relatively stable with little migration since 1998.

Section 4.0 2013 Groundwater Assessment Activities

On September 30, 2013, monitor wells MW-6R and MW-14 and recovery well RW-2R were installed in the Ogallala aquifer at the Site. Two of the wells were replacement wells (to wells with compromised casing): RW-2R to replace RW-2 and MW-6R to replace monitor well MW-6. MW-14 was installed to further evaluate the extent of elevated chloride concentrations at a location near the southeast margin of the chloride plume. The well installations also facilitated the implementation of aquifer testing activities performed at the Site in October 2013.

4.1 Monitor/Recovery Well Installation

Harrison and Cooper, Inc. (HCI), licensed by the State of New Mexico, utilized air and mud rotary techniques to construct the wells in accordance to NMOSE rules and regulations (NMAC 19.27.4). The wells were terminated within the top portion (2-5') of the Triassic Chinle Formation that unconformably underlies the Ogallala at approximately 170 feet beneath the Site. The wells were logged by a CRA geologist who described the lithology of the drilled formations and supervised the well construction and development activities.

Soil boring logs and well construction details of the three wells installed in 2013 are provided in Appendix C. A Professional Survey of the new wells is presented in Appendix D. NMOSE Wells Records and Logs for MW-6R, MW-14, and RW-2R are provided in Appendix E, along with the MW-6 Plugging Report.

4.2 Aquifer Testing

Aquifer testing tasks were performed from October 2-4, 2013 by HCI under the direction of CRA. The objectives of the tests were to evaluate aquifer characteristics, including sustainable well

pumping/recovery rates and radius of influence for evaluation of future groundwater remediation investigation and feasibility studies.

On October 2, an aquifer test was performed on recovery well RW-2R, where groundwater was pumped from the well for a period of eight (8) hours. To assess the radius of influence of the pumping of this well, water levels were measured in well RW-2, located approximately 20 feet away and six other monitor wells (MW-14, MW-4A, MW-5, MW-5A, MW-7 and MW-10), which are located various distances away from well RW-2R (Figure 2). An InSitu Level Troll 700 recorder with a 30 psi transducer was used to collect water levels within pumping well RW-2R and wells RW-2, MW-4, and RW-1 on a frequent basis. Each of the Level Trolls was placed in the well approximately eight hours prior to the pump test of well RW-2R to assess static water levels in these wells. In addition, water level measurements were also collected from wells MW-14, MW-4A, MW-5, MW-5A, MW-7 and MW-10 utilizing a groundwater interface probe. The water levels were measured by hand at approximately at 2 to 2 ½ hour intervals.

The pump test was initiated at a pumping rate of 6 gallons per minute (gpm) that was maintained for approximately 7 hours and 45 minutes. The level of drawdown was stabilized after approximately 3 hours and 10 minutes. The static water level at the start of the test (0900 hours) was 136.85 feet below ground surface (bgs), and at 1210 hours the water level was 155.6 ft-bgs and at the end of the test (1627 hours) the water level was 155.49 ft-bgs, with a total drawdown of 19.05 feet in RW-2R.

Monitor well RW-2, located approximately 20 feet west of well RW-2R exhibited an approximately stabilized water level drawdown after 3 hours and 38 minutes and a drawdown of 1.11 feet at the end of the pumping period. Water level drawdown in the other wells monitored during the test was negligible and within the expected diurnal fluctuation.

The data collected for the pump test of well MW-2R is contained in Appendix F**.** For the aquifer in this area and at a pumping rate of approximately 6 gpm, approximately 8,640 gallons will be removed per day, and 3,153,600 gallons per year or 9.7 ac-ft./ per annum per well would be removed from this well. The calculated storativity from the pump test for this well was 0.00022, which is average value for an unconfined aquifer. The calculated specific yield was 0.5, which is on the higher end of specific yield values and is more useful in evaluating the aquifer than the storativity for an unconfined aquifer such as this one. This higher end value indicates that storage from this aquifer or dewatering from the pore spaces is high. The calculated transmissivity was 25.62 ft^2/day, which indicates the aquifer can be produced at a stabilized rate of approximately 6 gpm.

A maximum drawdown of 1.11 feet was observed in well RW-2, located 20 feet away, which occurred within 2 hours and was sustained at this level for remaining portion of the test indicating a radius of influence of at least 20 feet. Then next closest observation wells - located approximately 200 feet away,

exhibited little to no measurable drawdown resulting from the pumping of RW-2R. Interpolation of the distance-drawdown relationship between RW-2R and the surrounding area suggest a likely radius of influence of 35 to 50 feet.

A total of 65 acre-feet (ac-ft.) per annum of groundwater from two on-Site recovery wells (RW-1 and RW-2R) was granted by the NMOSE for environmental remediation purposes. Usage of groundwater was granted by the NMOSE under well permits CP-884 (RW-2; 32.5 ac-ft. per annum) and CP-885 (RW-1; 32.5 ac-ft. per annum). Based on the aquifer testing data and using a pumping rate of 6 gpm, approximately 20 ac-ft. per annum could reasonably be pumped from the two existing recovery wells, a volume which is less than the permitted 65 ac-ft./annum for the two wells. Using this scenario, the addition of four more recovery wells could be employed at the Site to remove groundwater within the existing permit allotments. The four wells could be added in the area west of well RW-2R and spaced approximately 70 feet apart.

Chevron is currently evaluating the effectiveness of total fluids remediation systems for chloride impacted groundwater. Review of historical analytical trends at other chloride impacted sites indicate that only marginal benefits in the reduction of chloride and TDS mass and concentrations can be attributed to total fluid system operations. .Alternative remedial technologies, that are more effective in conserving groundwater resources and reducing groundwater impacts – are also being considered for implementation at the Cooper Jal site.

Documentation of the soil and fluid waste management activities (bills of lading) for the well installs and aquifer testing are provided in Appendix G. Original copies were mailed to Chevron Environmental Management Company.

Section 5.0 Summary of Findings

Based on groundwater monitoring, assessment and aquifer testing activities performed at the Site, CRA presents the following summary:

- On September 30, 2013, two monitor wells (MW-6R and MW-14) and one recovery well (RW-2R) were installed at the Site. In addition, one monitor well (MW-6) was plugged and abandoned on September 30, 2013.
- Groundwater at the Site is monitored with a network of 18 monitor wells and 3 recovery wells. Five wells (MW-8, MW-9, MW-9A, MW-10 and MW-11) were sampled during the first semi-annual monitoring event in May 2013. All wells were sampled during the second semi-annual monitoring event in October 2013.

- Groundwater elevations ranged from 3,179.42 feet to 3,193.79 feet on May 16, 2013 and from 3,179.57 feet to 3,193.89 feet on October 7-8, 2013. Groundwater flow at the Site is to the southeast at a gradient of 0.003 feet/foot.
- The analytical results generally fall within historical ranges with higher chloride concentrations in the basal portion of the Ogallala aquifer.
- During the May 2013 sampling event, two monitor wells exceeded the NMWQCC groundwater standards for chloride; one monitor well exceeded the NMWQCC groundwater standard for fluoride; two monitor wells exceeded the NMWQCC groundwater standards for TDS; and no wells exceeded the NMWQCC groundwater standards for sulfate or nitrates.
- During the October 2013 sampling event, 12 wells exceeded the NMWQCC groundwater standards for chloride; four wells exceeded the NMWQCC groundwater standard for fluoride; 12 wells exceeded the NMWQCC groundwater standards for TDS; two wells exceeded the NMWQCC groundwater standard for sulfate; and no wells exceeded the NMWQCC groundwater standard for nitrates.
- The chloride plume appears stable with little migration since 1998 and the extent of impacts have been effectively delineated.
- Aquifer testing performed in 2013 indicated that sustainable well pumping rates of 6 gpm and a radius of influence of 35-50 feet are characteristic for this location.
- In addition to total fluid recovery systems, alternative remedial technologies – that are more effective in conserving groundwater resources and reducing impacts, are also being considered for implementation at the Site.

Section 6.0 Planned Activities

Based upon the summary and conclusions presented in this report, the following is recommended for the 2014 calendar year:

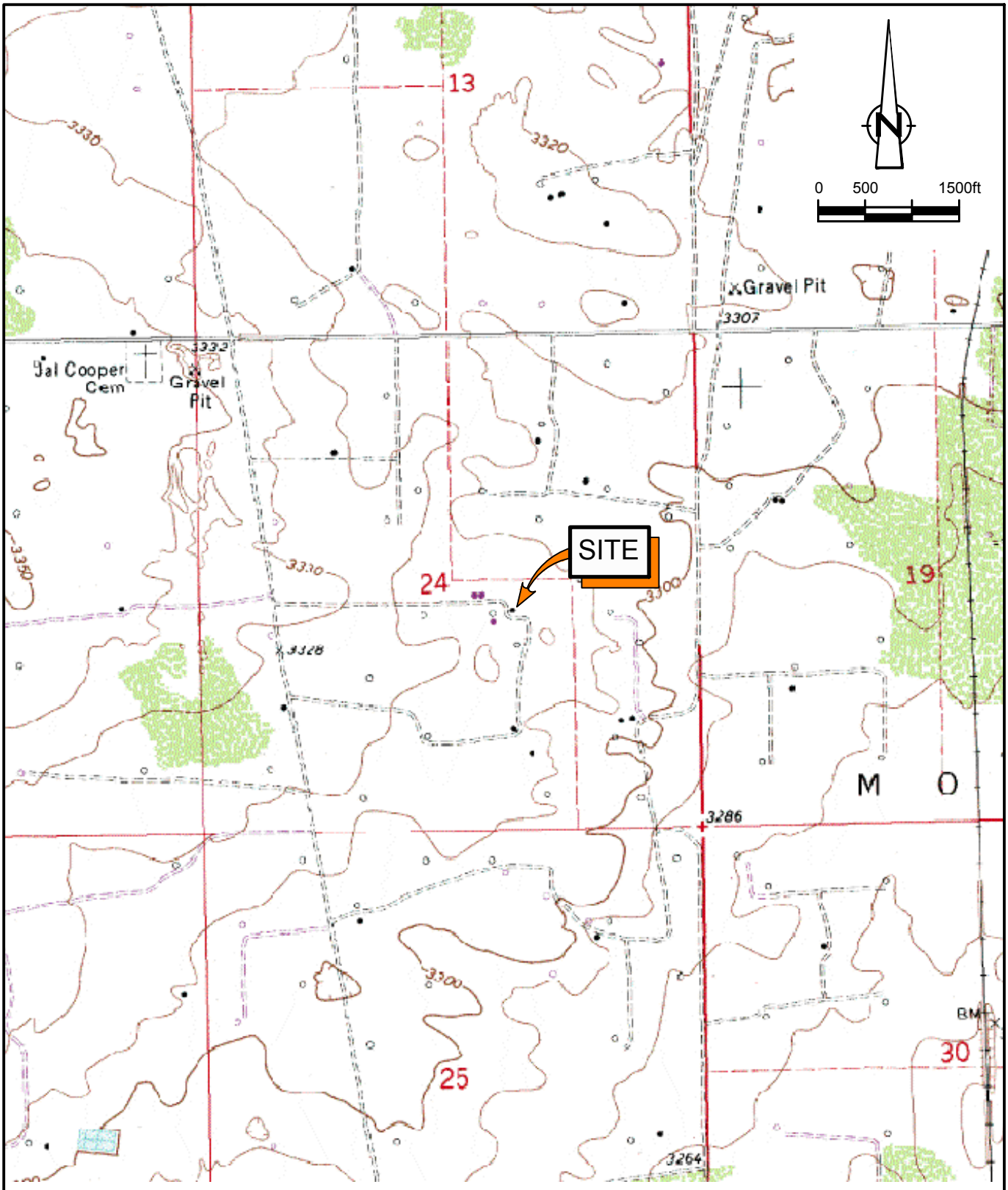
- Perform the 2014 semi-annual groundwater monitoring events that are scheduled for May and October 2014.
- Aquifer testing and other Site data will be evaluated in association with the development of remedial and closure strategies for this location.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Kim Lambert
Project Manager

Thomas C. Larson
Principal, Midland Operations Manager

Figures



SOURCE: USGS 7.5 MINUTE QUADRANGLE;
JAL NW, NEW MEXICO (1977)

32° 12' 7.13" N, 103° 13' 4.36" W

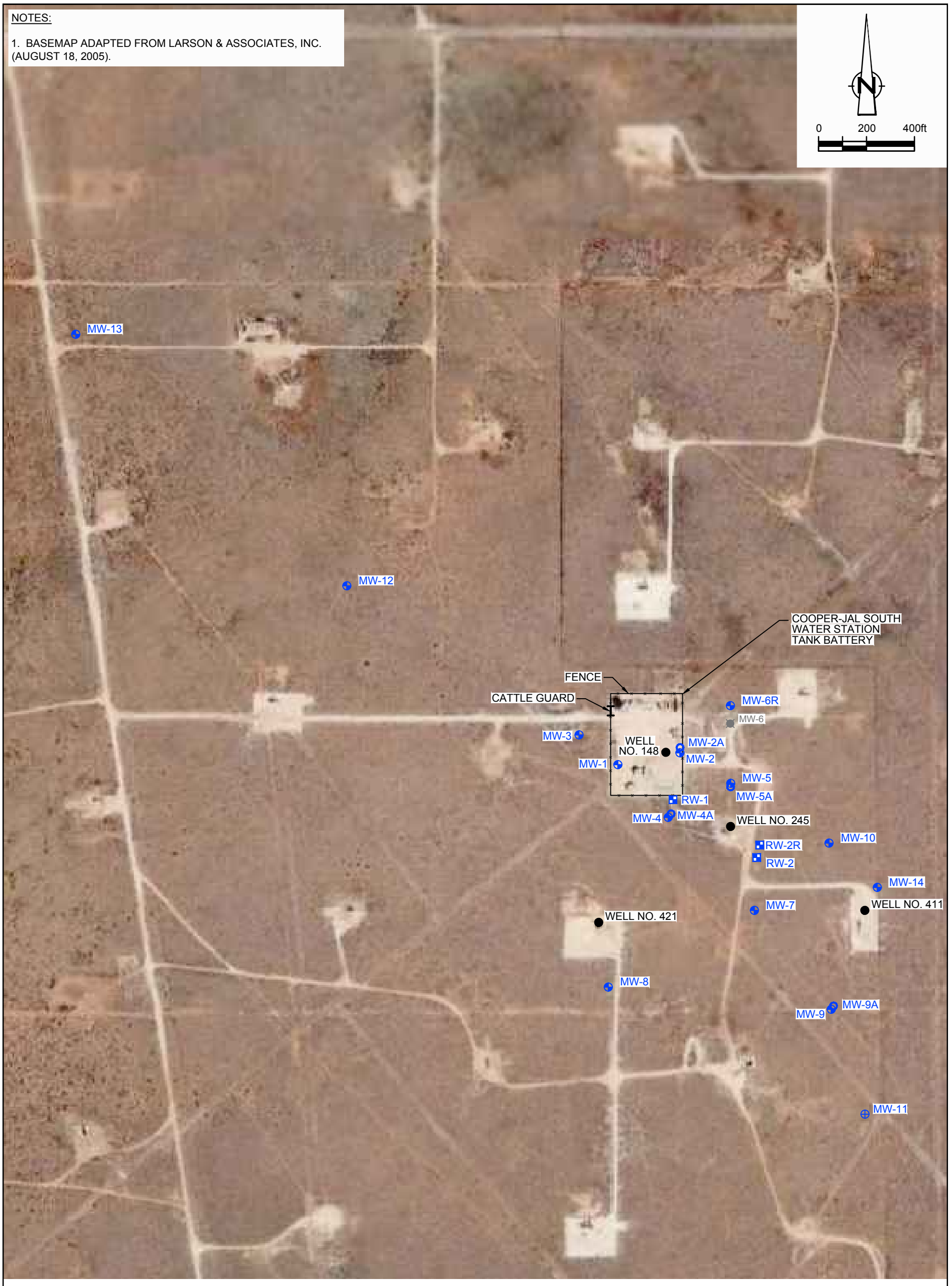
figure 1

SITE LOCATION MAP
COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
Chevron Environmental Management Company

039123-2012(009)GN-DL001 JAN 3/2013

NOTES:

1. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).



LEGEND

- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITORING WELL PLUGGED AND ABANDONED

figure 2

SITE DETAILS MAP
COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 25/2013

NOTES:

1. GROUNDWATER LEVEL ELEVATIONS WERE MEASURED BY CONESTOGA-ROVERS & ASSOCIATES ON MAY 16, 2013.
2. CONTOURS ARE FEET ABOVE MSL.
3. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).

N

0 200 400ft

MW-13 3193.79
MW-12 3188.76
MW-3 3185.96
MW-1 3185.59
MW-6
MW-2A 3185.51
MW-2 3185.53
MW-5 3184.30
MW-5A 3184.35
3184.65
RW-1
MW-4 3184.36
MW-4A 3184.38
MW-10 3182.79
RW-2 3183.29
MW-7 3182.80
MW-8 3183.20
3180.68
MW-9A
MW-9 3180.71
MW-11 3179.42

WELL NO. 148
WELL NO. 245
WELL NO. 421
WELL NO. 411

COOPER-JAL SOUTH WATER STATION TANK BATTERY
FENCE
CATTLE GUARD

3193.00
3191.00
3189.00
3187.00
3185.00
3183.00
3181.00

LEGEND

- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL PLUGGED AND ABANDONED
- 3193.79 GROUNDWATER LEVEL ELEVATION
- GROUNDWATER LEVEL ELEVATION CONTOUR (INTERVAL = 2 FT)
- DIRECTION OF GROUNDWATER FLOW

figure 3

GROUNDWATER GRADIENT MAP - MAY 2013
COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO

Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 25/2013

NOTES:

1. GROUNDWATER LEVEL ELEVATIONS WERE MEASURED BY CONESTOGA-ROVERS & ASSOCIATES ON OCTOBER 7 AND 8, 2013.
2. CONTOURS ARE FEET ABOVE MSL.
3. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).

N

0 200 400ft

MW-13 3193.89

3193.00

3191.00

MW-12 3188.93

3189.00

3187.00

COOPER-JAL SOUTH WATER STATION TANK BATTERY

FENCE

CATTLE GUARD

3185.33 MW-6R

MW-6

3186.07 MW-3

3185.66 MW-2A

WELL NO. 148

MW-2 3177.01*

MW-1 3185.64

MW-5 3184.31

3184.82 RW-1

MW-5A 3183.62

MW-4 3184.21

MW-4A 3184.57

WELL NO. 245

3183.74 RW-2R

MW-10 3182.75

RW-2 3183.19

3182.24 MW-14

MW-7 NS

WELL NO. 411

3185.00

WELL NO. 421

MW-8 3183.24

3180.66 MW-9A

MW-9 3180.85

3183.00

3181.00

MW-11 3179.57

LEGEND

- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL PLUGGED AND ABANDONED
- 3193.89 GROUNDWATER LEVEL ELEVATION
- 3193.89* WELL CASING IS DAMAGED
- NS NOT SAMPLED
- GROUNDWATER LEVEL ELEVATION CONTOUR (INTERVAL = 2 FT)
- DIRECTION OF GROUNDWATER FLOW

figure 4

GROUNDWATER GRADIENT MAP - OCTOBER 2013
COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO

Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 25/2013

NOTES:
1. HIGHLIGHTED CHLORIDE CONCENTRATIONS EXCEED NMWQCC STANDARD FOR GROUNDWATER (250 mg/L).
2. GROUNDWATER SAMPLES WERE COLLECTED ON MAY 17, 2013.
3. CHLORIDE ANALYSIS BY EPA METHOD 300.0
4. INCLUDES SHALLOW, DEEP, AND FULLY PENETRATING/ SCREENED WELLS (5 TOTAL).
5. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).

N

0 200 400ft

MW-13
MW-12
COOPER-JAL SOUTH WATER STATION TANK BATTERY
FENCE
CATTLE GUARD
MW-6R
MW-6
MW-3
WELL NO. 148
MW-2A
MW-2
MW-1
MW-5
MW-5A
RW-1
MW-4
MW-4A
WELL NO. 245
299
MW-10
RW-2R
RW-2
MW-14
MW-7
250
WELL NO. 411
WELL NO. 421
MW-8
38.3
754
MW-9A
500
MW-9
246
MW-11
43.6

LEGEND
- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL PLUGGED AND ABANDONED
- 38.3 CHLORIDE CONCENTRATION (MG/L)
- CHLORIDE CONCENTRATION CONTOUR (INTERVAL = 250 MG/L)

figure 5

CHLORIDE ISOCONCENTRATION MAP - MAY 2013
COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 25/2013

NOTES:
1. HIGHLIGHTED CHLORIDE CONCENTRATIONS EXCEED NMWQCC STANDARD FOR GROUNDWATER (250 mg/L).
2. GROUNDWATER SAMPLES WERE COLLECTED ON OCTOBER 8, 2013.
3. CHLORIDE ANALYSIS BY EPA METHOD 300.0
4. INCLUDES FOUR WELLS COMPLETED IN THE UPPER PORTION OF THE OGALLALA AQUIFER.
5. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).

N

0 200 400ft

MW-13
MW-12
COOPER-JAL SOUTH WATER STATION TANK BATTERY
FENCE
CATTLE GUARD
MW-6R
MW-6
78.6
MW-3
WELL NO. 148
MW-2A
MW-2
MW-1
MW-5
MW-5A
80.2
RW-1
MW-4
MW-4A
512
WELL NO. 245
MW-10
RW-2R
RW-2
MW-14
MW-7
WELL NO. 411
WELL NO. 421
500
MW-8
MW-9
MW-9A
534
MW-11
43.6

LEGEND
- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL PLUGGED AND ABANDONED
- 78 CHLORIDE CONCENTRATION (MG/L)
- CHLORIDE CONCENTRATION CONTOUR (INTERVAL = 500 MG/L)

figure 6

SHALLOW GROUNDWATER CHLORIDE ISOCONCENTRATION MAP - OCTOBER 2013 COOPER-JAL UNIT SOUTH INJECTION STATION LEA COUNTY, NEW MEXICO

Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 25/2013

NOTES:
1. HIGHLIGHTED CHLORIDE CONCENTRATIONS EXCEED NMWQCC STANDARD FOR GROUNDWATER (250 mg/L).
2. GROUNDWATER SAMPLES WERE COLLECTED ON OCTOBER 8, 2013.
3. CHLORIDE ANALYSIS BY EPA METHOD 300.0
4. BASEMAP ADAPTED FROM LARSON & ASSOCIATES, INC. (AUGUST 18, 2005).

N

0 200 400ft

MW-13 2710

2000

MW-12 246

COOPER-JAL SOUTH WATER STATION TANK BATTERY

FENCE

CATTLE GUARD

110 MW-6R

MW-6

78.6 MW-2A

MW-3 38.4

WELL NO. 148

MW-2 1180

MW-1 1890

3730 MW-5

6050 MW-5A

RW-1

MW-4 16,200

MW-4A

WELL NO. 245 6550

10,000

5000

RW-2R

RW-2 2450

MW-10 324

162 MW-14

MW-7 2840

WELL NO. 411

WELL NO. 421

2000

100

MW-8 39.5

MW-9 150

MW-9A

MW-11 45.2

LEGEND

- MONITOR WELL LOCATION (DEEP)
- MONITOR WELL LOCATION (SHALLOW)
- COOPER-JAL OIL WELL LOCATION
- RECOVERY WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL LOCATION (FULLY PENETRATING)
- MONITOR WELL PLUGGED AND ABANDONED
- 78 CHLORIDE CONCENTRATION (MG/L)
- CHLORIDE CONCENTRATION CONTOUR (INTERVAL = VARIABLE MG/L)

figure 7

DEEP GROUNDWATER CHLORIDE ISOCONCENTRATION MAP - OCTOBER 2013 COOPER-JAL UNIT SOUTH INJECTION STATION LEA COUNTY, NEW MEXICO

Chevron Environmental Management Company

039123-2013(010)GN-DL001 NOV 26/2013

Tables

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID *TOC[1] Elevation*	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-1	05/18/98	135.05	3185.12	172.38	2	153-173
3320.17	05/25/99	134.93	3185.24	---	---	---
	02/08/01	134.80	3185.37	---	---	---
	05/10/02	134.77	3185.40	---	---	---
	10/22/02	134.89	3185.28	---	---	---
	05/20/03	135.17	3185.00	---	---	---
	11/24/03	134.70	3185.47	---	---	---
	05/11/04	134.75	3185.42	---	---	---
	11/15/04	134.76	3185.41	---	---	---
	05/17/05	134.29	3185.88	---	---	---
	11/15/05	134.93	3185.24	---	---	---
	05/08/06	134.68	3185.49	---	---	---
	11/13/06	134.62	3185.55	---	---	---
	05/29/07	134.71	3185.46	---	---	---
	11/16/07	134.70	3185.47	---	---	---
	05/14/08	134.73	3185.44	---	---	---
	11/03/08	134.69	3185.48	---	---	---
	05/19/09	134.64	3185.53	---	---	---
	11/02/09	134.71	3185.46	---	---	---
	05/05/10	134.90	3185.27	172.20	---	---
	11/08/10	134.50	3185.67	172.20	---	---
	05/11/11	134.60	3185.57	---	---	---
	11/08/11	134.64	3185.53	---	---	---
	05/16/12	134.60	3185.57	172.16	---	---
	10/10/12	134.73	3185.44	177.45	---	---
	05/16/13	134.58	3185.59	---	---	---
	10/08/13	134.53	3185.64	170.82	---	---
MW-2	05/18/98	135.00	3184.86	170.60	2	163-173
3319.86	05/25/99	134.79	3185.07	---	---	---
	02/08/01	134.63	3185.23	---	---	---
	05/10/02	134.65	3185.21	---	---	---
	10/22/02	134.72	3185.14	---	---	---
	05/20/03	134.95	3184.91	---	---	---
	11/24/03	134.56	3185.30	---	---	---
	05/11/04	134.55	3185.31	---	---	---
	11/15/04	134.53	3185.33	---	---	---
	05/17/05	134.39	3185.47	---	---	---
	11/15/05	134.77	3185.09	---	---	---
	05/08/06	134.52	3185.34	---	---	---
	11/13/06	134.44	3185.42	---	---	---
	05/29/07	134.54	3185.32	---	---	---
	11/14/07	134.52	3185.34	---	---	---
	05/14/08	134.53	3185.33	---	---	---
	11/03/08	134.44	3185.42	---	---	---
	05/19/09	134.46	3185.40	---	---	---
	11/16/09	134.51	3185.35	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-2 (Cont)	05/05/10	134.62	3185.24	170.50	---	---
	11/08/10	134.25	3185.61	170.50	---	---
	05/11/11	134.31	3185.55	---	---	---
	11/08/11	134.36	3185.50	170.77	---	---
	05/16/12	134.31	3185.55	170.89	---	---
	10/10/12	134.51	3185.35	170.91	---	---
	05/16/13	134.33	3185.53	---	---	---
	10/07/13	142.85	3177.01	166.65	---	---
MW-2A	05/18/98	134.80	3185.06	142.30	2	130-145
3319.86	05/25/99	134.73	3185.13	---	---	---
	02/08/01	134.58	3185.28	---	---	---
	05/10/02	134.50	3185.36	---	---	---
	10/22/02	134.66	3185.20	---	---	---
	05/20/03	135.80	3184.06	---	---	---
	11/24/03	134.60	3185.26	---	---	---
	05/11/04	134.53	3185.33	---	---	---
	11/15/04	134.58	3185.28	---	---	---
	05/17/05	134.47	3185.39	---	---	---
	11/15/05	134.74	3185.12	---	---	---
	05/08/06	134.46	3185.40	---	---	---
	11/13/06	134.39	3185.47	---	---	---
	05/29/07	134.50	3185.36	---	---	---
	11/14/07	134.48	3185.38	---	---	---
	05/14/08	134.49	3185.37	---	---	---
	11/03/08	134.46	3185.40	---	---	---
	05/19/09	134.42	3185.44	---	---	---
	11/02/09	134.45	3185.41	---	---	---
	05/05/10	134.52	3185.34	142.19	---	---
	11/08/10	134.30	3185.56	142.19	---	---
	05/11/11	134.38	3185.48	---	---	---
	11/08/11	134.42	3185.44	142.31	---	---
	05/16/12	134.43	3185.43	142.32	---	---
	10/10/12	134.65	3185.21	142.35	---	---
	05/16/13	134.35	3185.51	---	---	---
	10/07/13	134.20	3185.66	138.95	---	---
MW-3	05/18/98	132.65	3185.56	171.93	2	161-171
3318.21	05/25/99	132.52	3185.69	---	---	---
	02/08/01	132.40	3185.81	---	---	---
	05/10/02	132.40	3185.81	---	---	---
	10/22/02	132.49	3185.72	---	---	---
	05/20/03	132.75	3185.46	---	---	---
	11/24/03	132.29	3185.92	---	---	---
	05/11/04	132.38	3185.83	---	---	---
	11/15/04	132.46	3185.75	---	---	---
	05/17/05	132.32	3185.89	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-3 (cont)	11/15/05	132.55	3185.66	---	---	---
	05/08/06	132.32	3185.89	---	---	---
	11/13/06	132.27	3185.94	---	---	---
	05/29/07	132.36	3185.85	---	---	---
	11/16/07	132.34	3185.87	---	---	---
	05/14/08	132.36	3185.85	---	---	---
	11/03/08	132.31	3185.90	---	---	---
	05/19/09	132.25	3185.96	---	---	---
	11/02/09	132.37	3185.84	---	---	---
	05/05/10	132.48	3185.73	171.93	---	---
	11/08/10	132.14	3186.07	171.93	---	---
	05/11/11	132.24	3185.97	---	---	---
	11/08/11	132.30	3185.91	171.89	---	---
	05/16/12	132.25	3185.96	171.86	---	---
	10/10/12	132.54	3185.67	171.98	---	---
	05/16/13	132.25	3185.96	---	---	---
	10/08/13	132.14	3186.07	168.30	---	---
MW-4	05/18/98	136.01	3183.73	171.41	2	161-171
3319.74	05/25/99	135.57	3184.17	---	---	---
	02/08/01	135.87	3183.87	---	---	---
	05/10/02	135.67	3184.07	---	---	---
	10/22/02	135.90	3183.84	---	---	---
	05/20/03	136.00	3183.74	---	---	---
	11/24/03	135.70	3184.04	---	---	---
	05/11/04	135.34	3184.40	---	---	---
	11/15/04	135.76	3183.98	---	---	---
	05/17/05	135.69	3184.05	---	---	---
	11/15/05	135.85	3183.89	---	---	---
	05/08/06	135.60	3184.14	---	---	---
	11/13/06	135.59	3184.15	---	---	---
	05/29/07	135.75	3183.99	---	---	---
	11/14/07	135.62	3184.12	---	---	---
	05/14/08	135.76	3183.98	---	---	---
	11/03/08	135.66	3184.08	---	---	---
	05/19/09	135.67	3184.07	---	---	---
	11/02/09	135.68	3184.06	---	---	---
	05/05/10	135.83	3183.91	171.56	---	---
	11/08/10	135.36	3184.38	171.56	---	---
	05/05/11	135.40	3184.34	---	---	---
	11/08/11	135.43	3184.31	171.76	---	---
	05/16/12	135.38	3184.36	171.74	---	---
	10/10/12	135.55	3184.19	171.88	---	---
	05/16/13	135.38	3184.36	---	---	---
	10/07/13	135.53	3184.21	167.3	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID *TOC[1] Elevation*	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-4A	05/18/98	135.68	3183.90	146.00	2	128-143
3319.58	05/21/99	135.65	3183.93	---	---	---
	05/25/99	135.90	3183.68	---	---	---
	02/08/01	135.34	3184.24	---	---	---
	05/10/02	135.30	3184.28	---	---	---
	10/22/02	135.51	3184.07	---	---	---
	05/20/03	135.55	3184.03	---	---	---
	11/24/03	135.31	3184.27	---	---	---
	05/11/04	135.72	3183.86	---	---	---
	11/15/04	135.38	3184.20	---	---	---
	05/17/05	135.32	3184.26	---	---	---
	11/15/05	135.52	3184.06	---	---	---
	05/08/06	135.26	3184.32	---	---	---
	11/13/06	135.20	3184.38	---	---	---
	05/29/07	135.32	3184.26	---	---	---
	11/14/07	135.20	3184.38	---	---	---
	05/14/08	135.31	3184.27	---	---	---
	11/03/08	135.27	3184.31	---	---	---
	05/19/09	135.25	3184.33	---	---	---
	11/02/09	135.25	3184.33	---	---	---
	05/05/10	135.33	3184.25	145.95	---	---
	11/08/10	135.18	3184.40	145.95	---	---
	05/11/11	135.17	3184.41	---	---	---
	11/08/11	135.22	3184.36	145.72	---	---
	05/16/12	135.18	3184.40	145.62	---	---
	10/10/12	135.33	3184.25	145.75	---	---
	05/16/13	135.20	3184.38	---	---	---
	10/07/13	135.01	3184.57	142.45	---	---
MW-5	05/18/98	137.42	3183.68	173.65	2	161-171
3321.10	05/25/99	137.28	3183.82	---	---	---
	02/08/01	137.18	3183.92	---	---	---
	05/10/02	137.10	3184.00	---	---	---
	10/22/02	137.04	3184.06	---	---	---
	05/20/03	137.45	3183.65	---	---	---
	11/24/03	137.01	3184.09	---	---	---
	05/11/04	137.01	3184.09	---	---	---
	11/15/04	137.08	3184.02	---	---	---
	05/17/05	137.00	3184.10	---	---	---
	11/15/05	137.18	3183.92	---	---	---
	05/08/06	136.90	3184.20	---	---	---
	11/13/06	136.81	3184.29	---	---	---
	05/29/07	136.92	3184.18	---	---	---
	11/14/07	136.85	3184.25	---	---	---
	05/14/08	136.97	3184.13	---	---	---
	11/03/08	136.89	3184.21	---	---	---
	05/19/09	136.90	3184.20	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-5 (cont)	11/02/09	136.90	3184.20	---	---	---
	05/05/10	137.02	3184.08	173.60	---	---
	11/08/10	136.93	3184.17	173.60	---	---
	05/11/11	136.92	3184.18	---	---	---
	11/08/11	136.84	3184.26	173.61	---	---
	05/16/12	136.80	3184.30	173.58	---	---
	10/10/12	136.98	3184.12	173.59	---	---
	05/16/13	136.80	3184.30	---	---	---
	10/07/13	136.79	3184.31	156.51	---	---
MW-5A	05/18/98	137.20	3183.87	143.85	2	126-141
3321.07	05/25/99	137.11	3183.96	---	---	---
	02/08/01	136.99	3184.08	---	---	---
	05/10/02	136.90	3184.17	---	---	---
	10/22/02	137.17	3183.90	---	---	---
	05/20/03	137.24	3183.83	---	---	---
	11/24/03	136.91	3184.16	---	---	---
	05/11/04	136.88	3184.19	---	---	---
	11/15/04	136.92	3184.15	---	---	---
	05/17/05	136.83	3184.24	---	---	---
	11/15/05	137.06	3184.01	---	---	---
	05/08/06	136.80	3184.27	---	---	---
	11/13/06	136.74	3184.33	---	---	---
	05/29/07	136.82	3184.25	---	---	---
	11/14/07	136.88	3184.19	---	---	---
	05/14/08	136.83	3184.24	---	---	---
	11/03/08	136.81	3184.26	---	---	---
	05/19/09	136.78	3184.29	---	---	---
	11/02/09	136.80	3184.27	---	---	---
	05/05/10	136.91	3184.16	143.90	---	---
	11/08/10	136.69	3184.38	143.90	---	---
	05/11/11	136.87	3184.20	---	---	---
	11/08/11	136.77	3184.30	144.06	---	---
	05/16/12	136.74	3184.33	144.01	---	---
	10/10/12	136.85	3184.22	143.89	---	---
	05/16/13	136.72	3184.35	---	---	---
	10/07/13	137.45	3183.62	142.02	---	---
MW-6	05/18/98	136.73	3184.42	169.25	2	120-170
3321.15	05/25/99	136.61	3184.54	---	---	---
	02/08/01	136.50	3184.65	---	---	---
	05/10/02	136.40	3184.75	---	---	---
	10/22/02	136.57	3184.58	---	---	---
	05/20/03	136.85	3184.30	---	---	---
	11/24/03	136.38	3184.77	---	---	---
	05/11/04	136.41	3184.74	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-6 (cont)	11/15/04	136.08	3185.07	---	---	---
	05/17/05	136.58	3184.57	---	---	---
	11/15/05	136.82	3184.33	---	---	---
	05/08/06	136.58	3184.57	---	---	---
	11/13/06	136.49	3184.66	---	---	---
	05/29/07	136.61	3184.54	---	---	---
	11/15/07	136.59	3184.56	---	---	---
	05/14/08	136.58	3184.57	---	---	---
	11/03/08	136.52	3184.63	---	---	---
	05/19/09	136.52	3184.63	---	---	---
	11/02/09	136.51	3184.64	---	---	---
	05/05/10	136.53	3184.62	168.97	---	---
	11/08/10	136.40	3184.75	168.97	---	---
	05/11/11	Well Casing Damaged				
	11/08/11	Well Casing Damaged				
	05/16/12	Well Casing Damaged				
	10/10/12	Well Casing Damaged				
	09/30/13	Well Plugged and Abondoned				
MW-6R *3321.50*	10/07/13	136.17	3185.33	182.85	---	---
MW-7	05/18/98	136.19	3182.20	166.15	2	151-166
3318.39	05/25/99	135.98	3182.41	---	---	---
	02/08/01	135.87	3182.52	---	---	---
	05/10/02	135.67	3182.72	---	---	---
	10/22/02	135.89	3182.50	---	---	---
	05/20/03	136.12	3182.27	---	---	---
	11/24/03	135.71	3182.68	---	---	---
	05/11/04	135.74	3182.65	---	---	---
	11/15/04	135.78	3182.61	---	---	---
	05/17/05	135.68	3182.71	---	---	---
	11/15/05	135.90	3182.49	---	---	---
	05/08/06	135.64	3182.75	---	---	---
	11/13/06	135.58	3182.81	---	---	---
	05/29/07	135.73	3182.66	---	---	---
	11/15/07	135.64	3182.75	---	---	---
	05/14/08	135.68	3182.71	---	---	---
	11/03/08	135.66	3182.73	---	---	---
	05/19/09	135.63	3182.76	---	---	---
	11/02/09	135.65	3182.74	---	---	---
	05/05/10	135.80	3182.59	165.90	---	---
	11/08/10	135.51	3182.88	165.90	---	---
	05/11/11	135.68	3182.71	---	---	---
	11/08/11	135.62	3182.77	166.07	---	---
	05/16/12	135.55	3182.84	165.98	---	---
	10/10/12	135.79	3182.60	166.19	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-7 (cont)	05/16/13	135.59	3182.80	---	---	---
	10/07/13	NS	NS	---	---	---
MW-8	05/18/98	134.36	3182.78	171.92	2	155-170
3317.14	05/25/99	134.21	3182.93	---	---	---
	02/08/01	134.08	3183.06	---	---	---
	05/10/02	133.95	3183.19	---	---	---
	10/22/02	134.18	3182.96	---	---	---
	05/20/03	134.38	3182.76	---	---	---
	11/24/03	133.99	3183.15	---	---	---
	05/11/04	134.02	3183.12	---	---	---
	11/15/04	134.11	3183.03	---	---	---
	05/17/05	133.97	3183.17	---	---	---
	11/15/05	134.21	3182.93	---	---	---
	05/08/06	133.94	3183.20	---	---	---
	11/13/06	133.90	3183.24	---	---	---
	05/29/07	134.02	3183.12	---	---	---
	11/15/07	133.76	3183.38	---	---	---
	05/15/08	133.98	3183.16	---	---	---
	11/03/08	134.01	3183.13	---	---	---
	05/19/09	133.97	3183.17	---	---	---
	11/02/09	134.00	3183.14	---	---	---
	05/05/10	134.08	3183.06	171.94	---	---
	11/08/10	134.03	3183.11	171.94	---	---
	05/11/11	133.98	3183.16	171.85	---	---
	11/08/11	133.96	3183.18	171.93	---	---
	05/16/12	133.84	3183.30	171.94	---	---
	10/10/12	134.15	3182.99	171.90	---	---
	05/16/13	133.94	3183.20	---	---	---
	10/07/13	133.90	3183.24	171.70	---	---
MW-9	05/18/98	132.89	3179.90	161.40	2	149-164
3312.79	05/25/99	132.68	3180.11	---	---	---
	02/08/01	132.52	3180.27	---	---	---
	05/10/02	137.20	3175.59	---	---	---
	10/22/02	132.56	3180.23	---	---	---
	05/20/03	132.75	3180.04	---	---	---
	11/24/03	132.35	3180.44	---	---	---
	05/11/04	132.39	3180.40	---	---	---
	11/15/04	132.43	3180.36	---	---	---
	05/17/05	132.26	3180.53	---	---	---
	11/15/05	132.60	3180.19	---	---	---
	05/08/06	132.26	3180.53	---	---	---
	11/13/06	132.19	3180.60	---	---	---
	05/29/07	132.32	3180.47	---	---	---
	11/14/07	132.34	3180.45	---	---	---
	05/15/08	132.29	3180.50	---	---	---
	11/03/08	132.33	3180.46	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-9 (cont)	05/19/09	132.21	3180.58	---	---	---
	11/02/09	132.35	3180.44	---	---	---
	05/05/10	132.41	3180.38	161.32	---	---
	11/08/10	132.10	3180.69	161.32	---	---
	05/11/11	132.22	3180.57	161.38	---	---
	11/08/11	132.19	3180.60	161.49	---	---
	05/16/12	132.05	3180.74	161.41	---	---
	10/10/12	132.32	3180.47	161.48	---	---
	05/16/13	132.08	3180.71	---	---	---
	10/07/13	131.94	3180.85	159.35	---	---
MW-9A	05/18/98	132.65	3179.91	144.15	2	127-142
3312.56	05/25/99	132.43	3180.13	---	---	---
	02/08/01	132.37	3180.19	---	---	---
	05/10/02	137.20	3175.36	---	---	---
	10/22/02	132.35	3180.21	---	---	---
	05/20/03	132.55	3180.01	---	---	---
	11/24/03	132.10	3180.46	---	---	---
	05/11/04	132.14	3180.42	---	---	---
	11/15/04	132.19	3180.37	---	---	---
	05/17/05	132.06	3180.50	---	---	---
	11/15/05	132.35	3180.21	---	---	---
	05/08/06	132.02	3180.54	---	---	---
	11/13/06	131.09	3181.47	---	---	---
	05/29/07	132.08	3180.48	---	---	---
	11/14/07	132.06	3180.50	---	---	---
	05/15/08	132.03	3180.53	---	---	---
	11/03/08	131.98	3180.58	---	---	---
	05/19/09	132.00	3180.56	---	---	---
	11/02/09	131.90	3180.66	---	---	---
	05/05/10	131.96	3180.60	143.85	---	---
	11/08/10	131.85	3180.71	143.85	---	---
	05/11/11	132.06	3180.50	143.40	---	---
	11/08/11	131.95	3180.61	143.47	---	---
	05/16/12	131.81	3180.75	143.42	---	---
	10/10/12	132.09	3180.47	143.58	---	---
	05/16/13	131.88	3180.68	---	---	---
	10/07/13	131.90	3180.66	142.70	---	---
MW-10	05/18/98	137.18	3182.12	164.15	2	151-166
3319.30	05/25/99	137.04	3182.26	---	---	---
	02/08/01	136.88	3182.42	---	---	---
	05/10/02	136.80	3182.50	---	---	---
	10/22/02	136.91	3182.39	---	---	---
	05/20/03	137.13	3182.17	---	---	---
	11/24/03	136.71	3182.59	---	---	---
	05/11/04	136.77	3182.53	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-10 (cont)	11/15/04	136.82	3182.48	---	---	---
	05/17/05	136.34	3182.96	---	---	---
	11/15/05	136.95	3182.35	---	---	---
	05/08/06	136.65	3182.65	---	---	---
	11/13/06	136.59	3182.71	---	---	---
	05/29/07	136.68	3182.62	---	---	---
	11/15/07	136.61	3182.69	---	---	---
	05/15/08	136.65	3182.65	---	---	---
	11/03/08	136.60	3182.70	---	---	---
	05/19/09	136.60	3182.70	---	---	---
	11/02/09	136.60	3182.70	---	---	---
	05/05/10	136.44	3182.86	163.98	---	---
	11/08/10	136.58	3182.72	163.98	---	---
	05/11/11	136.62	3182.68	163.77	---	---
	11/08/11	136.57	3182.73	163.79	---	---
	05/16/12	136.44	3182.86	163.69	---	---
	10/10/12	136.91	3182.39	163.74	---	---
	05/16/13	136.51	3182.79	---	---	---
	10/07/13	136.55	3182.75	161.25	---	---
MW-11	03/23/99	131.12	3178.57	165.71	4	125-140
3309.69	05/25/99	130.91	3178.78	---	---	---
	02/08/01	130.11	3179.58	---	---	---
	05/10/02	135.60	3174.09	---	---	---
	10/22/02	130.76	3178.93	---	---	---
	05/20/03	131.03	3178.66	---	---	---
	11/24/03	130.57	3179.12	---	---	---
	05/11/04	130.61	3179.08	---	---	---
	11/15/04	130.65	3179.04	---	---	---
	05/17/05	131.56	3178.13	---	---	---
	11/15/05	130.70	3178.99	---	---	---
	05/08/06	130.41	3179.28	---	---	---
	11/13/06	130.42	3179.27	---	---	---
	05/29/07	130.52	3179.17	---	---	---
	11/14/07	130.42	3179.27	---	---	---
	05/15/08	130.46	3179.23	---	---	---
	11/03/08	130.41	3179.28	---	---	---
	05/19/09	130.40	3179.29	---	---	---
	11/02/09	130.40	3179.29	---	---	---
	05/05/10	130.43	3179.26	165.75	---	---
	11/08/10	130.28	3179.41	165.75	---	---
	05/11/11	130.40	3179.29	165.50	---	---
	11/08/11	130.37	3179.32	165.65	---	---
	05/16/12	130.23	3179.46	165.54	---	---
	10/10/12	130.49	3179.20	165.89	---	---
	05/16/13	130.27	3179.42	---	---	---
	10/07/13	130.12	3179.57	165.20	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID *TOC[1] Elevation*	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-12	05/10/02	139.57	3188.86	165.50	2	156.68-171.65
3328.43	10/22/02	139.73	3188.70	---	---	---
	05/20/03	139.72	3188.71	---	---	---
	11/24/03	139.69	3188.74	---	---	---
	05/11/04	139.64	3188.79	---	---	---
	11/15/04	139.68	3188.75	---	---	---
	05/17/05	139.58	3188.85	---	---	---
	11/15/05	139.83	3188.60	---	---	---
	05/08/06	139.55	3188.88	---	---	---
	11/13/06	139.53	3188.90	---	---	---
	05/29/07	139.65	3188.78	---	---	---
	11/16/07	139.05	3189.38	---	---	---
	05/14/08	139.69	3188.74	---	---	---
	11/03/08	139.61	3188.82	---	---	---
	05/19/09	139.59	3188.84	---	---	---
	11/02/09	139.62	3188.81	---	---	---
	05/05/10	139.66	3188.77	165.85	---	---
	11/08/10	139.55	3188.88	165.85	---	---
	05/11/11	139.04	3189.39	---	---	---
	11/08/11	139.68	3188.75	171.91	---	---
	05/16/12	139.65	3188.78	171.04	---	---
	10/10/12	139.95	3188.48	171.85	---	---
	05/16/13	139.67	3188.76	---	---	---
	10/07/13	139.5	3188.93	167.31	---	---
MW-13	05/10/02	144.45	3194.04	167.40	2	156.68-171.65
3338.49	10/22/02	144.49	3194.00	---	---	---
	05/20/03	144.90	3193.59	---	---	---
	11/24/03	144.37	3194.12	---	---	---
	05/11/04	144.47	3194.02	---	---	---
	11/15/04	144.56	3193.93	---	---	---
	05/17/05	144.36	3194.13	---	---	---
	11/15/05	144.60	3193.89	---	---	---
	05/08/06	144.29	3194.20	---	---	---
	11/13/06	144.38	3194.11	---	---	---
	05/29/07	144.54	3193.95	---	---	---
	11/16/07	144.54	3193.95	---	---	---
	05/14/08	144.45	3194.04	---	---	---
	11/03/08	144.36	3194.13	---	---	---
	05/19/09	144.51	3193.98	---	---	---
	11/02/09	144.35	3194.14	---	---	---
	05/05/10	144.39	3194.10	166.41	---	---
	11/08/10	144.40	3194.09	166.41	---	---
	05/11/11	144.60	3193.89	---	---	---
	11/08/11	144.74	3193.75	171.05	---	---
	05/16/12	144.70	3193.79	170.97	---	---
	10/10/12	144.82	3193.67	171.20	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
MW-13 (cont)	05/16/13	144.70	3193.79	---	---	---
	10/07/13	144.60	3193.89	167.47	---	---
MW-14 *3316.84*	10/07/13	134.60	3182.24	173.80	---	---
RW-1 *3318.50*	05/21/99	134.32	3184.18	171.25	5	130.41-174.37
	05/25/99	134.24	3184.26	---	---	---
	02/08/01	134.15	3184.35	---	---	---
	05/10/02	134.00	3184.50	---	---	---
	10/22/02	134.17	3184.33	---	---	---
	05/20/03	134.40	3184.10	---	---	---
	11/24/03	134.02	3184.48	---	---	---
	05/11/04	134.01	3184.49	---	---	---
	11/15/04	134.06	3184.44	---	---	---
	05/17/05	133.97	3184.53	---	---	---
	11/15/05	134.20	3184.30	---	---	---
	05/08/06	133.93	3184.57	---	---	---
	11/13/06	133.92	3184.58	---	---	---
	05/29/07	134.00	3184.50	---	---	---
	11/15/07	133.88	3184.62	---	---	---
	05/14/08	133.98	3184.52	---	---	---
	11/03/08	133.99	3184.51	---	---	---
	05/19/09	133.92	3184.58	---	---	---
	11/02/09	134.00	3184.50	---	---	---
	05/05/10	134.03	3184.47	161.70	---	---
	11/08/10	133.81	3184.69	161.70	---	---
	05/11/11	133.83	3184.67	---	---	---
	11/08/11	133.88	3184.62	165.85	---	---
	05/16/12	133.84	3184.66	165.96	---	---
	10/10/12	135.01	3183.49	166.75	---	---
	05/16/13	133.85	3184.65	---	---	---
	10/07/13	133.68	3184.82	163.00	---	---
RW-2 *3318.62*	02/08/01	135.58	3183.04	154.63	5	134.22-172.73
	05/10/02	135.55	3183.07	---	---	---
	10/22/02	135.55	3183.07	---	---	---
	05/20/03	135.58	3183.04	---	---	---
	11/24/03	135.54	3183.08	---	---	---
	05/11/04	135.48	3183.14	---	---	---
	11/15/04	135.43	3183.19	---	---	---
	05/17/05	135.46	3183.16	---	---	---
	11/15/05	135.65	3182.97	---	---	---
	05/08/06	135.42	3183.20	---	---	---
	11/13/06	135.47	3183.15	---	---	---
	05/29/07	135.54	3183.08	---	---	---
	11/15/07	135.48	3183.14	---	---	---

TABLE 1

GROUNDWATER GAUGING SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Well ID TOC[1] Elevation	*Collection Date*	*Depth to Groundwater (ft TOC[1])*	*Groundwater Elevation (ft)*	*Well (ft TOC[1])*	*Casing Diameter (in)*	*Well Screen Interval (ft bgs[2])*
RW-2 (cont)	05/14/08	135.48	3183.14	---	---	---
	11/03/08	135.44	3183.18	---	---	---
	05/19/09	135.44	3183.18	---	---	---
	11/02/09	135.45	3183.17	---	---	---
	05/05/10	135.47	3183.15	154.71	---	---
	11/08/10	135.30	3183.32	154.71	---	---
	05/11/11	135.55	3183.07	---	---	---
	11/08/11	135.46	3183.16	156.28	---	---
	05/16/12	135.40	3183.22	156.37	---	---
	10/10/12	135.49	3183.13	156.48	---	---
	05/16/13	135.33	3183.29	---	---	---
	10/07/13	135.43	3183.19	162.00	---	---
RW-2R *3320.68*	10/07/13	136.94	3183.74	176.60	---	---

Notes:

1. TOC - Top of Casing.
2. bgs - below ground surface.
3. A - Indicates shallow groundwater monitor well.

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-1	9/16/97	--	--	280	8,500	--	--	1,100	520.0	630.0	50.00	4,300.0	15,000
	2/25/98	--	--	280	5,600	--	--	570	285.0	520.0	116.00	2,900.0	9,300
	2/14/01	<1.0	306	306	11,000	4.40	7.70	1,000	374.0	780.0	236.00	5,236.0	20,000
	5/17/02	<1.0	208	208	237	5.83	3.28	86.9	45.7	20.1	11.90	184.0	784
	10/23/02	--	--	--	168	--	--	96.8	--	--	--	--	696
	5/21/03	<1.0	290	290	6,600	<8.00	10.90	875	238.0	475.0	96.50	3,410.0	13,200
	11/25/03	<1.0	250	250	402	7.03	2.72	125	19.2	22.0	18.50	294.0	1,158
	5/12/04	<1.00	264	264	504	7.31	2.70	136	17.2	23.1	22.40	355.0	1,328
	11/16/04	<1.00	232	232	384	4.94	3.30	103	29.2	22.7	25.40	373.0	952
	11/16/05	<10.0	262	262	1,210	3.0	2.4	215 D1	85.400	92.600	23.000	847.000	2,640
	11/14/06	<10	200	200	96	4.2	2.0	76	13.200	6.490	15.600	172.000	624
	11/16/07	<10.0	255	255	4,250	3.7	3.90 D1	602 D1	154.000	187.000	54.000	2100.000 D1	10,900
	11/4/08	<5.0	190	190	110	6.3	1.6	83	10	5.8	7.9	180	590
	11/3/09	<10	270	270	4,100	4.1	2.8	640	190	250	61	2,300	8,000
	11/10/10	<10	223	223	2,670	1.92	2.62	373	138	196	21.5	1,480	5,020
	11/10/11	<5.00	209	209	3,220	1.02	2.37	275	169	176	22.5	1,340	5,250
DUP 1	11/10/11	<5.00	213	213	2,930	1.05	2.35	240	183	197	22.6	1,480	4,640
	10/11/12	<5.00	190	190	2,190	6.74	4.52	301	132	145	17.9	1,140	1,880
	10/8/13	<6.00	211	211	1,890	1.46	2.39	247	131	114	15.3	914	2,380
MW-2	2/25/98	--	--	210	5,900	--	--	760	840.0	380.0	30.00	2,650.0	9,400
	4/9/98	--	--	290	8,200	--	--	990	1,100.0	490.0	29.00	3,430.0	15,000
	2/14/01	<1.0	184	184	7,400	2.30	4.10	870	1,025.0	488.0	48.50	3,189.0	15,000
	5/17/02	<1.0	160	160	3,200	1.72	3.18	483	587.0	239.0	35.60	1,160.0	6,040
	10/23/02	--	--	--	2,920	--	--	451	--	--	--	--	6,770
	5/22/03	<1.0	158	158	2,550	2.04	3.87	386	448.0	176.0	20.00	1,020.0	5,880
	11/25/03	<1.0	160	160	3,330	<4.00	5.63	446	555.0	227.0	32.00	1,120.0	6,760
	5/12/04	<1.00	146	146	1,750	<2.00	2.78	246	308.0	112.0	29.70	549.0	3,965
	11/16/04	<1.00	120	120	430	<1.00	2.13	56.9	104.0	29.4	22.40	158.0	832
	11/16/05	<10.0	171	171	4,720	0.72	2.6	645 D1	594.000	209.000	20.800	3,290.000	10,000
	11/14/06	<10	160	160	3,500	0.78 N	2.1	470	535.000	212.000	21.000	1,5400.000	8,260

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-2 (cont)	11/14/07	<10.0	178	178	3,280.00	0.76	1.93	462 D1	449.000	152.000	16.200	1310.000 D1	9,110
	11/4/08	<5.0	150	150	2,900	<1.0	1.1	430	380	160	26	1,200	5,600
	11/16/09	<10	150	150	2,000	1.1	1.6	340	290	120	20	750	4,300
	11/12/10	<10	186	186	1,890	0.726	1.86	327	326	120	9.80	795	3,680
	11/10/11	<5.00	175	175	1,480	0.814	1.31	150	227	83.2	9.75	668	2,860
	10/11/12	<5.00	149	149	524	0.546	1.92	231	119	31.7	8.78	286	1,090
	10/8/13	<6.00	269	269	1,180	1.20	<0.100	169	178	64.7	8.16	505	2,520
MW-2A	2/26/98	--	--	190	280	--	--	330	144.0	36.0	5.70	215.0	1,200
	2/14/01	<1.0	162	162	44	1.30	2.30	76	64.4	16.7	7.02	45.5	390
	5/15/02	<1.0	176	176	36.6	<1.00	2.34	79.1	57.6	13.9	4.35	43.8	435
	10/23/02	--	--	--	44.3	--	--	97	--	--	--	--	425
	5/22/03	<1.0	168	168	40.5	<1.00	2.18	75.5	67.2	14.3	3.76	47.9	418
	11/25/03	<1.0	166	166	43.1	1.00	2.23	77.4	51.7	14.4	3.98	43.8	452
	5/12/04	<1.00	176	176	44.8	<1.00	2.24	76.5	62.9	15.0	3.66	43.6	440
	11/16/04	<1.00	164	164	52.5	1.22	2.78	75.4	68.8	15.3	3.98	49.1	428
	11/16/05	<10.0	151	151	56.8	0.60	2.3	75.1 D1	157.000	18.000	4.200	49.800	630 N
	11/14/06	<10	180	180	49	0.55	1.6	76	69.800	15.600	3.470	49.900	488
	11/14/07	<10.0	170	170	74.6	0.58	1.51	66.8 D1	666.00	15.300	<5.000	45.400	504
	11/4/08	<5.0	220	220	68	0.49	1.4	74	67	15	3.2	42	470
	11/3/09	<10	230	230	62	0.59	1.6	81	66	15	3.4	50	480
	11/11/10	<10	158	158	86.1	0.453	1.73	74.0	53.9	14.9	2.86	42.8	474
	11/10/11	<5.00	175	175	129	0.280	1.25	101	92.5	23.3	4.17	64.7	614
	10/11/12	<5.00	173	173	76.5	0.455	1.60	79.4	69.2	15.7	3.62	45.3	500
	10/8/13	<6.00	248	248	78.6	0.412	0.622	75.4	92.6	18.7	4.06	51.2	496
MW-3	2/27/98	--	--	190	452	--	--	406	200.0	50.0	11.00	237.0	1,500
	2/14/01	<1.0	158	158	34	1.60	2.40	100	54.5	19.0	7.61	48.6	440
	5/17/02	<1.0	158	158	30.6	1.56	2.35	102	55.6	18.4	5.04	50.0	433
	10/23/02	--	--	--	35.4	--	--	104	--	--	--	--	419
	5/22/03	<1.0	156	156	30.6	1.17	2.25	96.3	53.2	17.8	5.39	54.6	435

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-3 (cont)	11/25/03	<1.0	160	160	31.4	1.35	2.30	103	46.5	18.0	5.19	51.7	440
	5/12/04	<1.00	164	164	32.3	1.20	2.38	101	52.2	16.8	4.77	47.5	448
	11/16/04	<1.00	166	166	35.1	1.53	2.77	95.4	56.3	23.6	12.70	58.9	424
	11/17/05	<10.0	171	171	96.3	0.97	2.2	108 D1	89.200	22.100	8.870	93.400	840
	11/15/06	<10	170	170	30	0.92 N	1.7	96	51.300	17.300	4.300	57.200	505
	11/16/07	<10.0	170	170	39.7	0.93	1.58	88.2 D1	50.800	16.300	<5.000	50.600	570
	11/6/08	<5.0	150	150	36	1.1	1.4	97	50	17	4.0	48	430
	11/3/09	<10	160	160	35	1.1	1.6	110	49	17	4.2	56	410
	11/10/10	<10	164	164	35.4	0.836	1.77	99.9	48.8	15.2	3.42	45.1	380
	11/10/11	<5.00	165	165	36.4	0.833	1.35	87.9	57.9	18.0	3.79	53.0	404
	10/11/12	<5.00	162	162	36.6	1.01	1.74	100	51.2	16.9	4.11	51.0	438
	10/8/13	<6.00	194	194	38.4	1.02	1.17	98.7	56.5	18.3	4.08	54.9	450
MW-4	2/27/98	--	--	230	12,000	--	--	1,300	1,700.0	880.0	48.00	5,300.0	22,000
	4/9/98	--	--	240	13,000	--	--	1,500	1,740.0	840.0	42.00	5,400.0	23,000
	2/14/01	<1.0	232	232	15,000	1.80	6.80	1,500	--	--	--	--	29,000
	5/17/02	<1.0	232	232	11,300	2.01	6.09	1,380	1,610.0	814.0	60.90	4,310.0	22,600
	10/23/02	--	--	--	11,300	--	--	1,320	--	--	--	--	23,200
	5/22/03	<1.0	220	220	11,300	<10.00	12.30	1,370	1,450.0	659.0	47.30	4,140.0	62,500
	11/26/03	<1.0	218	218	12,100	<8.00	12.30	1,400	1830.0	889.0	62.00	4,620.0	54,450
	5/11/04	<1.00	214	214	14,200	<8.00	8.97	1,560	1800.0	829.0	60.70	4,850.0	65,450
	11/17/04	<1.00	222	222	13,600	<20.00	31.50	1,410	2020.0	972.0	73.60	5,900.0	25,200
	11/17/05	<10.0	181	181	9,440	0.82	0.20	45.8 D1	849.000	387.000	28.100	3,880.000	24,300
	11/15/06	<10	260	260	14,000	<5.0 C	5.2	1,400	1,760.000	897.000	58.800	6,150.000	28,700
	11/14/07	<10.0	255	255	14,800	0.54	7.15 D1	1,410 D1	1170.000	382.000	48.000	4,760.000 D1	36,300
	11/12/08	<5.0	200	200	12,000	1.2	0.33	1,300	1,500	840	82	4,800	22,000
	11/4/09	<5.0	250	250	15,000	1.1	5.3	1,600	1,500	1,000	65	5,800	30,000
	11/11/10	<5.0	294	294	15,500	<1.00	10	1,270	1,380	904	40	5,450	25,500
	11/10/11	<5.00	277	277	16,900	0.112	6.16	1,060	1,680	1,110	40.0	6,490	28,900
	10/11/12	<5.00	256	256	5,850	2.10	4.58	629	434	334	21.2	2,620	12,000
	10/8/13	<6.00	294	294	16,200	0.72	6.79	1,460	1,690	1,180	40.8	7,370	36,300

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-4A	2/27/98	--	--	180	1,600	--	--	410	470.0	130.0	11.00	620.0	3,300
	2/14/01	<1.0	154	154	1,600	1.40	2.80	210	--	--	--	--	4,000
	5/15/02	<1.0	156	156	577	<1.00	2.23	121	200.0	49.5	10.30	125.0	1,610
	10/23/02	--	--	--	478	--	--	114	--	--	--	--	1,430
	5/22/03	<1.0	154	154	844	<1.00	2.43	160	279.0	58.9	10.10	248.0	2,200
	11/26/03	<1.0	158	158	1,060	<4.00	5.82	182	337.0	79.3	15.20	329.0	2,585
	5/11/04	<1.00	156	156	984	<2.00	3.30	179	297.0	66.5	11.50	279.0	2,300
	11/17/04	<1.00	164	164	1,110	<2.00	4.62	186	369.0	75.4	14.90	413.0	2,235
	11/16/05	<10.0	181	181	827 D1	<0.5	2.2	160 D1	335.000	64.400	9.230	382.000	2,340 N
	11/15/06	<10	620	620	960	<0.50	2.6	170	227.000	53.500	8.100	406.000	2,870
	11/14/07	<10.0	311	311	845 D1	0.35	3.60 D1	167 D1	205.000	44.900	7.330	334.000	2,650
	11/12/08	<5.0	640	640	650	0.32	2.2	170	160	37	9.9	290	1,700
	11/4/09	<5.0	670	670	670	0.56	2.6	150	110	27	7.4	300	1,600
	11/11/10	<5.0	217	217	663	0.505	2.58	125	65.9	15.6	4.42	317	1,760
	11/10/11	<5.00	171	171	621	0.775	2.02	134	78.8	18.7	4.71	389	1,400
	10/11/12	<5.00	169	169	516	1.12	2.60	100	48.7	11.3	4.45	359	1,200
	10/8/13	<6.00	199	199	512	2.63	2.47	100	47.7	9.9	3.64	410	1,170
MW-5	2/26/98	--	--	180	6,600	--	--	910	1,400.0	470.0	31.00	2,400.0	12,000
	2/14/01	<1.0	166	166	7,700	1.80	4.10	910	--	--	--	--	18,000
	5/17/02	<1.0	156	156	4,040	1.53	4.56	586	757.0	319.0	60.90	1,260.0	8,340
	10/23/02	--	--	--	3,900	--	--	94.8	--	--	--	--	422
	5/22/03	<1.0	158	158	3,170	<4.00	6.52	550	644.0	215.0	49.90	1,240.0	7,860
	11/25/03	<1.0	168	168	5,120	<4.00	6.77	739	978.0	365.0	54.90	1,680.0	11,940
	5/11/04	<1.00	160	160	6,760	<3.00	4.65	1,030	1,180.0	417.0	40.30	2,120.0	20,380
	11/17/04	<1.00	172	172	6,750	<10	16.60	786	1,210.0	486.0	40.60	2,300.0	11,980
	11/17/05	<10.0	161	161	2,140 D1	0.79	0.16	334 D1	339.000	126.000	10.800	791.000	7,120 N
	11/14/06	<10	160	160	2,000	0.60	1.5	300	437.000	173.000	14.200	918.000	4,420
	11/14/07	<10.0	161	161	5,790 D1	0.37	4.01 D1	668 D1	812.000	240.000	23.300	1,850.000 D1	16,300
	11/6/08	<5.0	160	160	4,900	0.78	0.32	540	660	310	35	1,600	9,700

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	*Sample Date*	*Carbonate Alkalinity*	*Bicarbonate Alkalinity*	*Total Alkalinity*	*Chloride* [2]	*Fluoride* [1]	*Nitrate - N* [1]	*Sulfate* [2]	*Calcium*	*Magnesium*	*Potassium*	*Sodium*	*TDS* [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-5 (cont)	11/3/09	<10	160	160	5,100	0.51	2.3	710	860	320	<13	1,800	11,000
	11/11/10	<5.0	176	176	4,200	0.159	2.37	554	687	250	17.3	1,400	8,890
	11/10/11	<5.00	172	172	4,340	0.243	0.549	411	944	326	19.7	1,780	7,840
	10/11/12	<5.00	164	164	3,630	0.376	2.26	474	671	239	17.0	1,360	8,300
	10/8/13	<6.00	176	176	3,730	0.369	1.56	425	659	253	15.4	1,440	8,060
MW-5A	2/26/98	--	--	170	190	--	--	180	107.0	23.0	3.50	117.0	740
	2/15/01	<1.0	164	164	140	1.20	2.10	130	90.2	27.9	8.70	74.6	670
	5/15/02	<1.0	182	182	53.5	<1.00	2.23	84.4	63.2	16.1	4.69	43.6	475
	10/23/02	--	--	--	50	--	--	616	--	--	--	--	8,670
	5/22/03	<1.0	158	158	32.5	<1.00	2.10	69.9	55.5	13.8	3.41	41.5	416
	11/25/03	<1.0	332	332	34.1	1.05	2.20	75.5	60.9	14.6	4.08	45.0	422
	5/11/04	<1.00	164	164	38.8	<1.00	2.25	75.8	60.9	15.0	3.40	43.2	484
	11/17/04	<1.00	152	152	39.6	1.37	2.66	74.3	58.1	13.6	3.83	48.5	430
	11/16/05	<10.0	191	191	40.2	0.82	2.1	75.2 D1	176.000	17.800	4.220	45.300	570 N
	11/14/06	<10	240	240	47	0.64	1.5	79	90.400	16.100	3.580	51.400	588
	11/14/07	<10.0	227	227	54.4	0.66	1.45	68.7 D1	73.700	14.000	<5.000	44.200	528
	11/6/08	<5.0	350	350	53	0.70	1.3	72	76	15	3.4	43	450
	11/3/09	<10	710	710	47	0.72	1.5	79	65	14	3.3	50	440
	11/11/10	<5.00	182	182	49.6	0.568	1.61	73.6	55.7	12.9	2.79	42.0	606
	11/10/11	<5.00	170	170	131	0.492	1.15	116	83.8	29.9	5.16	85.7	594
	10/11/12	<5.00	163	163	68.0	0.631	1.57	69.8	60.6	15.3	3.96	49.2	534
	10/8/13	<6.00	182	182	80.2	0.568	1.60	67.5	69.3	16.2	3.29	53.4	462
MW-6	2/26/98	--	--	200	260	--	--	400	180.0	44.0	6.20	205.0	1,200
	2/14/01	<1.0	158	158	59	1.70	2.20	99	67.5	22.1	7.67	52.3	470
	5/17/02	<1.0	162	162	37.8	1.62	2.14	99.3	63.1	19.6	5.12	48.6	427
	10/23/02	--	--	--	46.1	--	--	109	--	--	--	--	331
	5/22/03	<1.0	162	162	40.3	1.24	2.13	94.4	61.7	17.4	4.23	51.9	464
	11/25/03	<1.0	154	154	53.6	1.40	2.18	98	53.6	18.7	4.97	51.7	482
	5/11/04	<1.00	156	156	54.4	1.23	2.19	97	59.0	18.1	4.22	47.8	506

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-6 (cont)	11/16/04	<1.00	162	162	57.9	1.64	2.68	99.8	66.6	19.6	5.16	57.0	464
	11/17/05	<10.0	201	201	101	0.97	0.35	97.8 D1	103.000	20.200	4.100	59.100	730 N
	11/15/06	<10	750	750	68	0.99	1.5	93	64.600	20.400	4.230	57.100	507
	11/15/07	<10.0	284	284	162	51	1.35	96.3 D1	84.100	25.200	<5.000	62.100	630
	11/6/08	<5.0	220	220	84	1.2	1.2	95	67	21	4.3	53	490
	11/3/09	<10	190	190	81	1.2	1.4	100	66	20	4.5	59	550
	11/8/10	NS - Well Damaged											
	11/10/11	NS - Well Damaged											
	10/11/12	NS - Well Damaged											
	9/30/13	Well Plugged and Abandoned											
MW-6R	10/8/13	<6.00	225	225	110	1.91	<0.100	102	69.9	24.4	5.17	85.6	600
MW-7	5/14/98	--	--	230	430	--	--	340	214.0	66.0	13.00	165.0	1,200
	2/14/01	<1.0	150	150	510	1.70	2.40	150	--	--	--	--	1,500
	5/16/02	<1.0	150	150	75.7	1.59	2.27	97.4	68.6	23.2	6.63	54.3	501
	10/22/02	--	--	--	88.6	--	--	109	--	--	--	--	490
	5/22/03	<1.0	140	140	173	1.17	2.14	88.9	85.5	28.2	6.18	64.6	631
	11/26/03	<1.0	136	136	189	1.29	2.23	93.5	95.7	31.0	7.91	63.6	704
	5/13/04	<1.00	130	130	267	1.11	2.18	94.7	107.0	34.7	6.59	62.9	914
	11/16/04	<1.00	130	130	367	1.49	2.72	97.3	142.0	49.3	8.61	87.9	870
	11/17/05	<10.0	121	121	456 D1	0.53	0.28	106 D1	412.000	64.700	12.100	100.000	1,440 N
	11/15/06	<10	240	240	550	0.63	1.5	110	202.000	70.300	7.400	102.000	2,100
	11/15/07	<10.0	189	189	458 D1	1.20	1.39	176 D1	144.000	59.500	9.950	148.000	1,880
	11/12/08	<5.0	110	110	650	0.84	1.2	140	210	76	12	120	1,600
	11/4/09	<5.0	110	110	1,100	0.63	1.5	160	310	120	11	130	2,800
	11/10/10	<5.0	111	111	1,310	0.372	1.64	173	415	149	10.0	150	3,130
	11/10/11	<5.00	106	109	1,710	0.296	1.45	147	662	203	12.3	198	3,660
	10/11/12	<5.00	108	108	2,020	0.439	1.71	261	619	215	12.3	208	5,580
	10/8/13	<6.00	142	142	2,840	0.445	2.11	331	916	258	13.3	265	7,530

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COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-8	5/13/98	--	--	200	270	--	--	390	190.0	60.0	12.00	170.0	1,200
	2/14/01	<1.0	156	156	49	1.80	2.50	100	59.9	21.5	7.84	52.9	400
	5/16/02	<1.0	158	158	32.9	1.57	2.33	101	56.6	19.2	5.20	49.5	432
	10/22/02	--	--	--	40.8	--	--	104	--	--	--	--	392
	5/22/03	8	160	168	33.2	1.40	2.32	98.3	53.9	18.3	9.31	46.4	410
	11/26/03	<1.0	142	142	31.7	1.59	2.38	95.6	55.3	18.2	5.31	50.2	443
	5/12/04	<1.00	154	154	36.3	1.39	2.38	101	53.0	17.3	4.56	48.1	435
	11/16/04	<1.00	170	170	39.8	1.94	2.94	103	57.8	18.6	5.63	56.4	435
	5/17/05	4	152	156	41	1.64	2.94	105	61.0	18.6	5.78	47.3	434
	11/17/05	<10.0	171	171	113	1.1	<0.05	115 D1	83.400	21.700	5.740	102.000	750 N
	5/9/06	<10	160	160	210	0.89	1.4	200	72.700	33.300	7.120	125.000	896
	11/14/06	<10	150	150	230	1.1	1.2	200	74.200	38.300	9.610	162.000	912
	5/30/07	<10	141	141	62	1.2	1.74	120	54.100	19.100	<5	59.300	500
	11/15/07	<10.0	159	159	43.1	1.33	1.56	94.2 D1	52.100	17.200	<5.000	49.800	540
	5/15/08	<1.53	151	151	40.7	1.40	1.78	99.6 D1	51.7	16.8	4.10	54.8 D1	427
	11/12/08	<5.0	140	140	39	1.4	1.5	97	52	17	<2.6	46	350
	5/20/09	<5.0	140	140	39	1.3	1.6	110	50	17	4.3	49	430
	11/4/09	<5.0	150	150	41	1.4	1.7	110	46	16	3.3	47	450
	5/7/10	<5.0	<5.00	172	34.9	1.09	1.70	97.8	49.5	15.7	3.52	45.5	426
DUP	5/7/10	<5.0	<5.00	157	34.9	1.09	1.71	98.0	51.0	14.5	3.21	43.6	466
	11/12/10	<5.0	172	172	38.7	1.10	1.77	98.2	48.9	15.7	3.40	45.4	410
DUP	11/12/10	<5.0	160	160	38.7	1.10	1.76	98.3	50.5	15.3	3.44	44.8	398
	5/11/11	<5.0	170	170	185	1.20	1.60	93.0	73.0	28.4	5.68	165	692
	11/10/11	<5.0	161	161	36.9	1.06	1.41	87.4	57.1	17.0	3.46	48.6	406
	5/17/12	<5.0	173	173	37.9	1.09	1.59	92.9	53.3	16.4	3.83	56.7	440
	10/11/12	<5.0	158	158	39.9	1.29	1.83	103	49.0	16.6	4.30	49.0	444
	5/17/13	<5.0	167	167	38.3	1.37	1.70	106	55.3	17.5	3.67	45.9	416
	10/8/13	<6.00	182	182	39.5	1.17	1.78	96.2	57.4	19.7	4.35	57.6	446
MW-9	5/14/98	--	--	190	350	--	--	470	207.0	61.0	12.00	200.0	1,300
	2/15/01	<1.0	156	156	35	2.60	2.40	110	60.4	19.8	7.47	47.0	430

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-9 (cont)	5/16/02	<1.0	160	160	31.7	2.22	2.28	99.4	60.8	17.6	5.32	50.1	440
	10/23/02	--	--	--	39	--	--	102	--	--	--	--	436
	5/22/03	<1.0	160	160	31	1.75	2.19	93.3	52.2	15.8	4.75	50.2	455
	11/26/03	<1.0	150	150	31.8	1.99	2.34	99.8	57.7	16.6	4.69	46.3	452
	5/12/04	<1.00	164	164	33.6	1.79	2.29	99.2	54.8	16.0	4.27	43.5	467
	11/16/04	8	154	162	367	1.49	2.72	97.3	63.2	17.8	5.59	55.5	433
	5/17/05	4	154	154	44.2	2.43	3.05	117	58.8	16.7	5.94	44.1	434
	11/17/05	<10.0	161	161	83.5	1.3	0.14	111 D1	149.000	26.200	7.430	80.400	790 N
	5/9/06	<10	170	170	37	1.8	1.8	99	52.700	15.000	3.210	45.500	428
	11/15/06	<10	150	150	210	1.1	1.2	190	70.500	35.800	8.640	152.000	905
	5/30/07	<10	153	153	35	2.1	1.69	110	52.200	15.800	<5	44.700	464
	11/14/07	<10.0	151	151	186	1.49	1.48	156 D1	74.100	39.400	8.730	141.000	808
	5/15/08	<1.53	174	174	42.5	2.38	1.72	105 D1	55.6	17.0	3.99	54.1 D1	467
	11/4/08	<5.0	160	160	39	2.1	1.4	98	54	16	3.7	47	440
	5/20/09	<5.0	320	320	69	2.1	1.5	120	58	19	4.6	58	520
	11/4/09	<5.0	160	160	42	2.2	1.6	110	50	15	3.0	43	460
	5/7/10	<5.0	<5.00	162	50.2	2.02	1.66	97.5	53.6	15.7	3.32	43.5	442
	11/9/10	<5.0	186	186	60.7	1.97	1.74	98.0	59.2	18.1	3.64	50.0	446
	5/11/11	<5.0	160	160	80.3	1.71	1.72	75.7	73.9	25.8	4.61	67.9	518
	11/10/11	<5.00	151	151	138	1.66	1.38	107	82.7	26.9	4.34	65.4	582
	5/16/12	<5.00	162	162	137	1.75	1.61	93.5	83.8	23.2	4.39	60.3	584
	10/11/12	<5.00	147	147	148	1.90	1.71	98.7	80.5	25.8	4.94	59.8	644
	5/17/13	<5.00	144	144	246	1.86	1.61	99.3	107	30.2	4.43	60.2	1,010
	10/8/13	<6.00	164	164	150	1.88	1.81	99.8	90.0	25.2	4.62	60.8	620
MW-9A	5/14/98	--	--	280	600	--	--	770	338.0	96.0	12.00	334.0	2,200
	2/15/01	<1.0	142	142	85	1.40	2.20	71	71.6	19.2	6.94	46.0	400
	5/15/02	<1.0	136	136	148	<1.00	2.18	65.3	62.9	16.1	4.62	46.8	445
	10/23/02	--	--	--	168	--	--	75.5	--	--	--	--	651
	5/22/03	<1.0	126	126	207	<1.00	2.09	62.1	102.0	25.2	4.80	55.7	672
	11/26/03	<1.0	118	118	216	1.14	2.26	62.7	107.0	25.1	5.31	53.2	648

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
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COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-9A (cont)	5/12/04	<1.00	122	122	242	<1.00	2.10	64.7	105.0	26.2	5.11	26.2	950
	11/16/04	<1.00	114	114	296	1.24	2.74	67.5	130.0	33.1	6.24	70.3	826
	5/17/05	<1.00	112	112	354	1.04	2.85	77.1	131.0	31.7	6.39	60.5	828
	11/17/05	<10.0	121	121	310 D1	0.82	0.31	74.7 D1	337.000	41.400	8.080	74.500	1,520 N
	5/9/06	<10	670	670	270	0.67	1.6	78	111.000	27.100	3.880	58.700	992
	11/15/06	<10	1,600	1,600	290	0.62	1.6	72	126.000	33.400	4.740	68.400	1,280
	5/30/07	<10	586	586	400	0.7	1.69	83	153.000	36.900	<5	71.800	1,450
	11/14/07	<10.0	605	605	285 D1	0.62	1.52	64.7 D1	153.000	35.400	5.030	70.700	1,430
	5/15/08	<1.53	738	738	380 D1	0.45	1.62	86.8 D1	146	35.5	5.45	77.2 D1	1,390
	11/4/08	<5.0	370	370	330	<1.0	1.2	84	130	32	5.1	66	1,000
	5/20/09	<5.0	600	600	480	0.49	1.5	86	170	43	6.4	76	1,600
	11/4/09	<5.0	110	110	430	0.49	1.6	82	160	41	5.3	71	1,500
	5/7/10	<5.0	<5.00	121	510	0.210	1.62	80.5	188	44.9	4.90	73.6	1,680
	11/9/10	<5.0	115	115	529	0.328	1.72	86.0	159	44.3	5.00	76.1	1,660
	5/11/11	<5.0	146	146	587	1.18	1.90	415	166	80.6	11.3	211	1,850
	11/10/11	<5.0	115	115	841	0.189	1.56	125	280	84.8	7.51	117	2,160
	5/16/12	<5.0	135	135	958	0.366	1.74	143	249	62.6	6.50	97.7	3,450
DUP	5/16/12	<5.0	128	128	882	0.308	1.70	134	270	65.7	6.72	92.3	3,050
	10/11/12	<5.0	125	125	628	0.366	1.70	121	235	60.4	6.72	94.0	1,810
	5/17/13	<5.0	137	137	754	0.337	1.67	145	224	53.9	5.49	86.8	1,930
	10/8/13	<6.00	153	153	534	0.370	1.69	118	185	43.1	5.23	81.3	1,210
MW-10	5/14/98	--	--	240	360	--	--	450	211.0	62.0	11.00	190.0	1,400
	2/15/01	<1.0	140	140	190	2.00	2.30	97	108.0	32.3	8.20	61.0	660
	5/17/02	<1.0	152	152	204	1.93	2.19	99.1	109.0	31.7	7.60	62.4	713
	10/22/02	--	--	--	213	--	--	108	--	--	--	--	758
	5/22/03	<1.0	152	152	213	1.45	2.17	96.6	109.0	29.9	8.65	74.2	764
	11/26/03	<1.0	152	152	220	1.54	2.26	103	120.0	35.7	6.96	64.0	752
	5/13/04	<1.00	158	158	232	1.39	2.23	102	114.0	31.6	5.95	57.2	802
	11/17/04	<1.00	170	170	245	1.73	2.78	104	121.0	35.7	7.07	70.3	764
	5/17/05	<1.00	150	150	233	1.77	2.80	106	113.0	32.3	6.83	60.2	776

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COOPER-JAL UNIT INJECTION STATION
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Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-10 (cont)	11/17/05	<10.0	151	151	205 D1	1.2	0.26	111 D1	482.000	47.400	13.100	82.400	970 N
	5/9/06	<10	190	190	180	1.4	1.6	98	93.300	27.100	4.310	60.400	724
	11/16/06	<10	320	320	190	1.2	1.6	92	101.000	30.000	4.750	64.100	900
	5/30/07	<10	340	340	200	1.4	1.68	110	101.000	28.600	<5	62.400	820
	11/15/07	<10.0	189	189	251 D1	1.44	1.44	152 D1	104.000	33.400	6.010	84.700	1,010
	5/15/08	<1.53	374	374	342 D1	1.47	1.28	257 D1	106	52.9	11.7	165 D1	1,140
	11/6/08	<5.0	150	150	210	1.5	1.3	89	110	32	5.4	64	730
	5/20/09	<5.0	240	240	270	1.3	1.5	120	110	35	6.2	72	960
	11/4/09	<5.0	150	150	240	1.5	1.3	130	100	35	5.4	78	1,000
	5/7/10	<5.0	<5.00	157	236	1.18	1.62	106	111	30.7	4.59	60.3	940
	11/10/10	<5.0	166	166	280	1.16	1.61	112	98.4	36.9	5.63	81.0	812
	5/11/11	<5.0	157	157	274	1.11	1.99	87.2	117	32.2	5.63	85.0	930
	11/15/11	<5.0	150	150	266	1.03	6.93	94.9	128	32.3	4.58	62.8	1,450
	5/16/12	<5.0	163	163	284	1.12	1.58	99.9	132	36.8	5.22	72.9	1,120
	10/11/12	<5.0	151	151	255	1.32	1.75	98.7	113	34.3	5.68	67.6	1,010
	5/17/13	<5.0	154	154	299	1.34	1.61	108	117	33.7	4.57	64.6	1,180
	10/8/13	<6.00	165	165	324	1.14	1.62	103	154	41.6	5.36	78.1	1,240
MW-11	1/22/99	30	<1.0	30	46	2.30	4.20	94	33.0	7.0	9.10	58.0	370
	2/15/01	<1.0	156	156	37	2.40	2.40	120	64.0	19.1	7.83	50.1	360
	5/16/02	<1.0	160	160	31.9	2.13	2.33	98.8	63.5	17.2	4.83	47.0	444
	10/23/02	--	--	--	37.2	--	--	102	--	--	--	--	447
	5/22/03	12	154	166	32.3	1.74	2.28	96.7	62.3	0.0	4.63	47.6	437
	11/26/03	<1.0	160	160	32.4	1.83	2.23	96.4	59.2	16.6	4.67	48.6	448
	5/12/04	<1.00	164	164	34.6	1.71	2.38	97.7	54.8	15.7	4.28	46.2	457
	11/16/04	<1.00	160	160	39	2.17	2.81	100	65.2	16.8	5.14	54.3	454
	5/17/05	4	158	162	43.1	1.87	2.82	94.6	68.4	16.9	6.45	44.0	429
	11/17/05	<10.0	161	161	58.1	1.5	2.1	91.3 D1	75.000	17.700	4.550	64.700	700 N
	5/9/06	<10	180	180	37	1.8	1.7	100	54.100	16.200	3.260	46.900	456
	11/14/06	<10	170	170	34	1.8	1.8	110	58.000	18.200	4.130	53.400	532
	5/30/07	<10	142	142	36	1.9	1.79	120	54.000	16.700	<5	50.800	456

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Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-11 (cont)	11/14/07	<10.0	189	189	42.3	1.98	1.54	95.6 D1	57.200	17.400	<5.000	52.400	452
	5/15/08	<1.53	177	177	72.4 D1	1.86	1.71	141	58.0	19.4	4.93	66.5 D1	544
	11/4/08	<5.0	170	170	49	1.5	1.3	90	60	16	3.6	47	440
	5/20/09	<5.0	360	360	40	2.2	1.7	130	51	17	4.5	53	450
	11/4/09	<5.0	150	150	43	1.6	1.6	100	52	15	2.9	42	470
	5/7/10	<5.0	<5.00	167	36.5	1.97	1.78	117	49.7	14.9	3.42	44.7	494
	11/9/10	<5.0	269	269	52.5	1.45	1.79	95.4	61.0	16.7	3.56	50.0	438
	5/11/11	<5.0	161	161	133	1.43	2.08	140	78.1	37.0	6.32	103	664
DUP	5/11/11	<5.0	161	161	130	1.44	2.01	137	77.4	37.0	6.29	104	706
	11/10/11	<5.0	162	162	38.8	1.86	1.49	97.1	66.2	17.9	3.62	52.3	420
	5/17/12	<5.0	176	176	45.8	1.29	1.62	88.5	63.6	16.3	3.66	53.4	456
	10/11/12	<5.0	166	166	44.6	1.49	1.74	95.1	55.8	15.8	3.80	49.3	440
	5/17/13	<5.0	171	171	43.6	1.87	1.67	106	57.7	14.8	3.18	42.9	428
	10/8/13	<6.00	178	178	45.2	1.55	1.74	95.5	60.9	16.1	3.33	52.0	450
MW-12	5/15/02	<1.0	160	160	58.3	1.09	2.44	91.3	53.5	15.9	5.52	50.3	462
	10/23/02	--	--	--	65	--	--	102	--	--	--	--	477
	5/22/03	<1.0	148	148	91.1	1.04	2.30	87.7	74.2	21.0	4.89	57.6	516
	11/25/03	<1.0	142	142	93.1	1.18	2.36	90.9	74.7	20.9	5.41	52.5	548
	5/12/04	<1.00	458	458	72.9	1.04	2.35	86.7	58.1	19.0	5.92	51.8	489
	11/15/04	<1.00	184	184	79.8	1.39	2.83	88.8	59.7	21.5	16.50	77.4	512
	11/17/05	<10.0	151	151	109	0.93	0.12	94.6 D1	193.000	26.600	13.400	87.500	700 N
	11/16/06	<10	270	270	120	0.71	1.7	84	82.300	27.000	4.820	62.200	620
	11/16/07	<10.0	170	170	258 D1	1.21	1.55	191 D1	77.200	42.700	11.000	154.000	1,270
	11/6/08	<5.0	130	130	110	0.89	1.4	79	61	20	4.5	52	460
	11/3/09	<25	2,000	2,000	120	0.87	1.6	98	68	24	6.0	79	600
	11/9/10	<5.0	144	144	211	0.566	1.76	89.8	75.6	27.8	4.60	60.6	712
	11/10/11	<5.00	134	134	179	0.464	1.37	92.8	93.8	27.8	4.53	64.0	594
	10/11/12	<5.00	145	145	179	0.705	0.791	86.5	80.4	25.4	5.44	62.9	724
	10/8/13	<6.00	160	160	246	0.621	1.64	84.5	110	30.4	4.92	67.8	944

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LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
MW-13	5/13/02	<1.0	100	100	517	<1.00	1.61	437	116.0	76.0	19.40	269.0	1,596
	10/23/02	--	--	--	549	--	--	370	--	--	--	--	1,740
	5/22/03	<1.0	186	186	944	<2.00	2.33	361	289.0	101.0	15.30	458.0	3,060
	11/25/03	<1.0	226	226	1,460	<2.00	2.22	372	369.0	117.0	20.00	478.0	3,445
	5/12/04	<1.00	234	234	1,550	<4.00	4.58	369	384.0	114.0	18.60	485.0	4,240
	11/15/04	<1.00	226	226	1,870	<2.00	4.92	384	510.0	164.0	16.50	627.0	3,600
	11/17/05	<10.0	201	201	722 D1	1.0	2.5	206 D1	786.000	91.600	19.700	276.000	2,350 N
	11/16/06	<10	1,500	1,500	2,000	<0.50 N	2.7	500 N	529.000	176.000	14.200	493.000	5,060
	11/16/07	<10.0	236	236	2,000 D1	0.33	3.05 D1	312 D1	361.000	105.000	11.400	553.000 D1	6,320
	11/6/08	<5.0	180	180	970	0.98	1.8	280	240	96	17	370	2,400
	11/3/09	<25	15,000	15,000	2,200	<0.50	2.6	440	490	180	22	490	5,600
	11/9/10	<5.0	267	267	1,680	0.217	2.82	405	400	120	10.4	540	4,270
	11/10/11	<5.00	206	206	2,110	0.177	<0.500	273	690	223	13.2	472	4,870
	10/11/12	<5.00	204	204	2,360	0.307	2.70	422	706	228	14.4	423	6,290
	10/8/13	<6.00	1780	1780	2,710	0.303	2.59	448	768	225	14.0	457	7,320
MW-14	10/8/13	<6.00	267	267	162	3.69	<0.100	127	74.4	32.3	8.42	145	854
Dup-1	10/8/13	<6.00	271	271	166	3.74	<0.100	130	60.7	26.3	7.97	145	848
RW-1	5/27/99	0	224	224	8,700	2.70	7.00	840	679.0	521.0	34.00	3,290	14,000
	5/22/03	<1.0	190	190	2,410	2.46	4.23	345	162.0	145.0	25.40	1,180.0	5,260
	11/26/03	<1.0	184	184	1,990	<4.00	20.00	324	199.0	147.0	38.60	1,080.0	5,050
	5/11/04	<1.00	148	148	491	1.32	2.65	109	66.3	23.4	11.20	252.0	1,224
	11/17/04	<1.00	160	160	633	1.65	3.23	121	89.7	43.5	18.00	382.0	1,314
	11/17/05	<10.0	221	221	895	1.0	1.4	166 D1	122.000	70.900	8.400	493.000	2,380
	11/16/06	<10	380	380	11,000	<0.50	<20 HC	1,100	539.000	694.000	43.300	5,580.000	22,000
	11/15/07	<10.0	359	359	2,380	1.26	3.74 D1	252 D1	141.000	137.000	16.000	1,100.000 D1	5,280
DUP	11/15/07	<10.0	208	208	2,620	1.24	3.85 D1	316 D1	136.000	133.000	15.500	1,040.000 D1	5,360
	11/12/08	<5.0	210	210	370	0.82	1.9	97	66	34	5.0	190	920
	11/4/09	<5.0	170	170	1,700	1.1	2.6	250	110	120	22	750	3,800
	11/11/10	<5.0	192	192	1,340	0.716	2.72	204	95.5	104	12.6	792	2,830

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COOPER-JAL UNIT INJECTION STATION
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Carbonate Alkalinity	Bicarbonate Alkalinity	Total Alkalinity	Chloride [2]	Fluoride [1]	Nitrate - N [1]	Sulfate [2]	Calcium	Magnesium	Potassium	Sodium	TDS [2]
New Mexico Water Quality Control Commission Groundwater Standard					*250*	*1.6*	*10*	*600*					*1,000*
RW-1 (cont)	11/10/11	<5.00	**396**	**396**	**14,000**	**3.32**	**9.16**	**1,540**	**942**	**1,260**	**44.6**	**8,720**	**32,200**
	10/11/12	<5.00	**263**	**263**	**6,530**	**2.19**	**4.75**	**625**	**314**	**445**	**28.0**	**3,490**	**10,100**
DUP-2	10/11/12	<5.00	**286**	**286**	**2,440**	**0.308**	**1.23**	**194**	**128**	**156**	**18.6**	**1,260**	**17,000**
	10/8/13	<6.00	**285**	**285**	**6,050**	**0.951**	**4.29**	**546**	**760**	**919**	**39.0**	**6,370**	**11,200**
DUP-2	10/8/13	<6.00	**216**	**216**	**10,500**	**1.270**	**5.98**	**926**	**490**	**581**	**31.4**	**4,170**	**1,870**
RW-2	5/22/03	**324**	<4.00	**780**	**1,580**	<2.00	**2.43**	**23.9**	**1,060.0**	<0.500	**20.20**	**258.0**	**4,310**
	11/26/03	**64**	<4.00	**704**	**1,480**	<5.00	**5.81**	**38.3**	**988.0**	<0.500	**23.80**	**240.0**	**3,535**
	11/17/04	**104.0**	<4.00	**692**	**2,280**	<10.0	<10.0	**116**	**1180.0**	<0.500	**18.50**	**415.0**	**3,915**
	11/17/05	**281**	<10.0	**422**	**1,770**	**0.89**	**0.60**	**175 D1**	**861.000**	**16.600**	**13.100**	**361.000**	**7,350**
	11/16/06	**49**	**150**	**199**	**2,500**	**0.57**	**1.9**	**370**	**978.000**	**48.800**	**18.000**	**437.000**	**5,270**
	11/15/07	**170**	**37.8**	**208**	**1,680**	**0.49**	**1.52**	**166 D1**	**586.000**	<5.000	**11.200**	**245.000**	**5,590**
	11/12/08	**150**	<5.0	**390**	**2,500**	<0.50	**0.24**	**250**	**1,200**	<0.38	**6.0**	**400**	**4,800**
	11/4/09	**34**	<5.0	**220**	**2,200**	<0.50	**1.7**	**240**	**940**	**0.18**	**16**	**420**	**6,300**
	11/11/10	**113**	<5.0	**172**	**2,100**	<0.50	**2.03**	**233**	**967**	**4.06**	**8.86**	**426**	**4,550**
	11/10/11	**36.9**	<5.00	**384**	**4,330**	<10.0	**2.13**	**305**	**2,040**	**1.12**	**18.7**	**711**	**8,300**
	10/11/12	**27.1**	<5.00	**202**	**1,920**	<0.50	**1.93**	**223**	**842**	**0.464**	**9.30**	**385**	**6,680**
DUP 1	10/11/12	**31.9**	<5.00	**206**	**2,310**	<0.50	**1.98**	**228**	**1,090**	**2.42**	**10.5**	**430**	**5,250**
	10/8/13	**66.3**	<6.00	**117**	**2,450**	0.140	**2.36**	**309**	**1,570**	**2.15**	**15.3**	**639**	**4,420**
RW-2R	10/8/13	<6.00	**146**	**146**	**6,550**	**0.452**	**1.79**	**762**	**1,850**	**616**	**25.5**	**1350**	**14,600**

Notes:

1. **Bold** value indicates a laboratory detection.
2. Shaded cells indicate New Mexico Water Quality Control Commission (NMWQCC) exceedance.
3. Results shown in mg/L.
4. N - See narrative in laboratory report for a detailed explanation.
5. D1 - The analysis was performed at a dilution due to the high analyte concentration.
6. H - The analysis was performed past holding time.
7. C - Elevated detection limit due to matrix effect.
8. Analyte detected below quantitation limit
9. [1]Human Health Standards for Groundwater.
10. ´Other Standards for Domestic Water Supply.

Appendices

Appendix A
Certified Laboratory Reports

31-May-2013

Chris Knight
Conestoga Rovers & Associates
13091 Pond Springs Road, Suite A100
Austin, Texas 78729

Tel: (512) 506-8803
Fax:

Re: CEMC Cooper-JAL - 039123 Work Order: **1305802**

Dear Chris,

ALS Environmental received 6 samples on 18-May-2013 09:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 19.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Dayna.Fisher

John M. Cady
Project Manager

Certificate No: TX: T104704231-13-12

ALS Environmental

Date: 31-May-13

Client: Conestoga Rovers & Associates
Project: CEMC Cooper-JAL - 039123
Work Order: **1305802**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1305802-01	MW-8 0517813	Water		5/17/2013 14:25	5/18/2013 09:15	☐
1305802-02	MW-9 051713	Water		5/17/2013 14:05	5/18/2013 09:15	☐
1305802-03	MW-9A 051713	Water		5/17/2013 14:15	5/18/2013 09:15	☐
1305802-04	MW-10 051713	Water		5/17/2013 14:40	5/18/2013 09:15	☐
1305802-05	MW-11 051713	Water		5/17/2013 13:55	5/18/2013 09:15	☐
1305802-06	Dup-1 051713	Water		5/17/2013	5/18/2013 09:15	☐

Client: Conestoga Rovers & Associates
Project: CEMC Cooper-JAL - 039123
Work Order: 1305802

Case Narrative

Batch 70341, Method 6020 Dissolved: The MS and the MSD did not recover for Calcium, Magnesium and Sodium on an unrelated sample. The LCS passed.

Batch 147640, Method 300: Fluoride recovered above acceptable limits in the MS and the MSD. Sulfate recovered below acceptable limits in the MS and the MSD. The MS and the MSD were analyzed on an unrelated sample. The LCS passed.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: MW-8 0517813 **Lab ID:** 1305802-01

Collection Date: 5/17/2013 02:25 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**55.3**		**0.500**	**mg/L**	1	5/29/2013	5/29/2013 08:33 PM
Magnesium	**17.5**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:33 PM
Potassium	**3.67**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:33 PM
Sodium	**45.9**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:34 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**38.3**		**0.500**	**mg/L**	1		5/18/2013 03:40 PM
Fluoride	**1.37**		**0.100**	**mg/L**	1		5/18/2013 03:40 PM
Nitrogen, Nitrate (As N)	**1.70**		**0.100**	**mg/L**	1		5/18/2013 03:40 PM
Sulfate	**106**		**0.500**	**mg/L**	1		5/18/2013 03:40 PM
Surr: Selenate (surr)	*97.1*		*85-115*	*%REC*	1		5/18/2013 03:40 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**167**		**6.00**	**mg/L**	1		5/23/2013 11:43 AM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:43 AM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:43 AM
Alkalinity, Total (As CaCO3)	**167**		**6.00**	**mg/L**	1		5/23/2013 11:43 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**416**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: MW-9 051713 **Lab ID:** 1305802-02

Collection Date: 5/17/2013 02:05 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**107**		**0.500**	**mg/L**	1	5/29/2013	5/29/2013 08:35 PM
Magnesium	**30.2**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:35 PM
Potassium	**4.43**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:35 PM
Sodium	**60.2**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:37 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **VAN**
Chloride	**246**		**5.00**	**mg/L**	10		5/29/2013 06:07 AM
Fluoride	**1.86**		**0.100**	**mg/L**	1		5/18/2013 04:02 PM
Nitrogen, Nitrate (As N)	**1.61**		**0.100**	**mg/L**	1		5/18/2013 04:02 PM
Sulfate	**99.3**		**0.500**	**mg/L**	1		5/18/2013 04:02 PM
Surr: Selenate (surr)	*97.3*		*85-115*	*%REC*	1		5/18/2013 04:02 PM
Surr: Selenate (surr)	*93.7*		*85-115*	*%REC*	10		5/29/2013 06:07 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**144**		**6.00**	**mg/L**	1		5/23/2013 11:48 AM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:48 AM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:48 AM
Alkalinity, Total (As CaCO3)	**144**		**6.00**	**mg/L**	1		5/23/2013 11:48 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,010**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: MW-9A 051713 **Lab ID:** 1305802-03

Collection Date: 5/17/2013 02:15 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**224**		**5.00**	**mg/L**	10	5/29/2013	5/30/2013 03:39 PM
Magnesium	**53.9**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:38 PM
Potassium	**5.49**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:38 PM
Sodium	**86.8**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:39 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **VAN**
Chloride	**754**		**5.00**	**mg/L**	10		5/29/2013 06:22 AM
Fluoride	**0.337**		**0.100**	**mg/L**	1		5/18/2013 04:23 PM
Nitrogen, Nitrate (As N)	**1.67**		**0.100**	**mg/L**	1		5/18/2013 04:23 PM
Sulfate	**145**		**5.00**	**mg/L**	10		5/29/2013 06:22 AM
Surr: Selenate (surr)	*97.0*		*85-115*	*%REC*	1		5/18/2013 04:23 PM
Surr: Selenate (surr)	*91.6*		*85-115*	*%REC*	10		5/29/2013 06:22 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**137**		**6.00**	**mg/L**	1		5/23/2013 11:53 AM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:53 AM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:53 AM
Alkalinity, Total (As CaCO3)	**137**		**6.00**	**mg/L**	1		5/23/2013 11:53 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,930**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: MW-10 051713 **Lab ID:** 1305802-04

Collection Date: 5/17/2013 02:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**117**		**0.500**	**mg/L**	1	5/29/2013	5/29/2013 08:40 PM
Magnesium	**33.7**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:40 PM
Potassium	**4.57**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:40 PM
Sodium	**64.6**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:41 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **VAN**
Chloride	**299**		**5.00**	**mg/L**	10		5/29/2013 06:36 AM
Fluoride	**1.34**		**0.100**	**mg/L**	1		5/18/2013 04:44 PM
Nitrogen, Nitrate (As N)	**1.61**		**0.100**	**mg/L**	1		5/18/2013 04:44 PM
Sulfate	**108**		**5.00**	**mg/L**	10		5/29/2013 06:36 AM
Surr: Selenate (surr)	*97.2*		*85-115*	*%REC*	1		5/18/2013 04:44 PM
Surr: Selenate (surr)	*93.3*		*85-115*	*%REC*	10		5/29/2013 06:36 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**154**		**6.00**	**mg/L**	1		5/23/2013 11:58 AM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:58 AM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 11:58 AM
Alkalinity, Total (As CaCO3)	**154**		**6.00**	**mg/L**	1		5/23/2013 11:58 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,180**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: MW-11 051713 **Lab ID:** 1305802-05

Collection Date: 5/17/2013 01:55 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**57.7**		**0.500**	**mg/L**	1	5/29/2013	5/29/2013 08:43 PM
Magnesium	**14.8**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:43 PM
Potassium	**3.18**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:43 PM
Sodium	**42.9**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:49 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**43.6**		**0.500**	**mg/L**	1		5/18/2013 05:05 PM
Fluoride	**1.87**		**0.100**	**mg/L**	1		5/18/2013 05:05 PM
Nitrogen, Nitrate (As N)	**1.67**		**0.100**	**mg/L**	1		5/18/2013 05:05 PM
Sulfate	**106**		**0.500**	**mg/L**	1		5/18/2013 05:05 PM
Surr: Selenate (surr)	*98.5*		*85-115*	*%REC*	1		5/18/2013 05:05 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**171**		**6.00**	**mg/L**	1		5/23/2013 12:03 PM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 12:03 PM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 12:03 PM
Alkalinity, Total (As CaCO3)	**171**		**6.00**	**mg/L**	1		5/23/2013 12:03 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**428**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *31-May-13*

Client: Conestoga Rovers & Associates

Project: CEMC Cooper-JAL - 039123 **Work Order:** 1305802

Sample ID: Dup-1 051713 **Lab ID:** 1305802-06

Collection Date: 5/17/2013 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**				Analyst: **SKS**
Calcium	**119**		**0.500**	**mg/L**	1	5/29/2013	5/29/2013 08:45 PM
Magnesium	**33.8**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:45 PM
Potassium	**4.65**		**0.200**	**mg/L**	1	5/29/2013	5/29/2013 08:45 PM
Sodium	**63.5**		**2.00**	**mg/L**	10	5/29/2013	5/30/2013 03:51 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **VAN**
Chloride	**299**		**5.00**	**mg/L**	10		5/29/2013 06:51 AM
Fluoride	**1.34**		**0.100**	**mg/L**	1		5/18/2013 05:27 PM
Nitrogen, Nitrate (As N)	**1.62**		**0.100**	**mg/L**	1		5/18/2013 05:27 PM
Sulfate	**108**		**5.00**	**mg/L**	10		5/29/2013 06:51 AM
Surr: Selenate (surr)	*97.3*		*85-115*	*%REC*	1		5/18/2013 05:27 PM
Surr: Selenate (surr)	*95.1*		*85-115*	*%REC*	10		5/29/2013 06:51 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**155**		**6.00**	**mg/L**	1		5/23/2013 12:08 PM
Alkalinity, Carbonate (As CaCO3)	U		6.00	mg/L	1		5/23/2013 12:08 PM
Alkalinity, Hydroxide (As CaCO3)	U		6.00	mg/L	1		5/23/2013 12:08 PM
Alkalinity, Total (As CaCO3)	**155**		**6.00**	**mg/L**	1		5/23/2013 12:08 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,180**		**10.0**	**mg/L**	1		5/23/2013 09:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **70341** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

MBLK Sample ID: **MBLKW5-052913-70341** Units: **mg/L** Analysis Date: **5/29/2013 08:06 PM**

Client ID: Run ID: **ICPMS05_130529A** SeqNo: **3234001** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	0.1698	0.50								J
Magnesium	U	0.20								
Potassium	U	0.20								

MBLK Sample ID: **MBLKW5-052913-70341** Units: **mg/L** Analysis Date: **5/30/2013 01:23 PM**

Client ID: Run ID: **ICPMS05_130530A** SeqNo: **3234829** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	U	0.20								

LCS Sample ID: **MLCSW5-052913-70341** Units: **mg/L** Analysis Date: **5/29/2013 08:09 PM**

Client ID: Run ID: **ICPMS05_130529A** SeqNo: **3234002** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.879	0.50	5	0	97.6	80-120				
Magnesium	4.77	0.20	5	0	95.4	80-120				
Potassium	4.824	0.20	5	0	96.5	80-120				

LCS Sample ID: **MLCSW5-052913-70341** Units: **mg/L** Analysis Date: **5/30/2013 01:25 PM**

Client ID: Run ID: **ICPMS05_130530A** SeqNo: **3234831** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	4.827	0.20	5	0	96.5	80-120				

MS Sample ID: **13051103-03BMS** Units: **mg/L** Analysis Date: **5/29/2013 08:21 PM**

Client ID: Run ID: **ICPMS05_130529A** SeqNo: **3234007** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	1337	0.50	5	1362	-488	75-125				SEO
Magnesium	557.4	0.20	5	572.7	-305	75-125				SEO
Potassium	33.29	0.20	5	29.47	76.4	75-125				O
Sodium	U	0.20	5	0	0	75-125				S

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga Rovers & Associates
Work Order: 1305802
Project: CEMC Cooper-JAL - 039123

QC BATCH REPORT

Batch ID: **70341** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

MSD Sample ID: **13051103-03BMSD** Units: **mg/L** Analysis Date: **5/29/2013 08:28 PM**
Client ID: Run ID: **ICPMS05_130529A** SeqNo: **3234010** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	1348	0.50	5	1362	-279	75-125	1337	0.778	25	SEO
Magnesium	562.7	0.20	5	572.7	-200	75-125	557.4	0.936	25	SEO
Potassium	33.8	0.20	5	29.47	86.7	75-125	33.29	1.53	25	O
Sodium	U	0.20	5	0	0	75-125	0	0	25	S

DUP Sample ID: **13051103-03BDUP** Units: **mg/L** Analysis Date: **5/29/2013 08:16 PM**
Client ID: Run ID: **ICPMS05_130529A** SeqNo: **3234005** Prep Date: **5/29/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	29.95	0.20					29.47	1.61	25	

DUP Sample ID: **13051103-03BDUP** Units: **mg/L** Analysis Date: **5/30/2013 03:27 PM**
Client ID: Run ID: **ICPMS05_130530A** SeqNo: **3235067** Prep Date: **5/29/2013** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	1466	50					1487	1.47	25	
Magnesium	497.4	20					495.1	0.461	25	
Sodium	5188	20					5239	0.977	25	

The following samples were analyzed in this batch:

1305802-01D	1305802-02D	1305802-03D
1305802-04D	1305802-05D	1305802-06D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga Rovers & Associates
Work Order: 1305802
Project: CEMC Cooper-JAL - 039123

QC BATCH REPORT

Batch ID: **R147640** Instrument ID **ICS3000** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R147640** Units: **mg/L** Analysis Date: **5/18/2013 10:21 AM**
Client ID: Run ID: **ICS3000_130520A** SeqNo: **3222310** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.50								
Fluoride	U	0.10								
Nitrogen, Nitrate (As N)	0.089	0.10								J
Sulfate	U	0.50								
Surr: Selenate (surr)	5.212	0.10	*5*	*0*	*104*	*85-115*	*0*			

LCS Sample ID: **WLCSW-R147640** Units: **mg/L** Analysis Date: **5/20/2013 02:08 PM**
Client ID: Run ID: **ICS3000_130520A** SeqNo: **3222332** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20	0.50	20	0	100	90-110				
Fluoride	4.392	0.10	4	0	110	90-110				
Nitrogen, Nitrate (As N)	4.137	0.10	4	0	103	90-110				
Sulfate	21.19	0.50	20	0	106	90-110				
Surr: Selenate (surr)	5.069	0.10	*5*	*0*	*101*	*85-115*	*0*			

MS Sample ID: **1305631-09BMS** Units: **mg/L** Analysis Date: **5/18/2013 02:58 PM**
Client ID: Run ID: **ICS3000_130520A** SeqNo: **3222322** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	159.2	5.0	100	47.68	112	80-120				
Fluoride	26.22	1.0	20	1.112	126	80-120				S
Nitrogen, Nitrate (As N)	20	1.0	20	0	100	80-120				H
Sulfate	2168	5.0	100	2119	48.8	80-120				SEO
Surr: Selenate (surr)	48.68	1.0	*50*	*0*	*97.4*	*85-115*	*0*			

MSD Sample ID: **1305631-09BMSD** Units: **mg/L** Analysis Date: **5/18/2013 03:19 PM**
Client ID: Run ID: **ICS3000_130520A** SeqNo: **3222323** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	160	5.0	100	47.68	112	80-120	159.2	0.509	20	
Fluoride	26.44	1.0	20	1.112	127	80-120	26.22	0.805	20	S
Nitrogen, Nitrate (As N)	20.08	1.0	20	0	100	80-120	20	0.389	20	H
Sulfate	2172	5.0	100	2119	53	80-120	2168	0.194	20	SEO
Surr: Selenate (surr)	48.76	1.0	*50*	*0*	*97.5*	*85-115*	*48.68*	*0.179*	*20*	

The following samples were analyzed in this batch:

1305802-01B	1305802-02B	1305802-03B
1305802-04B	1305802-05B	1305802-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga Rovers & Associates
Work Order: 1305802
Project: CEMC Cooper-JAL - 039123

QC BATCH REPORT

Batch ID: **R147816** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130523-R147816** Units: **mg/L** Analysis Date: **5/23/2013 10:41 AM**
Client ID: Run ID: **MANTECH01_130523B** SeqNo: **3227138** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	6.0								
Alkalinity, Carbonate (As CaCO3)	U	6.0								
Alkalinity, Hydroxide (As CaCO3)	U	6.0								
Alkalinity, Total (As CaCO3)	U	6.0								

LCS Sample ID: **WLCSW1-130523-R147816** Units: **mg/L** Analysis Date: **5/23/2013 10:47 AM**
Client ID: Run ID: **MANTECH01_130523B** SeqNo: **3227139** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1155	6.0	1000	0	116	80-120				

DUP Sample ID: **1305922-01EDUP** Units: **mg/L** Analysis Date: **5/23/2013 11:02 AM**
Client ID: Run ID: **MANTECH01_130523B** SeqNo: **3227143** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	268.2	6.0					267.3	0.314	0	
Alkalinity, Carbonate (As CaCO3)	U	6.0					0	0	0	
Alkalinity, Hydroxide (As CaCO3)	U	6.0					0	0	0	
Alkalinity, Total (As CaCO3)	268.2	6.0					267.3	0.314	20	

The following samples were analyzed in this batch:

1305802-01A	1305802-02A	1305802-03A
1305802-04A	1305802-05A	1305802-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga Rovers & Associates
Work Order: 1305802
Project: CEMC Cooper-JAL - 039123

QC BATCH REPORT

Batch ID: **R147881** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-052313-R147881** Units: **mg/L** Analysis Date: **5/23/2013 09:05 AM**
Client ID: Run ID: **BALANCE1_130523C** SeqNo: **3228897** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	U	10								

LCS Sample ID: **WLCS-052313-R147881** Units: **mg/L** Analysis Date: **5/23/2013 09:05 AM**
Client ID: Run ID: **BALANCE1_130523C** SeqNo: **3228898** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1074	10	1000	0	107	85-115				

DUP Sample ID: **1305797-08FDUP** Units: **mg/L** Analysis Date: **5/23/2013 09:05 AM**
Client ID: Run ID: **BALANCE1_130523C** SeqNo: **3228887** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	46	10					50	8.33	20	

DUP Sample ID: **1305966-08EDUP** Units: **mg/L** Analysis Date: **5/23/2013 09:05 AM**
Client ID: Run ID: **BALANCE1_130523C** SeqNo: **3231058** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1094	10					1094	0	20	

The following samples were analyzed in this batch:

1305802-01C	1305802-02C	1305802-03C
1305802-04C	1305802-05C	1305802-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga Rovers & Associates
Work Order: 1305802
Project: CEMC Cooper-JAL - 039123

QC BATCH REPORT

Batch ID: **R148101** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW2-R148101** Units: **mg/L** Analysis Date: **5/29/2013 03:13 AM**
Client ID: Run ID: **ICS2100_130528B** SeqNo: **3234379** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.399	0.50								J
Sulfate	U	0.50								
Surr: Selenate (surr)	4.555	0.10	*5*	*0*	*91.1*	*85-115*	*0*			

LCS Sample ID: **WLCSW2-R148101** Units: **mg/L** Analysis Date: **5/29/2013 03:27 AM**
Client ID: Run ID: **ICS2100_130528B** SeqNo: **3234380** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.15	0.50	20	0	106	90-110				
Sulfate	21.14	0.50	20	0	106	90-110				
Surr: Selenate (surr)	4.758	0.10	*5*	*0*	*95.2*	*85-115*	*0*			

MS Sample ID: **1305802-06BMS** Units: **mg/L** Analysis Date: **5/29/2013 07:05 AM**
Client ID: **Dup-1 051713** Run ID: **ICS2100_130528B** SeqNo: **3234395** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	395.4	5.0	100	299.4	95.9	80-120				
Sulfate	218	5.0	100	108.3	110	80-120				
Surr: Selenate (surr)	47.09	1.0	*50*	*0*	*94.2*	*85-115*	*0*			

MSD Sample ID: **1305802-06BMSD** Units: **mg/L** Analysis Date: **5/29/2013 07:20 AM**
Client ID: **Dup-1 051713** Run ID: **ICS2100_130528B** SeqNo: **3234396** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	394.8	5.0	100	299.4	95.3	80-120	395.4	0.154	20	
Sulfate	213.9	5.0	100	108.3	106	80-120	218	1.92	20	
Surr: Selenate (surr)	47.04	1.0	*50*	*0*	*94.1*	*85-115*	*47.09*	*0.102*	*20*	

The following samples were analyzed in this batch: 1305802-02B 1305802-03B 1305802-04B 1305802-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 31-May-13

Client: Conestoga Rovers & Associates
Project: CEMC Cooper-JAL - 039123
WorkOrder: **1305802**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **CRA - AUSTIN** Date/Time Received: **18-May-13 09:15**

Work Order: **1305802** Received by: **RDH**

Checklist completed by Robert D. Harris (eSignature) 18-May-13 (Date) Reviewed by: Sonia West (eSignature) 18-May-13 (Date)

Matrices: waters
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.8c/1.8c c/u	IR1	
Cooler(s)/Kit(s):	3757		
Date/Time sample(s) sent to storage:	5/18/13 10:20		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 81325

1305802

CRA-HOU: Conestoga-Rovers & Associates

Project: CEMC Cooper-JAL - SSOW - 039123

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	CEMC Cooper - Jal	A	Dissolved Metals (6020/7000) Ca, Mg, Na, K
Work Order		Project Number	39123	B	Anions (300) Cl , F, SO4, Nitrate
Company Name	Conestoga Rovers & Associates	Bill To Company	Conestoga Rovers & Associates	C	Alkalinity (Carbonate/Bicarbonate)
Send Report To	Chris Knight	Invoice Attn	Chris Knight	D	TDS
Address	13091 Pond Springs Road, Suite A100	Address	13091 Pond Springs Road, Suite A10	E	
				F	
City/State/Zip	Austin, Texas 78729	City/State/Zip	Austin, Texas 78729	G	
Phone	(512) 506-8803	Phone	(512) 506-8803	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8 051713	5-17-13	1425	W	None	4	X	X	X	X							
2	MW-9 051713	5-17-13	1405	W	None	4	X	X	X	X							
3	MW-9A 051713	5-17-13	1415	W	None	4	X	X	X	X							
4	MW-10 051713	5-17-13	1440	W	None	4	X	X	X	X							
5	MW-11 051713	5-17-13	1355	W	None	4	X	X	X	X							
6	DUP-1 051713	5-17-13		W	None	4	X	X	X	X							
7																	
8																	
9																	
10																	

Sample(s) Please Print & Sign: Greg Quinn

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 5-17-13	Time: 1700	Received by:	Notes: 10 Day TAT. Dissolved Metals are Lab Filtered	
Relinquished by:	Date:	Time:	Received by (Laboratory): 5/18/13 0915	Cooler ID	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

1500 DUL

FedEx Express Package US Airbill

FedEx Tracking Number 8020 3307 1179

1 From

Date 5/17/13 [redacted]

Sender's Name Warren Maurer Phone 432 686-0286

Company CRA

Address 2135 S. Loop 250 W.

Dept/Floor/Suite/Room

City Midland State TX ZIP 79703

2 Your Internal Billing Reference Cooper Jal #039...3

3 To

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Da
Na
Co

CUSTODY SEAL

te: 5/17/2013	Time: 16:58
ime: Warren Maurer	
mpany: CRA	

Seal Broken By:	Date: 5/18/13

24-Oct-2013

Chris Knight
Conestoga-Rovers & Associates
2135 S Loop 250 West
Midland, TX 79703

Tel: (432) 686-0086
Fax: (432) 686-0186

Re: 039123 CEMC Cooper-JAL Work Order: **1310435**

Dear Chris,

ALS Environmental received 23 samples on 09-Oct-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 56.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Dayna.Fisher

Dane J. Wacasey

Certificate No: TX: T104704231-13-12

ALS Environmental

Date: 24-Oct-13

Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL
Work Order: **1310435**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1310435-01	MW-14-100813	Water		10/8/2013 12:50	10/9/2013 09:30	☐
1310435-02	Dup-1-100813	Water		10/8/2013 12:55	10/9/2013 09:30	☐
1310435-03	RW-2R-100813	Water		10/8/2013 11:50	10/9/2013 09:30	☐
1310435-04	RW-2-100813	Water		10/8/2013 11:40	10/9/2013 09:30	☐
1310435-05	MW-2A-100813	Water		10/8/2013 11:30	10/9/2013 09:30	☐
1310435-06	MW-3-100813	Water		10/8/2013 10:55	10/9/2013 09:30	☐
1310435-07	MW-1-100813	Water		10/8/2013 11:10	10/9/2013 09:30	☐
1310435-08	MW-2-100813	Water		10/8/2013 11:20	10/9/2013 09:30	☐
1310435-09	MW-10-100813	Water		10/8/2013 12:40	10/9/2013 09:30	☐
1310435-10	MW-6R-100813 MW-6R-100813	Water		10/8/2013 15:00	10/9/2013 09:30	☐
1310435-11	RW-1-100813	Water		10/8/2013 14:35	10/9/2013 09:30	☐
1310435-12	Dup-2-100813	Water		10/8/2013 14:45	10/9/2013 09:30	☐
1310435-13	MW-4A-100813	Water		10/8/2013 14:25	10/9/2013 09:30	☐
1310435-14	MW-4-100813	Water		10/8/2013 14:35	10/9/2013 09:30	☐
1310435-15	MW-5A-100813	Water		10/8/2013 14:20	10/9/2013 09:30	☐
1310435-16	MW-5-100813	Water		10/8/2013 14:15	10/9/2013 09:30	☐
1310435-17	MW-8-100813	Water		10/8/2013 13:50	10/9/2013 09:30	☐
1310435-18	MW-11-100813	Water		10/8/2013 13:35	10/9/2013 09:30	☐
1310435-19	MW-9-100813	Water		10/8/2013 13:15	10/9/2013 09:30	☐
1310435-20	MW-9A-100813	Water		10/8/2013 13:20	10/9/2013 09:30	☐
1310435-21	MW-12-100813	Water		10/8/2013 15:20	10/9/2013 09:30	☐
1310435-22	MW-13-100813	Water		10/8/2013 15:30	10/9/2013 09:30	☐
1310435-23	MW-7-100813	Water		10/8/2013 14:05	10/9/2013 09:30	☐

Client:	Conestoga-Rovers & Associates
Project:	039123 CEMC Cooper-JAL
Work Order:	1310435

Case Narrative

Batch 73817, Dissolved Metals, Sample 1310574-01: MS/MSD was performed on an unrelated sample.

Batch 73907, Dissolved Metals, Sample 1310646-01: MS/MSD was performed on an unrelated sample.

Batch 73948, Dissolved Metals, Sample MW-9A-100813: MS/MSD recoveries were outside the control limits for calcium and sodium due to matrix interference. The associated LCS recoveries and MS/MSD RPD were within the control limits.

Batch R155393, Anions, Sample MW-9A-100813: MS/MSD recoveries were outside the control limits for chloride and/or sulfate due to matrix interference. The associated LCS recoveries and MS/MSD RPD were within the control limits.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-14-100813 **Lab ID:** 1310435-01

Collection Date: 10/8/2013 12:50 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**74.4**		**0.500**	**mg/L**	1	10/14/2013	10/14/2013 07:04 PM
Magnesium	**32.3**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:04 PM
Potassium	**8.42**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:04 PM
Sodium	**145**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:37 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**162**		**2.50**	**mg/L**	5		10/22/2013 03:48 AM
Fluoride	**3.69**		**0.100**	**mg/L**	1		10/9/2013 05:37 PM
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1		10/9/2013 05:37 PM
Sulfate	**127**		**2.50**	**mg/L**	5		10/22/2013 03:48 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**267**		**6.00**	**mg/L**	1		10/17/2013 12:49 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 12:49 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 12:49 PM
Alkalinity, Total (As CaCO3)	**267**		**6.00**	**mg/L**	1		10/17/2013 12:49 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**854**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: Dup-1-100813 **Lab ID:** 1310435-02

Collection Date: 10/8/2013 12:55 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**60.7**		**0.500**	**mg/L**	1	10/14/2013	10/14/2013 07:06 PM
Magnesium	**26.3**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:06 PM
Potassium	**7.97**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:06 PM
Sodium	**145**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:39 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**166**		**2.50**	**mg/L**	5		10/22/2013 05:00 AM
Fluoride	**3.74**		**0.100**	**mg/L**	1		10/9/2013 05:51 PM
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1		10/9/2013 05:51 PM
Sulfate	**130**		**2.50**	**mg/L**	5		10/22/2013 05:00 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**271**		**6.00**	**mg/L**	1		10/17/2013 12:59 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 12:59 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 12:59 PM
Alkalinity, Total (As CaCO3)	**271**		**6.00**	**mg/L**	1		10/17/2013 12:59 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**848**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: RW-2R-100813 **Lab ID:** 1310435-03

Collection Date: 10/8/2013 11:50 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**1,850**		**50.0**	**mg/L**	100	10/14/2013	10/15/2013 03:46 PM
Magnesium	**616**		**20.0**	**mg/L**	100	10/14/2013	10/15/2013 03:46 PM
Potassium	**25.5**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:08 PM
Sodium	**1,350**		**50.0**	**mg/L**	100	10/14/2013	10/15/2013 03:46 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**6,550**		**50.0**	**mg/L**	100		10/22/2013 05:24 AM
Fluoride	**0.452**		**0.100**	**mg/L**	1		10/9/2013 06:06 PM
Nitrogen, Nitrate (As N)	**1.79**		**0.100**	**mg/L**	1		10/9/2013 06:06 PM
Sulfate	**762**		**50.0**	**mg/L**	100		10/22/2013 05:24 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**146**		**6.00**	**mg/L**	1		10/17/2013 01:07 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:07 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:07 PM
Alkalinity, Total (As CaCO3)	**146**		**6.00**	**mg/L**	1		10/17/2013 01:07 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**14,600**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: RW-2-100813 **Lab ID:** 1310435-04

Collection Date: 10/8/2013 11:40 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**1,570**		**50.0**	**mg/L**	100	10/14/2013	10/15/2013 03:49 PM
Magnesium	**2.15**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:11 PM
Potassium	**15.3**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:11 PM
Sodium	**639**		**50.0**	**mg/L**	100	10/14/2013	10/15/2013 03:49 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**2,450**		**50.0**	**mg/L**	100		10/23/2013 01:04 AM
Fluoride	**0.140**		**0.100**	**mg/L**	1		10/9/2013 06:20 PM
Nitrogen, Nitrate (As N)	**2.36**		**0.100**	**mg/L**	1		10/9/2013 06:20 PM
Sulfate	**309**		**5.00**	**mg/L**	10		10/22/2013 05:48 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:13 PM
Alkalinity, Carbonate (As CaCO3)	**66.3**		**6.00**	**mg/L**	1		10/17/2013 01:13 PM
Alkalinity, Hydroxide (As CaCO3)	**51.1**		**6.00**	**mg/L**	1		10/17/2013 01:13 PM
Alkalinity, Total (As CaCO3)	**117**		**6.00**	**mg/L**	1		10/17/2013 01:13 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**4,420**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-2A-100813 **Lab ID:** 1310435-05

Collection Date: 10/8/2013 11:30 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**92.6**		**0.500**	**mg/L**	1	10/14/2013	10/14/2013 07:13 PM
Magnesium	**18.7**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:13 PM
Potassium	**4.06**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:13 PM
Sodium	**51.2**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:51 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**78.6**		**0.500**	**mg/L**	1		10/9/2013 06:35 PM
Fluoride	**0.412**		**0.100**	**mg/L**	1		10/9/2013 06:35 PM
Nitrogen, Nitrate (As N)	**0.622**		**0.100**	**mg/L**	1		10/9/2013 06:35 PM
Sulfate	**75.4**		**0.500**	**mg/L**	1		10/9/2013 06:35 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**248**		**6.00**	**mg/L**	1		10/17/2013 01:19 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:19 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:19 PM
Alkalinity, Total (As CaCO3)	**248**		**6.00**	**mg/L**	1		10/17/2013 01:19 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**496**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-3-100813 **Lab ID:** 1310435-06

Collection Date: 10/8/2013 10:55 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**56.5**		**0.500**	**mg/L**	1	10/14/2013	10/14/2013 07:20 PM
Magnesium	**18.3**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:20 PM
Potassium	**4.08**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:20 PM
Sodium	**54.9**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:53 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**38.4**		**0.500**	**mg/L**	1		10/9/2013 06:50 PM
Fluoride	**1.02**		**0.100**	**mg/L**	1		10/9/2013 06:50 PM
Nitrogen, Nitrate (As N)	**1.17**		**0.100**	**mg/L**	1		10/9/2013 06:50 PM
Sulfate	**98.7**		**0.500**	**mg/L**	1		10/9/2013 06:50 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**194**		**6.00**	**mg/L**	1		10/17/2013 01:24 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:24 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:24 PM
Alkalinity, Total (As CaCO3)	**194**		**6.00**	**mg/L**	1		10/17/2013 01:24 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**450**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-1-100813 **Lab ID:** 1310435-07

Collection Date: 10/8/2013 11:10 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**131**		**0.500**	**mg/L**	1	10/14/2013	10/14/2013 07:23 PM
Magnesium	**114**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:23 PM
Potassium	**15.3**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:23 PM
Sodium	**914**		**50.0**	**mg/L**	100	10/14/2013	10/15/2013 03:56 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**1,890**		**25.0**	**mg/L**	50		10/22/2013 06:13 AM
Fluoride	**1.46**		**0.100**	**mg/L**	1		10/9/2013 07:04 PM
Nitrogen, Nitrate (As N)	**2.39**		**0.100**	**mg/L**	1		10/9/2013 07:04 PM
Sulfate	**247**		**25.0**	**mg/L**	50		10/22/2013 06:13 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**211**		**6.00**	**mg/L**	1		10/17/2013 01:29 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:29 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:29 PM
Alkalinity, Total (As CaCO3)	**211**		**6.00**	**mg/L**	1		10/17/2013 01:29 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**2,380**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-2-100813 **Lab ID:** 1310435-08

Collection Date: 10/8/2013 11:20 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **SKS**
Calcium	**178**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:58 PM
Magnesium	**64.7**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:25 PM
Potassium	**8.16**		**0.200**	**mg/L**	1	10/14/2013	10/14/2013 07:25 PM
Sodium	**505**		**5.00**	**mg/L**	10	10/14/2013	10/15/2013 03:58 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**1,180**		**25.0**	**mg/L**	50		10/22/2013 06:37 AM
Fluoride	**1.20**		**0.100**	**mg/L**	1		10/9/2013 07:19 PM
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1		10/9/2013 07:19 PM
Sulfate	**169**		**25.0**	**mg/L**	50		10/22/2013 06:37 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**269**		**6.00**	**mg/L**	1		10/17/2013 01:35 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:35 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:35 PM
Alkalinity, Total (As CaCO3)	**269**		**6.00**	**mg/L**	1		10/17/2013 01:35 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**2,520**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-10-100813 **Lab ID:** 1310435-09

Collection Date: 10/8/2013 12:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**154**		**0.500**	**mg/L**	1	10/17/2013	10/17/2013 07:09 PM
Magnesium	**41.6**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:09 PM
Potassium	**5.36**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:09 PM
Sodium	**78.1**		**2.00**	**mg/L**	10	10/17/2013	10/18/2013 02:03 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**324**		**25.0**	**mg/L**	50		10/22/2013 07:49 AM
Fluoride	**1.14**		**0.100**	**mg/L**	1		10/9/2013 08:02 PM
Nitrogen, Nitrate (As N)	**1.62**		**0.100**	**mg/L**	1		10/9/2013 08:02 PM
Sulfate	**103**		**25.0**	**mg/L**	50		10/22/2013 07:49 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**165**		**6.00**	**mg/L**	1		10/17/2013 01:40 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:40 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:40 PM
Alkalinity, Total (As CaCO3)	**165**		**6.00**	**mg/L**	1		10/17/2013 01:40 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,240**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-6R-100813 **Lab ID:** 1310435-10
MW-6R-100813

Collection Date: 10/8/2013 03:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**69.9**		**0.500**	**mg/L**	1	10/17/2013	10/17/2013 07:11 PM
Magnesium	**24.4**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:11 PM
Potassium	**5.17**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:11 PM
Sodium	**85.6**		**2.00**	**mg/L**	10	10/17/2013	10/18/2013 02:05 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**110**		**0.500**	**mg/L**	1		10/9/2013 08:17 PM
Fluoride	**1.91**		**0.100**	**mg/L**	1		10/9/2013 08:17 PM
Nitrogen, Nitrate (As N)	ND		0.100	mg/L	1		10/9/2013 08:17 PM
Sulfate	**102**		**0.500**	**mg/L**	1		10/9/2013 08:17 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**225**		**6.00**	**mg/L**	1		10/17/2013 01:45 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:45 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:45 PM
Alkalinity, Total (As CaCO3)	**225**		**6.00**	**mg/L**	1		10/17/2013 01:45 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**600**		**10.0**	**mg/L**	1		10/15/2013 12:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: RW-1-100813 **Lab ID:** 1310435-11

Collection Date: 10/8/2013 02:35 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**760**		**50.0**	**mg/L**	100	10/17/2013	10/18/2013 02:08 PM
Magnesium	**919**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:08 PM
Potassium	**39.0**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:13 PM
Sodium	**6,370**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:08 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**6,050**		**50.0**	**mg/L**	100		10/22/2013 08:13 AM
Fluoride	**0.951**		**0.100**	**mg/L**	1		10/9/2013 09:00 PM
Nitrogen, Nitrate (As N)	**4.29**		**0.100**	**mg/L**	1		10/9/2013 09:00 PM
Sulfate	**546**		**50.0**	**mg/L**	100		10/22/2013 08:13 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**285**		**6.00**	**mg/L**	1		10/17/2013 01:50 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:50 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/17/2013 01:50 PM
Alkalinity, Total (As CaCO3)	**285**		**6.00**	**mg/L**	1		10/17/2013 01:50 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**11,200**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: Dup-2-100813 **Lab ID:** 1310435-12

Collection Date: 10/8/2013 02:45 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**490**		**50.0**	**mg/L**	100	10/17/2013	10/18/2013 02:10 PM
Magnesium	**581**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:10 PM
Potassium	**31.4**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:16 PM
Sodium	**4,170**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:10 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**10,500**		**50.0**	**mg/L**	100		10/22/2013 08:37 AM
Fluoride	**1.27**		**0.100**	**mg/L**	1		10/9/2013 09:15 PM
Nitrogen, Nitrate (As N)	**5.98**		**0.100**	**mg/L**	1		10/9/2013 09:15 PM
Sulfate	**926**		**50.0**	**mg/L**	100		10/22/2013 08:37 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**216**		**6.00**	**mg/L**	1		10/21/2013 12:32 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:32 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:32 PM
Alkalinity, Total (As CaCO3)	**216**		**6.00**	**mg/L**	1		10/21/2013 12:32 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,870**		**10.0**	**mg/L**	1		10/15/2013 12:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-4A-100813 **Lab ID:** 1310435-13

Collection Date: 10/8/2013 02:25 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**47.7**		**0.500**	**mg/L**	1	10/17/2013	10/17/2013 07:18 PM
Magnesium	**9.93**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:18 PM
Potassium	**3.64**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:18 PM
Sodium	**410**		**2.00**	**mg/L**	10	10/17/2013	10/18/2013 02:12 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**512**		**5.00**	**mg/L**	10		10/22/2013 09:01 AM
Fluoride	**2.63**		**0.100**	**mg/L**	1		10/9/2013 09:30 PM
Nitrogen, Nitrate (As N)	**2.47**		**0.100**	**mg/L**	1		10/9/2013 09:30 PM
Sulfate	**100**		**0.500**	**mg/L**	1		10/9/2013 09:30 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**199**		**6.00**	**mg/L**	1		10/21/2013 12:37 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:37 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:37 PM
Alkalinity, Total (As CaCO3)	**199**		**6.00**	**mg/L**	1		10/21/2013 12:37 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,170**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-4-100813 **Lab ID:** 1310435-14

Collection Date: 10/8/2013 02:35 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**1,690**		**50.0**	**mg/L**	100	10/17/2013	10/18/2013 02:15 PM
Magnesium	**1,180**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:15 PM
Potassium	**40.8**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:21 PM
Sodium	**7,370**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:15 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**16,200**		**250**	**mg/L**	500		10/22/2013 09:26 AM
Fluoride	**0.715**		**0.100**	**mg/L**	1		10/9/2013 09:44 PM
Nitrogen, Nitrate (As N)	**6.79**		**0.100**	**mg/L**	1		10/9/2013 09:44 PM
Sulfate	**1,460**		**250**	**mg/L**	500		10/22/2013 09:26 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**294**		**6.00**	**mg/L**	1		10/21/2013 12:42 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:42 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:42 PM
Alkalinity, Total (As CaCO3)	**294**		**6.00**	**mg/L**	1		10/21/2013 12:42 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**36,300**		**10.0**	**mg/L**	1		10/15/2013 12:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-5A-100813 **Lab ID:** 1310435-15

Collection Date: 10/8/2013 02:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**69.3**		**0.500**	**mg/L**	1	10/17/2013	10/17/2013 07:23 PM
Magnesium	**16.2**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:23 PM
Potassium	**3.29**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:23 PM
Sodium	**53.4**		**2.00**	**mg/L**	10	10/17/2013	10/18/2013 02:22 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**80.2**		**0.500**	**mg/L**	1		10/9/2013 09:59 PM
Fluoride	**0.568**		**0.100**	**mg/L**	1		10/9/2013 09:59 PM
Nitrogen, Nitrate (As N)	**1.60**		**0.100**	**mg/L**	1		10/9/2013 09:59 PM
Sulfate	**67.5**		**0.500**	**mg/L**	1		10/9/2013 09:59 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**182**		**6.00**	**mg/L**	1		10/21/2013 12:51 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:51 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:51 PM
Alkalinity, Total (As CaCO3)	**182**		**6.00**	**mg/L**	1		10/21/2013 12:51 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**462**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-5-100813 **Lab ID:** 1310435-16

Collection Date: 10/8/2013 02:15 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**659**		**50.0**	**mg/L**	100	10/17/2013	10/18/2013 02:24 PM
Magnesium	**253**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:24 PM
Potassium	**15.4**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:26 PM
Sodium	**1,440**		**20.0**	**mg/L**	100	10/17/2013	10/18/2013 02:24 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**3,730**		**25.0**	**mg/L**	50		10/22/2013 09:50 AM
Fluoride	**0.369**		**0.100**	**mg/L**	1		10/9/2013 10:13 PM
Nitrogen, Nitrate (As N)	**1.56**		**0.100**	**mg/L**	1		10/9/2013 10:13 PM
Sulfate	**425**		**25.0**	**mg/L**	50		10/22/2013 09:50 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**176**		**6.00**	**mg/L**	1		10/21/2013 12:56 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:56 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 12:56 PM
Alkalinity, Total (As CaCO3)	**176**		**6.00**	**mg/L**	1		10/21/2013 12:56 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**8,060**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-8-100813 **Lab ID:** 1310435-17

Collection Date: 10/8/2013 01:50 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**57.4**		**1.00**	**mg/L**	2	10/17/2013	10/18/2013 02:27 PM
Magnesium	**19.7**		**0.400**	**mg/L**	2	10/17/2013	10/18/2013 02:27 PM
Potassium	**4.35**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:28 PM
Sodium	**57.6**		**0.400**	**mg/L**	2	10/17/2013	10/18/2013 02:27 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**39.5**		**0.500**	**mg/L**	1		10/9/2013 10:57 PM
Fluoride	**1.17**		**0.100**	**mg/L**	1		10/9/2013 10:57 PM
Nitrogen, Nitrate (As N)	**1.78**		**0.100**	**mg/L**	1		10/9/2013 10:57 PM
Sulfate	**96.2**		**0.500**	**mg/L**	1		10/9/2013 10:57 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**182**		**6.00**	**mg/L**	1		10/21/2013 01:02 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:02 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:02 PM
Alkalinity, Total (As CaCO3)	**182**		**6.00**	**mg/L**	1		10/21/2013 01:02 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**446**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-11-100813 **Lab ID:** 1310435-18

Collection Date: 10/8/2013 01:35 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **JCJ**
Calcium	**60.9**		**0.500**	**mg/L**	1	10/17/2013	10/17/2013 07:30 PM
Magnesium	**16.1**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:30 PM
Potassium	**3.33**		**0.200**	**mg/L**	1	10/17/2013	10/17/2013 07:30 PM
Sodium	**52.0**		**2.00**	**mg/L**	10	10/17/2013	10/18/2013 02:29 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**45.2**		**0.500**	**mg/L**	1		10/9/2013 11:11 PM
Fluoride	**1.55**		**0.100**	**mg/L**	1		10/9/2013 11:11 PM
Nitrogen, Nitrate (As N)	**1.74**		**0.100**	**mg/L**	1		10/9/2013 11:11 PM
Sulfate	**95.5**		**0.500**	**mg/L**	1		10/9/2013 11:11 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**178**		**6.00**	**mg/L**	1		10/21/2013 01:07 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:07 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:07 PM
Alkalinity, Total (As CaCO3)	**178**		**6.00**	**mg/L**	1		10/21/2013 01:07 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**450**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-9-100813 **Lab ID:** 1310435-19

Collection Date: 10/8/2013 01:15 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **ALR**
Calcium	**90.0**		**0.500**	**mg/L**	1	10/18/2013	10/18/2013 10:01 PM
Magnesium	**25.2**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:01 PM
Potassium	**4.62**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:01 PM
Sodium	**60.8**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:01 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**150**		**2.50**	**mg/L**	5		10/22/2013 10:14 AM
Fluoride	**1.88**		**0.100**	**mg/L**	1		10/9/2013 11:26 PM
Nitrogen, Nitrate (As N)	**1.81**		**0.100**	**mg/L**	1		10/9/2013 11:26 PM
Sulfate	**99.8**		**0.500**	**mg/L**	1		10/9/2013 11:26 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**164**		**6.00**	**mg/L**	1		10/21/2013 01:12 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:12 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:12 PM
Alkalinity, Total (As CaCO3)	**164**		**6.00**	**mg/L**	1		10/21/2013 01:12 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**620**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-9A-100813 **Lab ID:** 1310435-20

Collection Date: 10/8/2013 01:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **ALR**
Calcium	**185**		**5.00**	**mg/L**	10	10/18/2013	10/21/2013 01:37 PM
Magnesium	**43.1**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 05:22 PM
Potassium	**5.23**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 05:22 PM
Sodium	**81.3**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 05:22 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**534**		**5.00**	**mg/L**	10		10/22/2013 10:38 AM
Fluoride	**0.370**		**0.100**	**mg/L**	1		10/9/2013 11:40 PM
Nitrogen, Nitrate (As N)	**1.69**		**0.100**	**mg/L**	1		10/9/2013 11:40 PM
Sulfate	**118**		**5.00**	**mg/L**	10		10/22/2013 10:38 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**153**		**6.00**	**mg/L**	1		10/21/2013 01:17 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:17 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:17 PM
Alkalinity, Total (As CaCO3)	**153**		**6.00**	**mg/L**	1		10/21/2013 01:17 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**1,210**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-12-100813 **Lab ID:** 1310435-21

Collection Date: 10/8/2013 03:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **ALR**
Calcium	**110**		**0.500**	**mg/L**	1	10/18/2013	10/18/2013 10:06 PM
Magnesium	**30.4**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:06 PM
Potassium	**4.92**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:06 PM
Sodium	**67.8**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:06 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**246**		**25.0**	**mg/L**	50		10/22/2013 11:02 AM
Fluoride	**0.621**		**0.100**	**mg/L**	1		10/10/2013 02:31 AM
Nitrogen, Nitrate (As N)	**1.64**		**0.100**	**mg/L**	1		10/10/2013 02:31 AM
Sulfate	**84.5**		**0.500**	**mg/L**	1		10/10/2013 02:31 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**160**		**6.00**	**mg/L**	1		10/21/2013 01:23 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:23 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:23 PM
Alkalinity, Total (As CaCO3)	**160**		**6.00**	**mg/L**	1		10/21/2013 01:23 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**944**		**10.0**	**mg/L**	1		10/15/2013 12:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-13-100813 **Lab ID:** 1310435-22

Collection Date: 10/8/2013 03:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **ALR**
Calcium	**768**		**5.00**	**mg/L**	10	10/18/2013	10/21/2013 02:07 PM
Magnesium	**225**		**2.00**	**mg/L**	10	10/18/2013	10/21/2013 02:07 PM
Potassium	**14.0**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:11 PM
Sodium	**457**		**2.00**	**mg/L**	10	10/18/2013	10/21/2013 02:07 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**2,710**		**25.0**	**mg/L**	50		10/22/2013 11:26 AM
Fluoride	**0.303**		**0.100**	**mg/L**	1		10/10/2013 02:45 AM
Nitrogen, Nitrate (As N)	**2.59**		**0.100**	**mg/L**	1		10/10/2013 02:45 AM
Sulfate	**448**		**25.0**	**mg/L**	50		10/22/2013 11:26 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**1,780**		**6.00**	**mg/L**	1		10/21/2013 01:31 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:31 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:31 PM
Alkalinity, Total (As CaCO3)	**1,780**		**6.00**	**mg/L**	1		10/21/2013 01:31 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**7,320**		**10.0**	**mg/L**	1		10/15/2013 12:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *24-Oct-13*

Client: Conestoga-Rovers & Associates

Project: 039123 CEMC Cooper-JAL **Work Order:** 1310435

Sample ID: MW-7-100813 **Lab ID:** 1310435-23

Collection Date: 10/8/2013 02:05 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
DISSOLVED METALS			**SW6020**		SW3010A		Analyst: **ALR**
Calcium	**916**		**5.00**	**mg/L**	10	10/18/2013	10/21/2013 02:12 PM
Magnesium	**258**		**2.00**	**mg/L**	10	10/18/2013	10/21/2013 02:12 PM
Potassium	**13.3**		**0.200**	**mg/L**	1	10/18/2013	10/18/2013 10:16 PM
Sodium	**265**		**2.00**	**mg/L**	10	10/18/2013	10/21/2013 02:12 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**2,840**		**25.0**	**mg/L**	50		10/22/2013 11:50 AM
Fluoride	**0.445**		**0.100**	**mg/L**	1		10/10/2013 03:00 AM
Nitrogen, Nitrate (As N)	**2.11**		**0.100**	**mg/L**	1		10/10/2013 03:00 AM
Sulfate	**331**		**25.0**	**mg/L**	50		10/22/2013 11:50 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**142**		**6.00**	**mg/L**	1		10/21/2013 01:37 PM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:37 PM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		10/21/2013 01:37 PM
Alkalinity, Total (As CaCO3)	**142**		**6.00**	**mg/L**	1		10/21/2013 01:37 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**7,530**		**10.0**	**mg/L**	1		10/15/2013 08:45 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 73817	**Test Name:** Dissolved Metals					
1310435-01C	MW-14-100813	Water	10/8/2013 12:50:00 PM		10/14/2013 10:00 AM	10/14/2013 07:04 PM
					10/14/2013 10:00 AM	10/15/2013 03:37 PM
1310435-02C	Dup-1-100813		10/8/2013 12:55:00 PM		10/14/2013 10:00 AM	10/14/2013 07:06 PM
					10/14/2013 10:00 AM	10/15/2013 03:39 PM
1310435-03C	RW-2R-100813		10/8/2013 11:50:00 AM		10/14/2013 10:00 AM	10/14/2013 07:08 PM
					10/14/2013 10:00 AM	10/15/2013 03:46 PM
1310435-04C	RW-2-100813		10/8/2013 11:40:00 AM		10/14/2013 10:00 AM	10/14/2013 07:11 PM
					10/14/2013 10:00 AM	10/15/2013 03:49 PM
1310435-05C	MW-2A-100813		10/8/2013 11:30:00 AM		10/14/2013 10:00 AM	10/14/2013 07:13 PM
					10/14/2013 10:00 AM	10/15/2013 03:51 PM
1310435-06C	MW-3-100813		10/8/2013 10:55:00 AM		10/14/2013 10:00 AM	10/14/2013 07:20 PM
					10/14/2013 10:00 AM	10/15/2013 03:53 PM
1310435-07C	MW-1-100813		10/8/2013 11:10:00 AM		10/14/2013 10:00 AM	10/14/2013 07:23 PM
					10/14/2013 10:00 AM	10/15/2013 03:56 PM
1310435-08C	MW-2-100813		10/8/2013 11:20:00 AM		10/14/2013 10:00 AM	10/14/2013 07:25 PM
					10/14/2013 10:00 AM	10/15/2013 03:58 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 73907	**Test Name:** Dissolved Metals					
1310435-09C	MW-10-100813	Water	10/8/2013 12:40:00 PM		10/17/2013 10:00 AM	10/17/2013 07:09 PM
					10/17/2013 10:00 AM	10/18/2013 02:03 PM
1310435-10C	MW-6R-100813		10/8/2013 3:00:00 PM		10/17/2013 10:00 AM	10/17/2013 07:11 PM
	MW-6R-100813					
					10/17/2013 10:00 AM	10/18/2013 02:05 PM
1310435-11C	RW-1-100813		10/8/2013 2:35:00 PM		10/17/2013 10:00 AM	10/17/2013 07:13 PM
					10/17/2013 10:00 AM	10/18/2013 02:08 PM
1310435-12C	Dup-2-100813		10/8/2013 2:45:00 PM		10/17/2013 10:00 AM	10/17/2013 07:16 PM
					10/17/2013 10:00 AM	10/18/2013 02:10 PM
1310435-13C	MW-4A-100813		10/8/2013 2:25:00 PM		10/17/2013 10:00 AM	10/17/2013 07:18 PM
					10/17/2013 10:00 AM	10/18/2013 02:12 PM
1310435-14C	MW-4-100813		10/8/2013 2:35:00 PM		10/17/2013 10:00 AM	10/17/2013 07:21 PM
					10/17/2013 10:00 AM	10/18/2013 02:15 PM
1310435-15C	MW-5A-100813		10/8/2013 2:20:00 PM		10/17/2013 10:00 AM	10/17/2013 07:23 PM
					10/17/2013 10:00 AM	10/18/2013 02:22 PM
1310435-16C	MW-5-100813		10/8/2013 2:15:00 PM		10/17/2013 10:00 AM	10/17/2013 07:26 PM
					10/17/2013 10:00 AM	10/18/2013 02:24 PM
1310435-17C	MW-8-100813		10/8/2013 1:50:00 PM		10/17/2013 10:00 AM	10/17/2013 07:28 PM
					10/17/2013 10:00 AM	10/18/2013 02:27 PM
1310435-18C	MW-11-100813		10/8/2013 1:35:00 PM		10/17/2013 10:00 AM	10/17/2013 07:30 PM
					10/17/2013 10:00 AM	10/18/2013 02:29 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 73948	**Test Name:** Dissolved Metals					
1310435-19C	MW-9-100813	Water	10/8/2013 1:15:00 PM		10/18/2013 10:00 AM	10/18/2013 10:01 PM
1310435-20C	MW-9A-100813		10/8/2013 1:20:00 PM		10/18/2013 10:00 AM	10/18/2013 05:22 PM
					10/18/2013 10:00 AM	10/21/2013 01:37 PM
1310435-21C	MW-12-100813		10/8/2013 3:20:00 PM		10/18/2013 10:00 AM	10/18/2013 10:06 PM
1310435-22C	MW-13-100813		10/8/2013 3:30:00 PM		10/18/2013 10:00 AM	10/18/2013 10:11 PM
					10/18/2013 10:00 AM	10/21/2013 02:07 PM
1310435-23C	MW-7-100813		10/8/2013 2:05:00 PM		10/18/2013 10:00 AM	10/18/2013 10:16 PM
					10/18/2013 10:00 AM	10/21/2013 02:12 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R155393 **Test Name:** Anions - EPA 300.0 (1993)						
1310435-01A	MW-14-100813	Water	10/8/2013 12:50:00 PM			10/9/2013 05:37 PM
1310435-02A	Dup-1-100813		10/8/2013 12:55:00 PM			10/9/2013 05:51 PM
1310435-03A	RW-2R-100813		10/8/2013 11:50:00 AM			10/9/2013 06:06 PM
1310435-04A	RW-2-100813		10/8/2013 11:40:00 AM			10/9/2013 06:20 PM
1310435-05A	MW-2A-100813		10/8/2013 11:30:00 AM			10/9/2013 06:35 PM
1310435-06A	MW-3-100813		10/8/2013 10:55:00 AM			10/9/2013 06:50 PM
1310435-07A	MW-1-100813		10/8/2013 11:10:00 AM			10/9/2013 07:04 PM
1310435-08A	MW-2-100813		10/8/2013 11:20:00 AM			10/9/2013 07:19 PM
1310435-09A	MW-10-100813		10/8/2013 12:40:00 PM			10/9/2013 08:02 PM
1310435-10A	MW-6R-100813 MW-6R-100813		10/8/2013 3:00:00 PM			10/9/2013 08:17 PM
1310435-11A	RW-1-100813		10/8/2013 2:35:00 PM			10/9/2013 09:00 PM
1310435-12A	Dup-2-100813		10/8/2013 2:45:00 PM			10/9/2013 09:15 PM
1310435-13A	MW-4A-100813		10/8/2013 2:25:00 PM			10/9/2013 09:30 PM
1310435-14A	MW-4-100813		10/8/2013 2:35:00 PM			10/9/2013 09:44 PM
1310435-15A	MW-5A-100813		10/8/2013 2:20:00 PM			10/9/2013 09:59 PM
1310435-16A	MW-5-100813		10/8/2013 2:15:00 PM			10/9/2013 10:13 PM
1310435-17A	MW-8-100813		10/8/2013 1:50:00 PM			10/9/2013 10:57 PM
1310435-18A	MW-11-100813		10/8/2013 1:35:00 PM			10/9/2013 11:11 PM
1310435-19A	MW-9-100813		10/8/2013 1:15:00 PM			10/9/2013 11:26 PM
1310435-20A	MW-9A-100813		10/8/2013 1:20:00 PM			10/9/2013 11:40 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R155567 **Test Name:** Total Dissolved Solids						
1310435-01D	MW-14-100813	Water	10/8/2013 12:50:00 PM			10/15/2013 08:45 AM
1310435-02D	Dup-1-100813		10/8/2013 12:55:00 PM			10/15/2013 08:45 AM
1310435-03D	RW-2R-100813		10/8/2013 11:50:00 AM			10/15/2013 08:45 AM
1310435-04D	RW-2-100813		10/8/2013 11:40:00 AM			10/15/2013 08:45 AM
1310435-05D	MW-2A-100813		10/8/2013 11:30:00 AM			10/15/2013 08:45 AM
1310435-06D	MW-3-100813		10/8/2013 10:55:00 AM			10/15/2013 08:45 AM
1310435-07D	MW-1-100813		10/8/2013 11:10:00 AM			10/15/2013 08:45 AM
1310435-08D	MW-2-100813		10/8/2013 11:20:00 AM			10/15/2013 08:45 AM
1310435-09D	MW-10-100813		10/8/2013 12:40:00 PM			10/15/2013 08:45 AM
1310435-11D	RW-1-100813		10/8/2013 2:35:00 PM			10/15/2013 08:45 AM
1310435-13D	MW-4A-100813		10/8/2013 2:25:00 PM			10/15/2013 08:45 AM
1310435-15D	MW-5A-100813		10/8/2013 2:20:00 PM			10/15/2013 08:45 AM
1310435-16D	MW-5-100813		10/8/2013 2:15:00 PM			10/15/2013 08:45 AM
1310435-17D	MW-8-100813		10/8/2013 1:50:00 PM			10/15/2013 08:45 AM
1310435-18D	MW-11-100813		10/8/2013 1:35:00 PM			10/15/2013 08:45 AM
1310435-19D	MW-9-100813		10/8/2013 1:15:00 PM			10/15/2013 08:45 AM
1310435-20D	MW-9A-100813		10/8/2013 1:20:00 PM			10/15/2013 08:45 AM
1310435-23D	MW-7-100813		10/8/2013 2:05:00 PM			10/15/2013 08:45 AM
Batch ID R155575 **Test Name:** Total Dissolved Solids						
1310435-10D	MW-6R-100813 MW-6R-100813	Water	10/8/2013 3:00:00 PM			10/15/2013 12:10 PM
1310435-12D	Dup-2-100813		10/8/2013 2:45:00 PM			10/15/2013 12:10 PM
1310435-14D	MW-4-100813		10/8/2013 2:35:00 PM			10/15/2013 12:10 PM
1310435-21D	MW-12-100813		10/8/2013 3:20:00 PM			10/15/2013 12:10 PM
1310435-22D	MW-13-100813		10/8/2013 3:30:00 PM			10/15/2013 12:10 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R155604 **Test Name:** Alkalinity-SM2320B						
1310435-01B	MW-14-100813	Water	10/8/2013 12:50:00 PM			10/17/2013 12:49 PM
1310435-02B	Dup-1-100813		10/8/2013 12:55:00 PM			10/17/2013 12:59 PM
1310435-03B	RW-2R-100813		10/8/2013 11:50:00 AM			10/17/2013 01:07 PM
1310435-04B	RW-2-100813		10/8/2013 11:40:00 AM			10/17/2013 01:13 PM
1310435-05B	MW-2A-100813		10/8/2013 11:30:00 AM			10/17/2013 01:19 PM
1310435-06B	MW-3-100813		10/8/2013 10:55:00 AM			10/17/2013 01:24 PM
1310435-07B	MW-1-100813		10/8/2013 11:10:00 AM			10/17/2013 01:29 PM
1310435-08B	MW-2-100813		10/8/2013 11:20:00 AM			10/17/2013 01:35 PM
1310435-09B	MW-10-100813		10/8/2013 12:40:00 PM			10/17/2013 01:40 PM
1310435-10B	MW-6R-100813 MW-6R-100813		10/8/2013 3:00:00 PM			10/17/2013 01:45 PM
1310435-11B	RW-1-100813		10/8/2013 2:35:00 PM			10/17/2013 01:50 PM
Batch ID R155708 **Test Name:** Anions - EPA 300.0 (1993)						
1310435-21A	MW-12-100813	Water	10/8/2013 3:20:00 PM			10/10/2013 02:31 AM
1310435-22A	MW-13-100813		10/8/2013 3:30:00 PM			10/10/2013 02:45 AM
1310435-23A	MW-7-100813		10/8/2013 2:05:00 PM			10/10/2013 03:00 AM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R155769 **Test Name:** Alkalinity-SM2320B						
1310435-12B	Dup-2-100813	Water	10/8/2013 2:45:00 PM			10/21/2013 12:32 PM
1310435-13B	MW-4A-100813		10/8/2013 2:25:00 PM			10/21/2013 12:37 PM
1310435-14B	MW-4-100813		10/8/2013 2:35:00 PM			10/21/2013 12:42 PM
1310435-15B	MW-5A-100813		10/8/2013 2:20:00 PM			10/21/2013 12:51 PM
1310435-16B	MW-5-100813		10/8/2013 2:15:00 PM			10/21/2013 12:56 PM
1310435-17B	MW-8-100813		10/8/2013 1:50:00 PM			10/21/2013 01:02 PM
1310435-18B	MW-11-100813		10/8/2013 1:35:00 PM			10/21/2013 01:07 PM
1310435-19B	MW-9-100813		10/8/2013 1:15:00 PM			10/21/2013 01:12 PM
1310435-20B	MW-9A-100813		10/8/2013 1:20:00 PM			10/21/2013 01:17 PM
1310435-21B	MW-12-100813		10/8/2013 3:20:00 PM			10/21/2013 01:23 PM
1310435-22B	MW-13-100813		10/8/2013 3:30:00 PM			10/21/2013 01:31 PM
1310435-23B	MW-7-100813		10/8/2013 2:05:00 PM			10/21/2013 01:37 PM

Work Order: 1310435
Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R155877 **Test Name:** Anions - EPA 300.0 (1993)						
1310435-01A	MW-14-100813	Water	10/8/2013 12:50:00 PM			10/22/2013 03:48 AM
1310435-02A	Dup-1-100813		10/8/2013 12:55:00 PM			10/22/2013 05:00 AM
1310435-03A	RW-2R-100813		10/8/2013 11:50:00 AM			10/22/2013 05:24 AM
1310435-04A	RW-2-100813		10/8/2013 11:40:00 AM			10/22/2013 05:48 AM
1310435-07A	MW-1-100813		10/8/2013 11:10:00 AM			10/22/2013 06:13 AM
1310435-08A	MW-2-100813		10/8/2013 11:20:00 AM			10/22/2013 06:37 AM
1310435-09A	MW-10-100813		10/8/2013 12:40:00 PM			10/22/2013 07:49 AM
1310435-11A	RW-1-100813		10/8/2013 2:35:00 PM			10/22/2013 08:13 AM
1310435-12A	Dup-2-100813		10/8/2013 2:45:00 PM			10/22/2013 08:37 AM
1310435-13A	MW-4A-100813		10/8/2013 2:25:00 PM			10/22/2013 09:01 AM
1310435-14A	MW-4-100813		10/8/2013 2:35:00 PM			10/22/2013 09:26 AM
1310435-16A	MW-5-100813		10/8/2013 2:15:00 PM			10/22/2013 09:50 AM
1310435-19A	MW-9-100813		10/8/2013 1:15:00 PM			10/22/2013 10:14 AM
1310435-20A	MW-9A-100813		10/8/2013 1:20:00 PM			10/22/2013 10:38 AM
1310435-21A	MW-12-100813		10/8/2013 3:20:00 PM			10/22/2013 11:02 AM
1310435-22A	MW-13-100813		10/8/2013 3:30:00 PM			10/22/2013 11:26 AM
1310435-23A	MW-7-100813		10/8/2013 2:05:00 PM			10/22/2013 11:50 AM
Batch ID R155921 **Test Name:** Anions - EPA 300.0 (1993)						
1310435-04A	RW-2-100813	Water	10/8/2013 11:40:00 AM			10/23/2013 01:04 AM

Batch ID: **73817** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

MBLK Sample ID: **MBLKW5-101413-73817** Units: **mg/L** Analysis Date: **10/14/2013 06:38 PM**

Client ID: Run ID: **ICPMS05_131014B** SeqNo: **3392554** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	0.500								
Magnesium	ND	0.200								
Potassium	ND	0.200								

MBLK Sample ID: **MBLKW5-101413-73817** Units: **mg/L** Analysis Date: **10/15/2013 03:23 PM**

Client ID: Run ID: **ICPMS05_131015A** SeqNo: **3393518** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	ND	0.500								

LCS Sample ID: **MLCSW5-101413-73817** Units: **mg/L** Analysis Date: **10/14/2013 06:40 PM**

Client ID: Run ID: **ICPMS05_131014B** SeqNo: **3392555** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.433	0.500	5	0	109	80-120				
Magnesium	5.461	0.200	5	0	109	80-120				
Potassium	5.466	0.200	5	0	109	80-120				

LCS Sample ID: **MLCSW5-101413-73817** Units: **mg/L** Analysis Date: **10/15/2013 03:25 PM**

Client ID: Run ID: **ICPMS05_131015A** SeqNo: **3393519** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	5.073	0.500	5	0	101	80-120				

MS Sample ID: **1310574-01LMS** Units: **mg/L** Analysis Date: **10/14/2013 06:52 PM**

Client ID: Run ID: **ICPMS05_131014B** SeqNo: **3392560** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	39.59	0.500	5	35.81	75.5	75-125				O
Magnesium	12.06	0.200	5	6.926	103	75-125				
Potassium	10.78	0.200	5	5.623	103	75-125				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **73817** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

MS Sample ID: **1310574-01LMS** Units: **mg/L** Analysis Date: **10/15/2013 03:27 PM**
Client ID: Run ID: **ICPMS05_131015A** SeqNo: **3393520** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	12.08	0.500	5	7.291	95.8	75-125				

MSD Sample ID: **1310574-01LMSD** Units: **mg/L** Analysis Date: **10/14/2013 06:54 PM**
Client ID: Run ID: **ICPMS05_131014B** SeqNo: **3392561** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	39.38	0.500	5	35.81	71.3	75-125	39.59	0.534	25	SO
Magnesium	12.01	0.200	5	6.926	102	75-125	12.06	0.466	25	
Potassium	10.68	0.200	5	5.623	101	75-125	10.78	0.968	25	

MSD Sample ID: **1310574-01LMSD** Units: **mg/L** Analysis Date: **10/15/2013 03:30 PM**
Client ID: Run ID: **ICPMS05_131015A** SeqNo: **3393521** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	11.74	0.500	5	7.291	88.9	75-125	12.08	2.89	25	

DUP Sample ID: **1310574-01LDUP** Units: **mg/L** Analysis Date: **10/14/2013 06:45 PM**
Client ID: Run ID: **ICPMS05_131014B** SeqNo: **3392557** Prep Date: **10/14/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	35.41	0.500					35.81	1.14	25	
Magnesium	6.949	0.200					6.926	0.326	25	
Potassium	5.612	0.200					5.623	0.205	25	
Sodium	7.134	0.500					7.291	2.17	25	

The following samples were analyzed in this batch:

1310435-01C	1310435-02C	1310435-03C
1310435-04C	1310435-05C	1310435-06C
1310435-07C	1310435-08C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **73907** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

MBLK Sample ID: **MBLKW4-101713-73907** Units: **mg/L** Analysis Date: **10/17/2013 03:43 PM**
Client ID: Run ID: **ICPMS05_131017A** SeqNo: **3397292** Prep Date: **10/17/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	0.500								
Magnesium	ND	0.200								
Potassium	ND	0.200								
Sodium	ND	0.200								

LCS Sample ID: **MLCSW4-101713-73907** Units: **mg/L** Analysis Date: **10/17/2013 03:45 PM**
Client ID: Run ID: **ICPMS05_131017A** SeqNo: **3397293** Prep Date: **10/17/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.061	0.500	5	0	101	80-120				
Magnesium	4.917	0.200	5	0	98.3	80-120				
Potassium	4.993	0.200	5	0	99.9	80-120				
Sodium	4.995	0.200	5	0	99.9	80-120				

MS Sample ID: **1310646-01BMS** Units: **mg/L** Analysis Date: **10/17/2013 04:12 PM**
Client ID: Run ID: **ICPMS05_131017A** SeqNo: **3397304** Prep Date: **10/17/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	159.1	0.500	5	159.9	-14.9	75-125				SO
Magnesium	27.09	0.200	5	23.81	65.5	75-125				SO
Potassium	6.149	0.200	5	1.284	97.3	75-125				
Sodium	71.74	0.200	5	71.55	3.78	75-125				SO

MSD Sample ID: **1310646-01BMSD** Units: **mg/L** Analysis Date: **10/17/2013 04:15 PM**
Client ID: Run ID: **ICPMS05_131017A** SeqNo: **3397305** Prep Date: **10/17/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	166.1	0.500	5	159.9	124	75-125	159.1	4.27	25	O
Magnesium	27.94	0.200	5	23.81	82.6	75-125	27.09	3.12	25	O
Potassium	6.187	0.200	5	1.284	98	75-125	6.149	0.607	25	
Sodium	73.83	0.200	5	71.55	45.6	75-125	71.74	2.87	25	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **73907** Instrument ID **ICPMS05** Method: **SW6020** **(Dissolve)**

DUP Sample ID: **1310646-01BDUP** Units: **mg/L** Analysis Date: **10/17/2013 04:05 PM**

Client ID: Run ID: **ICPMS05_131017A** SeqNo: **3397301** Prep Date: **10/17/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	158.3	0.500					159.9	1	25	
Magnesium	23.46	0.200					23.81	1.51	25	
Potassium	1.28	0.200					1.284	0.294	25	
Sodium	69.47	0.200					71.55	2.95	25	

The following samples were analyzed in this batch:

1310435-09C	1310435-10C	1310435-11C
1310435-12C	1310435-13C	1310435-14C
1310435-15C	1310435-16C	1310435-17C
1310435-18C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **73948** Instrument ID **ICP7500** Method: **SW6020** **(Dissolve)**

MBLK Sample ID: **MBLKW4-101813-73948** Units: **mg/L** Analysis Date: **10/18/2013 04:28 PM**
Client ID: Run ID: **ICP7500_131018A** SeqNo: **3399537** Prep Date: **10/18/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	0.500								
Magnesium	ND	0.200								
Potassium	ND	0.200								
Sodium	ND	0.200								

LCS Sample ID: **MLCSW4-101813-73948** Units: **mg/L** Analysis Date: **10/18/2013 04:33 PM**
Client ID: Run ID: **ICP7500_131018A** SeqNo: **3399538** Prep Date: **10/18/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.005	0.500	5	0	100	80-120				
Magnesium	4.979	0.200	5	0	99.6	80-120				
Potassium	4.978	0.200	5	0	99.6	80-120				
Sodium	4.954	0.200	5	0	99.1	80-120				

MS Sample ID: **1310435-20CMS** Units: **mg/L** Analysis Date: **10/18/2013 05:37 PM**
Client ID: **MW-9A-100813** Run ID: **ICP7500_131018A** SeqNo: **3399551** Prep Date: **10/18/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	200.8	0.500	5	196.9	78	75-125				EO
Magnesium	48.31	0.200	5	43.12	104	75-125				O
Potassium	10.18	0.200	5	5.234	98.9	75-125				
Sodium	86.26	0.200	5	81.3	99.2	75-125				O

MSD Sample ID: **1310435-20CMSD** Units: **mg/L** Analysis Date: **10/18/2013 05:42 PM**
Client ID: **MW-9A-100813** Run ID: **ICP7500_131018A** SeqNo: **3399552** Prep Date: **10/18/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	192	0.500	5	196.9	-98	75-125	200.8	4.48	25	SEO
Magnesium	47.1	0.200	5	43.12	79.6	75-125	48.31	2.54	25	O
Potassium	10.29	0.200	5	5.234	101	75-125	10.18	1.07	25	
Sodium	83.96	0.200	5	81.3	53.2	75-125	86.26	2.7	25	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **73948** Instrument ID **ICP7500** Method: **SW6020** **(Dissolve)**

DUP Sample ID: **1310435-20CDUP** Units: **mg/L** Analysis Date: **10/18/2013 05:27 PM**
Client ID: **MW-9A-100813** Run ID: **ICP7500_131018A** SeqNo: **3399549** Prep Date: **10/18/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	44.32	0.200					43.12	2.74	25	
Potassium	5.383	0.200					5.234	2.81	25	
Sodium	82.75	0.200					81.3	1.77	25	

DUP Sample ID: **1310435-20CDUP** Units: **mg/L** Analysis Date: **10/21/2013 01:42 PM**
Client ID: **MW-9A-100813** Run ID: **ICP7500_131021A** SeqNo: **3400507** Prep Date: **10/18/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	180.1	5.00					184.9	2.63	25	

The following samples were analyzed in this batch:

1310435-19C	1310435-20C	1310435-21C
1310435-22C	1310435-23C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155393** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R155393** Units: **mg/L** Analysis Date: **10/9/2013 12:58 PM**
Client ID: Run ID: **ICS2100_131009A** SeqNo: **3392189** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Fluoride	ND	0.100								
Nitrogen, Nitrate (As N)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-R155393** Units: **mg/L** Analysis Date: **10/9/2013 01:12 PM**
Client ID: Run ID: **ICS2100_131009A** SeqNo: **3392190** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.66	0.500	20	0	98.3	90-110				
Fluoride	4.094	0.100	4	0	102	90-110				
Nitrogen, Nitrate (As N)	3.854	0.100	4	0	96.4	90-110				
Sulfate	18.04	0.500	20	0	90.2	90-110				

MS Sample ID: **1310435-10AMS** Units: **mg/L** Analysis Date: **10/9/2013 08:31 PM**
Client ID: **MW-6R-100813** Run ID: **ICS2100_131009A** SeqNo: **3392203** Prep Date: DF: **1**
MW-6R-100813

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	117.1	0.500	10	109.8	72.7	80-120				SEO
Fluoride	3.894	0.100	2	1.907	99.4	80-120				
Nitrogen, Nitrate (As N)	1.936	0.100	2	0.05	94.3	80-120				
Sulfate	108.2	0.500	10	101.8	63.2	80-120				SEO

MS Sample ID: **1310435-20AMS** Units: **mg/L** Analysis Date: **10/10/2013 12:20 AM**
Client ID: **MW-9A-100813** Run ID: **ICS2100_131009A** SeqNo: **3392232** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	534.6	0.500	10	520.4	143	80-120				SEO
Fluoride	2.444	0.100	2	0.37	104	80-120				
Nitrogen, Nitrate (As N)	3.686	0.100	2	1.694	99.6	80-120				
Sulfate	124.1	0.500	10	114.2	98.9	80-120				EO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155393** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MSD Sample ID: **1310435-10AMSD** Units: **mg/L** Analysis Date: **10/9/2013 08:46 PM**

Client ID: **MW-6R-100813 MW-6R-100813** Run ID: **ICS2100_131009A** SeqNo: **3392204** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	115.3	0.500	10	109.8	55.3	80-120	117.1	1.5	20	SEO
Fluoride	3.842	0.100	2	1.907	96.8	80-120	3.894	1.34	20	
Nitrogen, Nitrate (As N)	1.908	0.100	2	0.05	92.9	80-120	1.936	1.46	20	
Sulfate	106.4	0.500	10	101.8	46	80-120	108.2	1.61	20	SEO

MSD Sample ID: **1310435-20AMSD** Units: **mg/L** Analysis Date: **10/10/2013 12:34 AM**

Client ID: **MW-9A-100813** Run ID: **ICS2100_131009A** SeqNo: **3392234** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	548.4	0.500	10	520.4	281	80-120	534.6	2.54	20	SEO
Fluoride	2.452	0.100	2	0.37	104	80-120	2.444	0.327	20	
Nitrogen, Nitrate (As N)	3.789	0.100	2	1.694	105	80-120	3.686	2.76	20	
Sulfate	127.4	0.500	10	114.2	132	80-120	124.1	2.63	20	SEO

The following samples were analyzed in this batch:

1310435-01A	1310435-02A	1310435-03A
1310435-04A	1310435-05A	1310435-06A
1310435-07A	1310435-08A	1310435-09A
1310435-10A	1310435-11A	1310435-12A
1310435-13A	1310435-14A	1310435-15A
1310435-16A	1310435-17A	1310435-18A
1310435-19A	1310435-20A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155567** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-101513-R155567** Units: **mg/L** Analysis Date: **10/15/2013 08:45 AM**
Client ID: Run ID: **BALANCE1_131015F** SeqNo: **3395967** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	ND	10.0								

LCS Sample ID: **WLCS-101513-R155567** Units: **mg/L** Analysis Date: **10/15/2013 08:45 AM**
Client ID: Run ID: **BALANCE1_131015F** SeqNo: **3395968** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1018	10.0	1000	0	102	85-115				

DUP Sample ID: **1310435-11DDUP** Units: **mg/L** Analysis Date: **10/15/2013 08:45 AM**
Client ID: **RW-1-100813** Run ID: **BALANCE1_131015F** SeqNo: **3395955** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	11610	10.0					11230	3.33	20	

DUP Sample ID: **1310518-01ADUP** Units: **mg/L** Analysis Date: **10/15/2013 08:45 AM**
Client ID: Run ID: **BALANCE1_131015F** SeqNo: **3395966** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1548	10.0					1576	1.79	20	

The following samples were analyzed in this batch:

1310435-01D	1310435-02D	1310435-03D
1310435-04D	1310435-05D	1310435-06D
1310435-07D	1310435-08D	1310435-09D
1310435-11D	1310435-13D	1310435-15D
1310435-16D	1310435-17D	1310435-18D
1310435-19D	1310435-20D	1310435-23D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155575** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-101513-R155575** Units: **mg/L** Analysis Date: **10/15/2013 12:10 PM**
Client ID: Run ID: **BALANCE1_131015G** SeqNo: **3396088** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	ND	10.0								

LCS Sample ID: **WLCS-101513-R155575** Units: **mg/L** Analysis Date: **10/15/2013 12:10 PM**
Client ID: Run ID: **BALANCE1_131015G** SeqNo: **3396089** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1046	10.0	1000	0	105	85-115				

DUP Sample ID: **1310435-14DDUP** Units: **mg/L** Analysis Date: **10/15/2013 12:10 PM**
Client ID: **MW-4-100813** Run ID: **BALANCE1_131015G** SeqNo: **3396080** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	36780	10.0					36260	1.42	10	

The following samples were analyzed in this batch:

1310435-10D	1310435-12D	1310435-14D
1310435-21D	1310435-22D	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155604** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW2-131017-R155604** Units: **mg/L** Analysis Date: **10/17/2013 12:35 PM**
Client ID: Run ID: **MANTECH01_131017C** SeqNo: **3396796** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.00								
Alkalinity, Carbonate (As CaCO3)	ND	6.00								
Alkalinity, Hydroxide (As CaCO3)	ND	6.00								
Alkalinity, Total (As CaCO3)	ND	6.00								

LCS Sample ID: **WLCSW2-131017-R155604** Units: **mg/L** Analysis Date: **10/17/2013 12:41 PM**
Client ID: Run ID: **MANTECH01_131017C** SeqNo: **3396797** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1150	6.00	1000	0	115	80-120				

DUP Sample ID: **1310435-01BDUP** Units: **mg/L** Analysis Date: **10/17/2013 12:54 PM**
Client ID: **MW-14-100813** Run ID: **MANTECH01_131017C** SeqNo: **3396800** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	267.3	6.00					266.6	0.266	0	
Alkalinity, Carbonate (As CaCO3)	ND	6.00					0	0	0	
Alkalinity, Hydroxide (As CaCO3)	ND	6.00					0	0	0	
Alkalinity, Total (As CaCO3)	267.3	6.00					266.6	0.266	20	

The following samples were analyzed in this batch:

1310435-01B	1310435-02B	1310435-03B
1310435-04B	1310435-05B	1310435-06B
1310435-07B	1310435-08B	1310435-09B
1310435-10B	1310435-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155708** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW2-R155708** Units: **mg/L** Analysis Date: **10/10/2013 01:18 AM**
Client ID: Run ID: **ICS2100_131009B** SeqNo: **3398843** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	ND	0.100								
Nitrogen, Nitrate (As N)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW2-R155708** Units: **mg/L** Analysis Date: **10/10/2013 01:33 AM**
Client ID: Run ID: **ICS2100_131009B** SeqNo: **3398844** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	4.009	0.100	4	0	100	90-110				
Nitrogen, Nitrate (As N)	3.797	0.100	4	0	94.9	90-110				
Sulfate	18.09	0.500	20	0	90.5	90-110				

MS Sample ID: **1310446-05IMS** Units: **mg/L** Analysis Date: **10/10/2013 02:02 AM**
Client ID: Run ID: **ICS2100_131009B** SeqNo: **3398846** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.068	0.100	2	0.082	99.3	80-120				
Nitrogen, Nitrate (As N)	1.852	0.100	2	0.016	91.8	80-120				
Sulfate	13.11	0.500	10	3.005	101	80-120				

MSD Sample ID: **1310446-05IMSD** Units: **mg/L** Analysis Date: **10/10/2013 02:16 AM**
Client ID: Run ID: **ICS2100_131009B** SeqNo: **3398847** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.013	0.100	2	0.082	96.6	80-120	2.068	2.7	20	
Nitrogen, Nitrate (As N)	1.802	0.100	2	0.016	89.3	80-120	1.852	2.74	20	
Sulfate	11.83	0.500	10	3.005	88.2	80-120	13.11	10.3	20	

The following samples were analyzed in this batch: 1310435-21A 1310435-22A 1310435-23A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155769** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-131021-R155769** Units: **mg/L** Analysis Date: **10/21/2013 11:37 AM**
Client ID: Run ID: **MANTECH01_131021A** SeqNo: **3400254** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.00								
Alkalinity, Carbonate (As CaCO3)	ND	6.00								
Alkalinity, Hydroxide (As CaCO3)	ND	6.00								
Alkalinity, Total (As CaCO3)	ND	6.00								

LCS Sample ID: **WLCSW1-131021-R155769** Units: **mg/L** Analysis Date: **10/21/2013 11:43 AM**
Client ID: Run ID: **MANTECH01_131021A** SeqNo: **3400255** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1165	6.00	1000	0	116	80-120				

DUP Sample ID: **1310910-01DDUP** Units: **mg/L** Analysis Date: **10/21/2013 12:02 PM**
Client ID: Run ID: **MANTECH01_131021A** SeqNo: **3400261** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	565	6.00					565.9	0.152	0	
Alkalinity, Carbonate (As CaCO3)	32.76	6.00					33.15	1.18	0	
Alkalinity, Hydroxide (As CaCO3)	ND	6.00					0	0	0	
Alkalinity, Total (As CaCO3)	597.8	6.00					599	0.207	20	

The following samples were analyzed in this batch:

1310435-12B	1310435-13B	1310435-14B
1310435-15B	1310435-16B	1310435-17B
1310435-18B	1310435-19B	1310435-20B
1310435-21B	1310435-22B	1310435-23B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155877** Instrument ID **ICS3K2** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R155877** Units: **mg/L** Analysis Date: **10/22/2013 02:11 AM**
Client ID: Run ID: **ICS3K2_131022A** SeqNo: **3402685** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-R155877** Units: **mg/L** Analysis Date: **10/22/2013 03:24 AM**
Client ID: Run ID: **ICS3K2_131022A** SeqNo: **3402686** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.06	0.500	20	0	105	90-110				
Sulfate	19.64	0.500	20	0	98.2	90-110				

MS Sample ID: **1310435-01AMS** Units: **mg/L** Analysis Date: **10/22/2013 04:12 AM**
Client ID: **MW-14-100813** Run ID: **ICS3K2_131022A** SeqNo: **3402688** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	214	2.50	50	161.8	105	80-120				
Sulfate	177.5	2.50	50	127.2	101	80-120				

MSD Sample ID: **1310435-01AMSD** Units: **mg/L** Analysis Date: **10/22/2013 04:36 AM**
Client ID: **MW-14-100813** Run ID: **ICS3K2_131022A** SeqNo: **3402689** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	214.3	2.50	50	161.8	105	80-120	214	0.111	20	
Sulfate	177.5	2.50	50	127.2	101	80-120	177.5	0.0361	20	

The following samples were analyzed in this batch:

1310435-01A	1310435-02A	1310435-03A
1310435-04A	1310435-07A	1310435-08A
1310435-09A	1310435-11A	1310435-12A
1310435-13A	1310435-14A	1310435-16A
1310435-19A	1310435-20A	1310435-21A
1310435-22A	1310435-23A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1310435
Project: 039123 CEMC Cooper-JAL

QC BATCH REPORT

Batch ID: **R155921** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R155921** Units: **mg/L** Analysis Date: **10/23/2013 12:35 AM**
Client ID: Run ID: **ICS2100_131022A** SeqNo: **3403441** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								

LCS Sample ID: **WLCSW1-R155921** Units: **mg/L** Analysis Date: **10/23/2013 12:49 AM**
Client ID: Run ID: **ICS2100_131022A** SeqNo: **3403442** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.25	0.500	20	0	101	90-110				

MS Sample ID: **1310435-04AMS** Units: **mg/L** Analysis Date: **10/23/2013 01:18 AM**
Client ID: **RW-2-100813** Run ID: **ICS2100_131022A** SeqNo: **3403444** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3489	50.0	1000	2445	104	80-120				

MSD Sample ID: **1310435-04AMSD** Units: **mg/L** Analysis Date: **10/23/2013 01:33 AM**
Client ID: **RW-2-100813** Run ID: **ICS2100_131022A** SeqNo: **3403445** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3415	50.0	1000	2445	96.9	80-120	3489	2.14	20	

The following samples were analyzed in this batch: 1310435-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 24-Oct-13

Client: Conestoga-Rovers & Associates
Project: 039123 CEMC Cooper-JAL
WorkOrder: **1310435**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **CRA-MID** Date/Time Received: **09-Oct-13 09:30**

Work Order: **1310435** Received by: **RDH**

Checklist completed by Robert D. Harris (eSignature) 09-Oct-13 (Date) Reviewed by: Dane L. Wacasey (eSignature) 10-Oct-13 (Date)

Matrices: waters
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6c/1.6c,1.3c/1.3c,2.3c/2.3c c/u	IR1	
Cooler(s)/Kit(s):	4057,3182,3040		
Date/Time sample(s) sent to storage:	10/9/13 12:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample MW-7-100813 not on COC; logged in at end of WO to be analyzed with rest of the samples in the WO. Container ID's don't match ID's on COC; logged in per COC. COC ID: MW-14-100813. Container ID: MW-14.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Laboratory Group

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
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Fax. +1 281 530 5887

Chain of Custody Form

1310435

CRA-MID: Conestoga-Rovers & Associates

Project: CEMC Cooper-JAL - SSOW - 039123

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	CEMC - Cooper - Jal	A	Dissolved metals (200.7/1000) Ca, Mg, Na, K
Work Order		Project Number	39123	B	Anions (300) Cl, F, SO4, Nitrate
Company Name	CRA	Bill To Company	CRA	C	Alkalinity (carbonate/bicarbonate)
Send Report To	Chris Knight	Invoice Attn	Chris Knight	D	TDS
Address	13091 Pond Spring Rd Suite A100	Address	13091 Pond Springs Road, Suite A10	E	
				F	
City/State/Zip	Austin TX 78729	City/State/Zip	Austin TX 78729	G	
Phone	(512) 506-8803	Phone	(512) 506-8803	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	~~Date~~ Time	~~Time~~ Date	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-14-100813	1250	10-08-13	Water	NPNa	4	✓	✓	✓	✓							
2	Dup-1-100813	1255															
3	RW-2R-100813	1150															
4	RW-2-100813	1140															
5	MW-2A-100813	1130															
6	MW-3-100813	1055															
7	MW-1-100813	1110															
8	MW-2-100813	1120															
9	MW-10-100813	1240															
10	MW-UR-100813	1500															

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Sampler(s) Please Print & Sign	Shipment Method	Required Turnaround Time: (Check Box)	Results Due Date:
Justin Nixon	FedEx	☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other	

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Day TAT Dissolved metals are lab filtered
	10-8-13	1815		
Relinquished by:	Date:	Time:	Received by (Laboratory): 10/8/13 1830	Cooler ID / Cooler Temp
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Date
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 3

COC ID: 81323

ALS Project Manager: | ALS Work Order #: 1310435

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	CEMC Cooper - Jal	A	Dissolved Metals (6020/7000) Ca, Mg, Na, K
Work Order		Project Number	39123	B	Anions (300) Cl , F, SO4, Nitrate
Company Name	Conestoga Rovers & Associates	Bill To Company	Conestoga Rovers & Associates	C	Alkalinity (Carbonate/Bicarbonate)
Send Report To	Chris Knight	Invoice Attn	Chris Knight	D	TDS
Address	13991 Pond Springs Road, Suite A100	Address	13091 Pond Springs Road, Suite A10	E	
				F	
City/State/Zip	Austin, Texas 78729	City/State/Zip	Austin, Texas 78729	G	
Phone	(512) 506-8803	Phone	(512) 506-8803	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	RW-1-100813	10-08-13	1435	WATER	NONE	4	✓	✓	✓	✓							
2	Dup-2-100813		1445			4											
3	MW-4A-100813		1425			4											
4	MW-4-100813		1435			4											
5	MW-5A-100813		1420			4											
6	MW-5-100813		1415			4											
7	MW-8-100813		1350			4											
8	MW-11-100813		1335			4											
9	MW-9-100813		1315			4											
10	MW-9A-100813		1320			4											

Sampler(s) Please Print & Sign: Justin Nixon

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Justin Nixon	10-8-13	1815	
Relinquished by:	Date:	Time:	Received by (Laboratory): 10/9/13 0730
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: 10 Day TAT.Dissolved Metals are Lab Filtered

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 81321

ALS Project Manager: | ALS Work Order #: 1310135

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	CEMC Cooper - Jal	A	Dissolved Metals (6020/7000) Ca, Mg, Na, K
Work Order		Project Number	39123	B	Anions (300) Cl , F, SO4, Nitrate
Company Name	Conestoga Rovers & Associates	Bill To Company	Conestoga Rovers & Associates	C	Alkalinity (Carbonate/Bicarbonate)
Send Report To	Chris Knight	Invoice Attn	Chris Knight	D	TDS
Address	13091 Pond Springs Road, Suite A100	Address	13091 Pond Springs Road, Suite A10	E	
				F	
City/State/Zip	Austin, Texas 78729	City/State/Zip	Austin, Texas 78729	G	
Phone	(512) 506-8803	Phone	(512) 506-8803	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-12 - 100813	10-08-13	1520	water	NONE	4	✓	✓	✓	✓							
2	MW-13 - 100813	10-08-13	1530	water	NONE	4	✓	✓	✓	✓							
3																	
4	Triple Blank	10-08-13	1700	water	NONE	3											
5																	
6																	
7																	
8																	
9																	
10																	

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Sampler(s) Please Print & Sign:

Shipment Method: Fedex

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 10-8-13	Time: 1815	Received by:	Notes: 10 Day TAT Dissolved Metals are Lab Filtered
Relinquished by:	Date:	Time:	Received by (Laboratory): 10/9/13 0930	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

1310455

FedEx Express Package US Airbill

FedEx Tracking Number 8013 7714 2577

From

Date

Sender's Name Phone

Company

Address

Dept/Floor/Suite/Room

City State ZIP

2 Your Internal Billing Reference

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

4057

CUSTODY SEAL

Date: 10-3-13 Time: 1815

Name:

Company: CRA

Seal Broken By:

10/4/13

FedEx Express Package US Airbill

FedEx Tracking Number 8013 7714 2555

1 From

Date

Sender's Name Phone

Company

Address

Dept/Floor/Suite/Room

City State ZIP

2 Your Internal Billing Reference

3 To

ALS Environmental
10450 Stancliff Rd.
Houston, Texas 770
Tel. +1 281 530 565
Fax. +1 281 530 588

4055
4089

CUSTODY SEAL

Date: 10-4-13 Time: 1315

Name:

Company: CRA

Seal Broken By:

10/4/13

1510135

FedEx Express Package US Airbill

FedEx Tracking Number 8013 7714 2544

1 From

Date 10-8-13

Sender's Name [redacted] Phone [redacted]

Company [redacted]

Address [redacted]

Dept./Floor/Suite/Room

City [redacted] State [redacted] ZIP 79703

2 Your Internal Billing Refere

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 10-8-13 Time: 1815

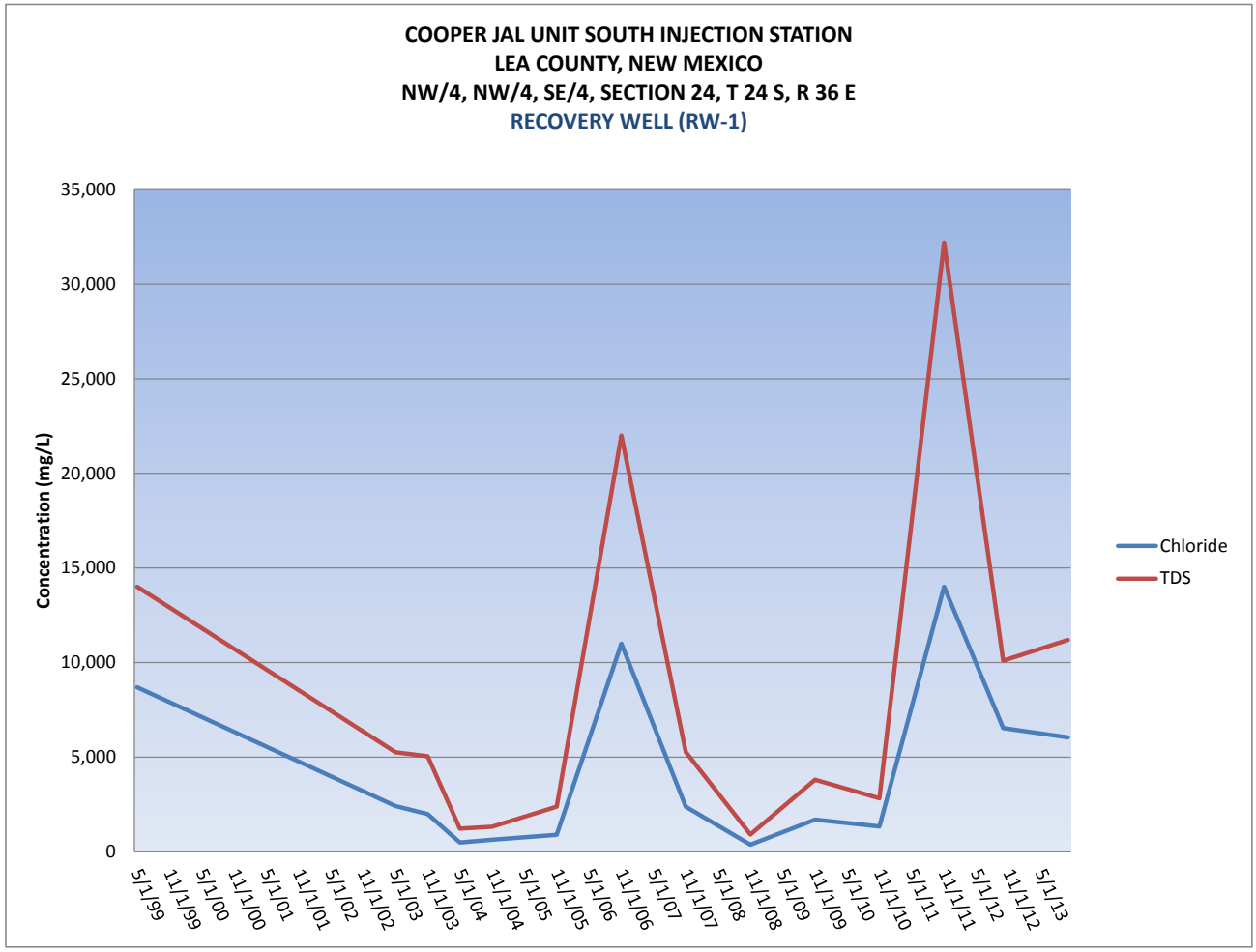
Name: [redacted]

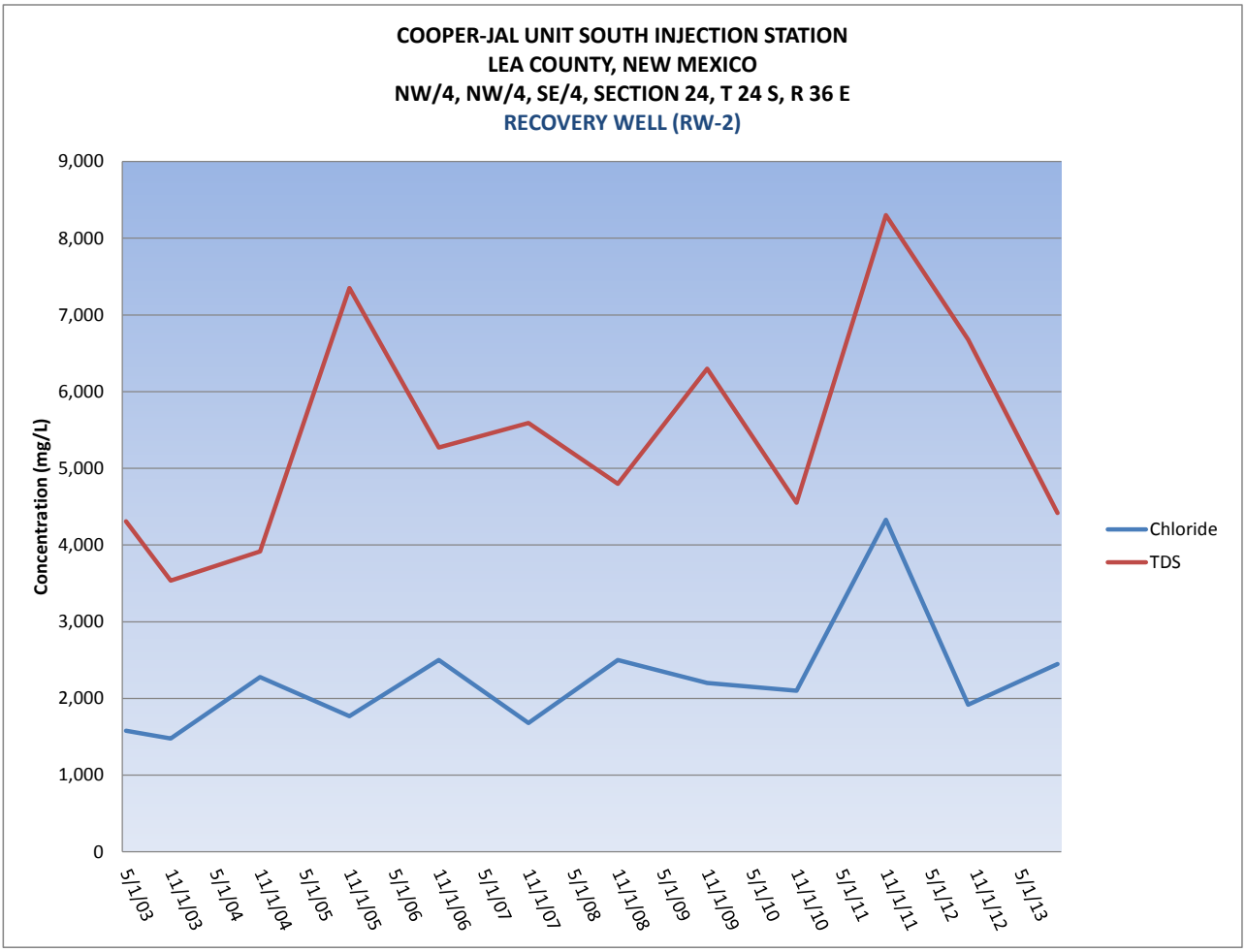
Company: ESRA

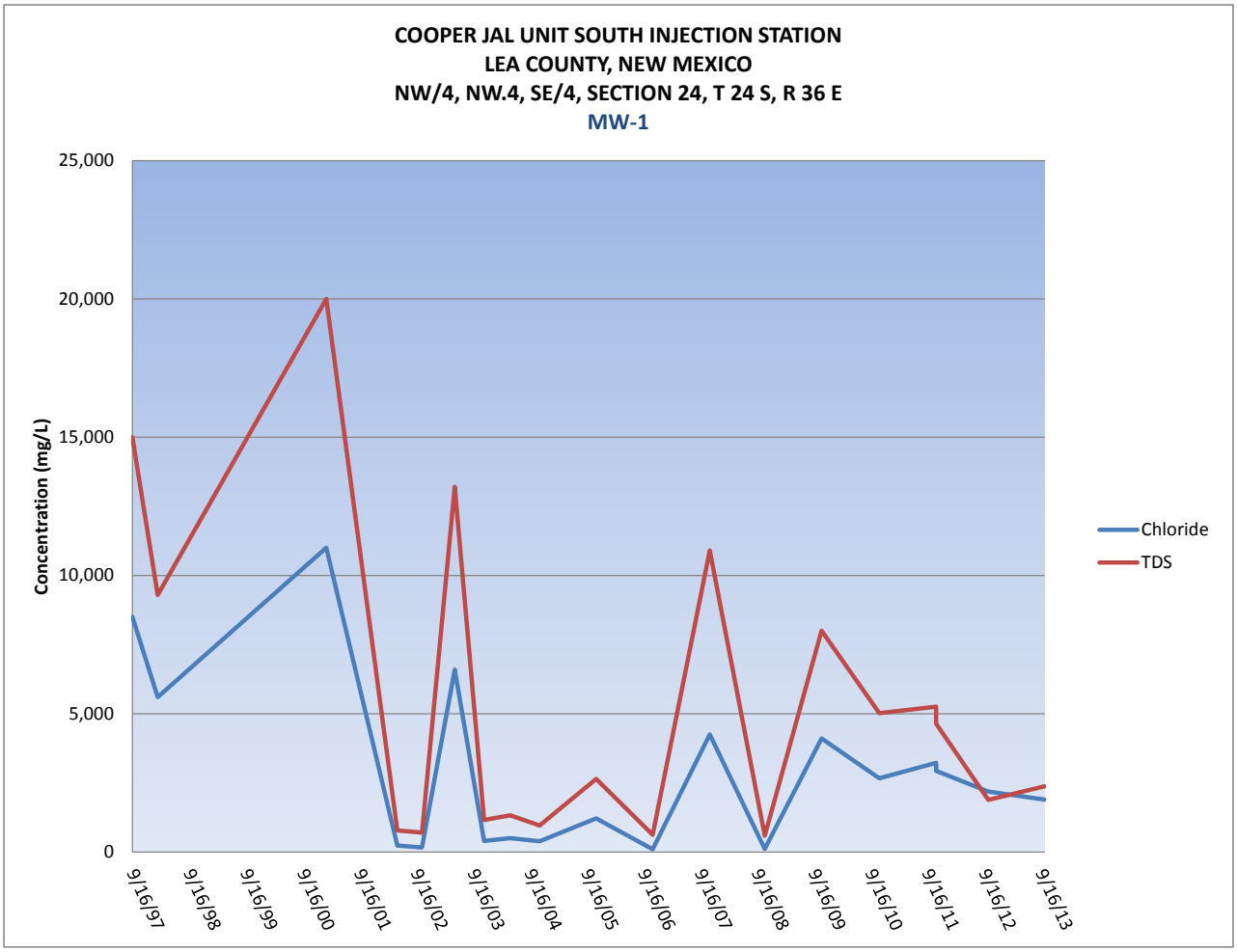
Sent Broken By:

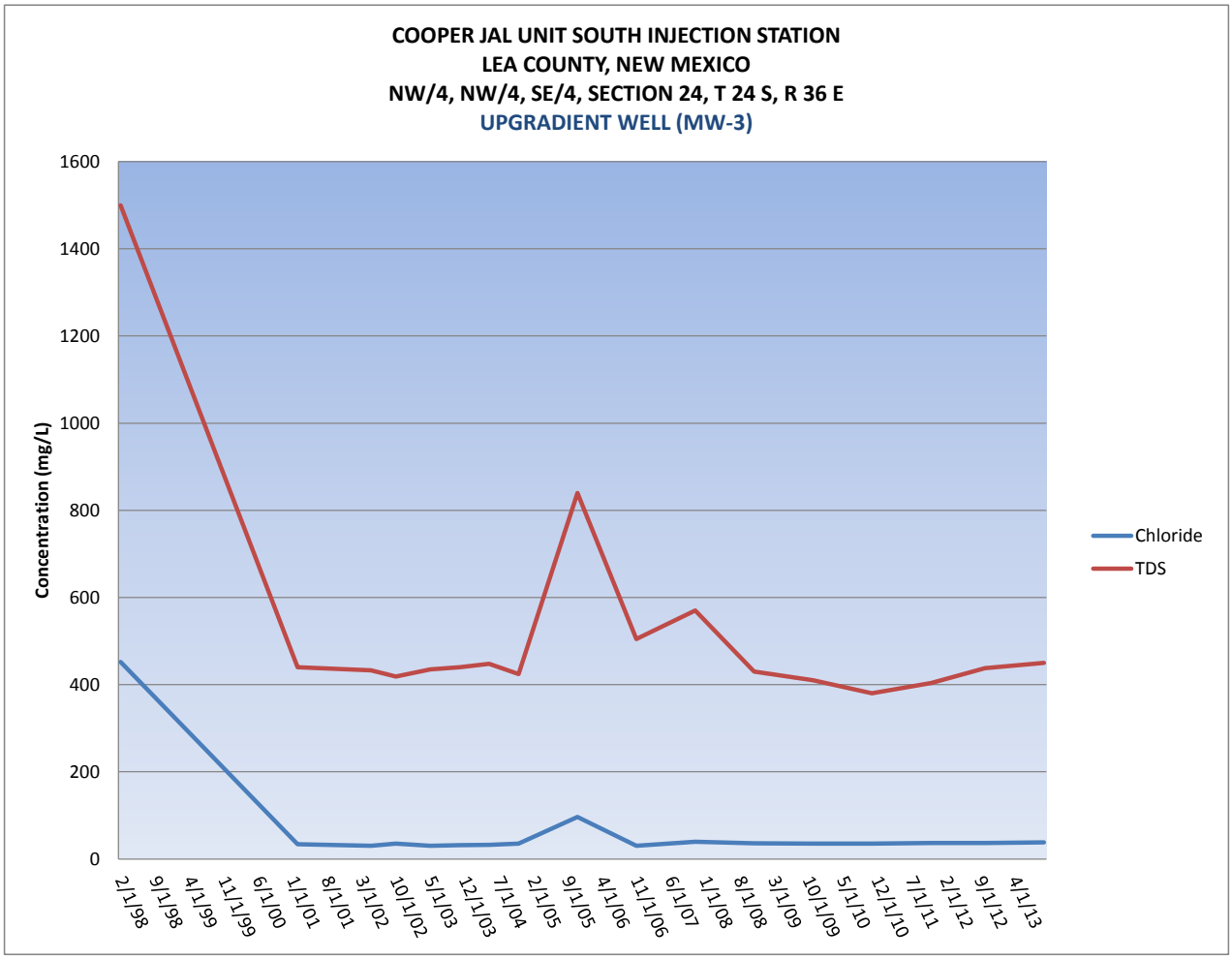
10/9/13

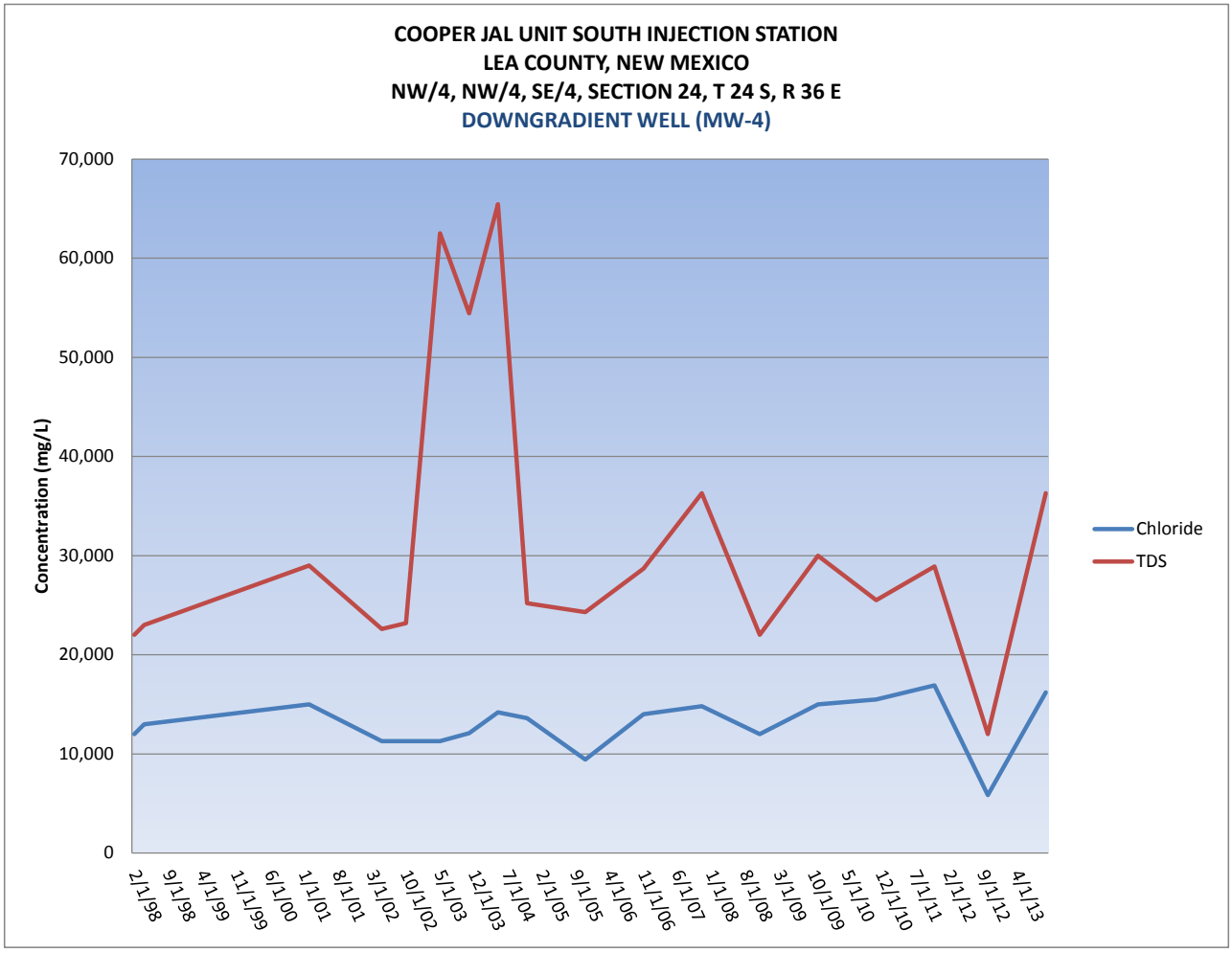
Appendix B
Well Graphs Chloride/TDS Concentration versus Time


COOPER JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
NW/4, NW/4, SE/4, SECTION 24, T 24 S, R 36 E
RECOVERY WELL (RW-1)
Concentration (mg/L)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
5/1/99
11/1/99
5/1/00
11/1/00
5/1/01
11/1/01
5/1/02
11/1/02
5/1/03
11/1/03
5/1/04
11/1/04
5/1/05
11/1/05
5/1/06
11/1/06
5/1/07
11/1/07
5/1/08
11/1/08
5/1/09
11/1/09
5/1/10
11/1/10
5/1/11
11/1/11
5/1/12
11/1/12
5/1/13
Chloride
TDS


COOPER-JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
NW/4, NW/4, SE/4, SECTION 24, T 24 S, R 36 E
RECOVERY WELL (RW-2)
Concentration (mg/L)
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
5/1/03
11/1/03
5/1/04
11/1/04
5/1/05
11/1/05
5/1/06
11/1/06
5/1/07
11/1/07
5/1/08
11/1/08
5/1/09
11/1/09
5/1/10
11/1/10
5/1/11
11/1/11
5/1/12
11/1/12
5/1/13
Chloride
TDS


COOPER JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
NW/4, NW.4, SE/4, SECTION 24, T 24 S, R 36 E
MW-1
Concentration (mg/L)
25,000
20,000
15,000
10,000
5,000
0
9/16/97
9/16/98
9/16/99
9/16/00
9/16/01
9/16/02
9/16/03
9/16/04
9/16/05
9/16/06
9/16/07
9/16/08
9/16/09
9/16/10
9/16/11
9/16/12
9/16/13
Chloride
TDS


COOPER JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
NW/4, NW/4, SE/4, SECTION 24, T 24 S, R 36 E
UPGRADIENT WELL (MW-3)
Concentration (mg/L)
1600
1400
1200
1000
800
600
400
200
0
2/1/98
9/1/98
4/1/99
11/1/99
6/1/00
1/1/01
8/1/01
3/1/02
10/1/02
5/1/03
12/1/03
7/1/04
2/1/05
9/1/05
4/1/06
11/1/06
6/1/07
1/1/08
8/1/08
3/1/09
10/1/09
5/1/10
12/1/10
7/1/11
2/1/12
9/1/12
4/1/13
Chloride
TDS


COOPER JAL UNIT SOUTH INJECTION STATION
LEA COUNTY, NEW MEXICO
NW/4, NW/4, SE/4, SECTION 24, T 24 S, R 36 E
DOWNGRADIENT WELL (MW-4)
Concentration (mg/L)
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2/1/98
9/1/98
4/1/99
11/1/99
6/1/00
1/1/01
8/1/01
3/1/02
10/1/02
5/1/03
12/1/03
7/1/04
2/1/05
9/1/05
4/1/06
11/1/06
6/1/07
1/1/08
8/1/08
3/1/09
10/1/09
5/1/10
12/1/10
7/1/11
2/1/12
9/1/12
4/1/13
Chloride
TDS

Appendix C
CRA Soil Boring Log and Well Construction Detail

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-6R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Top Soil
						0					Sand, tan, fine grained with slight red color, well sorted (poorly graded)
								5			
								10			
						0					
								15			
						0					
								20			
								25			
						0					
								30			Color change to white, with few calcareous nodules
						0					
								35			
						0					
								40			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

Client: CEMC

No. MW-6R

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Slightly more tan color, no calcareous nodules
						0					
								45			
						0					
								50			
						0					White with few calcareous nodules
								55			
						0					
								60			
						0					Soil change to light red color
								65			
						0					
								70			
						0					
								75			
						0					
								80			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

Client: CEMC

No. MW-6R

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Soil change to light red color
						0					
								85			
						0					
								90			
						0					
								95			
						0					
								100			Soil change to red color
						0					
								105			
						0					
								110			Light brown, loose to compact
						0					
								115			
						0					
								120			Switch to mud rotary, continued on next page....

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-6R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Switch to mud rotary, beginning to get moist/wet, color change to red-brown
						0					
								125			
						0					
								130			
						0					
								135			
						0					
								140			Fine grain to med grain moderatley well sorted
						0					
								145			
						0					
								150			
						0					
								155			
						0					
								160			Fine grain

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-6R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time: 1
											Fine grain
						0		165			
						0		170			Sand with clay (gray and red)
						0					Sandy clay - red to grey
								175			Clay - red with gray
						0					TD = 176-Feet
								180			
								185			
								190			
								195			
								200			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

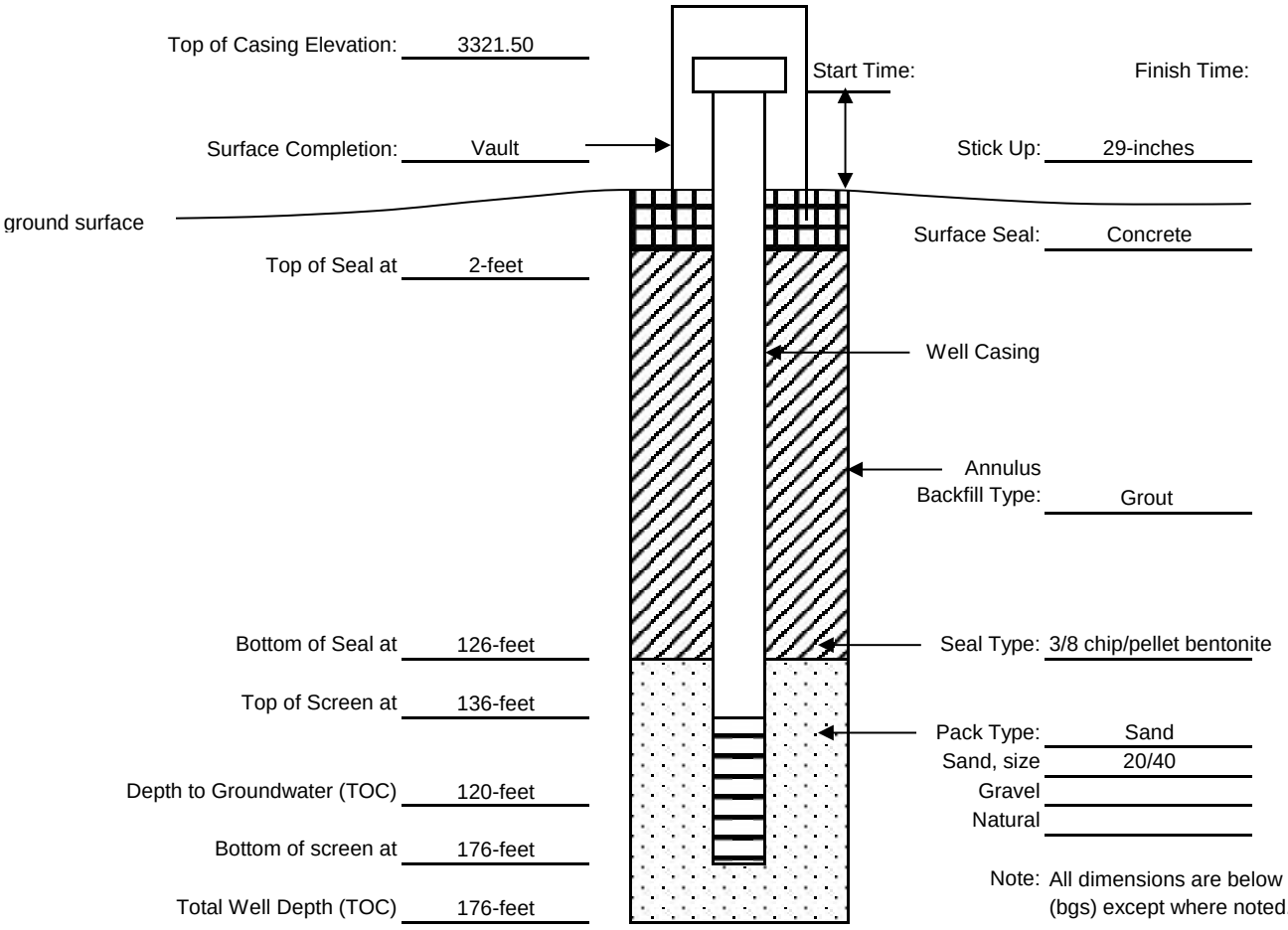
MONITORING WELL CONSTRUCTION DETAIL

Project: Cooper Jal Unit South Injection Site

No. MW-6R

Client: CEMC

File No.: 039123
Date: 9/30/13
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin



Screen Type: ☑ slotted ☐ perforated other:

Screen Material: ☐ stainless steel ☑ PVC other:

Screen Length: 40-feet Screen Diameter: 4-inches Screen Slot Size: 0.01

Well Casing Material: PVC Well Casing Diameter: 4-inches

Development - Method: Bailing/Pumping Hole Diameter: 7 7/8"

Duration/Volume: 2 hours/1200 gallons (approx)

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-14

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
						0		5			Sand, fine grained,loose, well rounded, well sorted (poorly graded), tan -white
						0		10			Sand, fine grained,loose, well rounded, well sorted (poorly graded) - light brown
						0		15			
						0		20			
						0		25			
						0		30			
						0		35			
								40			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

Client: CEMC

No. MW-14

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											White with few cemented sand nodules - calcareous
						0					
								45			
						0					
								50			Tan colored, no nodules/cementation
						0					
								55			
						0					
								60			
						0					
								65			
						0					
								70			Light brown color with no nodules/cementation
						0					
								75			
						0					
								80			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-14

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Light brown, many nodules of cemented sand = cemented layer
						0					
								85			
						0					
								90			Red-brown, no nodules
						0					
								95			
						0					
								100			
						0					
								105			
						0					
								110			
						0					
								115			
						0					
								120			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-14

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Moist, switch to mud rotary - fine grain to med grain, red-brown
						0		125			
						0		130			
						0		135			
						0		140			Fine grain
						0		145			
						0		150			
						0		155			
						0		160			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. MW-14

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Fine grain
						0		165			
						0					Trace of grey clay
								170			Grey and red clay medium plasticity
						0					TD = 171.5-feet
								175			
						0					
								180			
								185			
								190			
								195			
								200			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

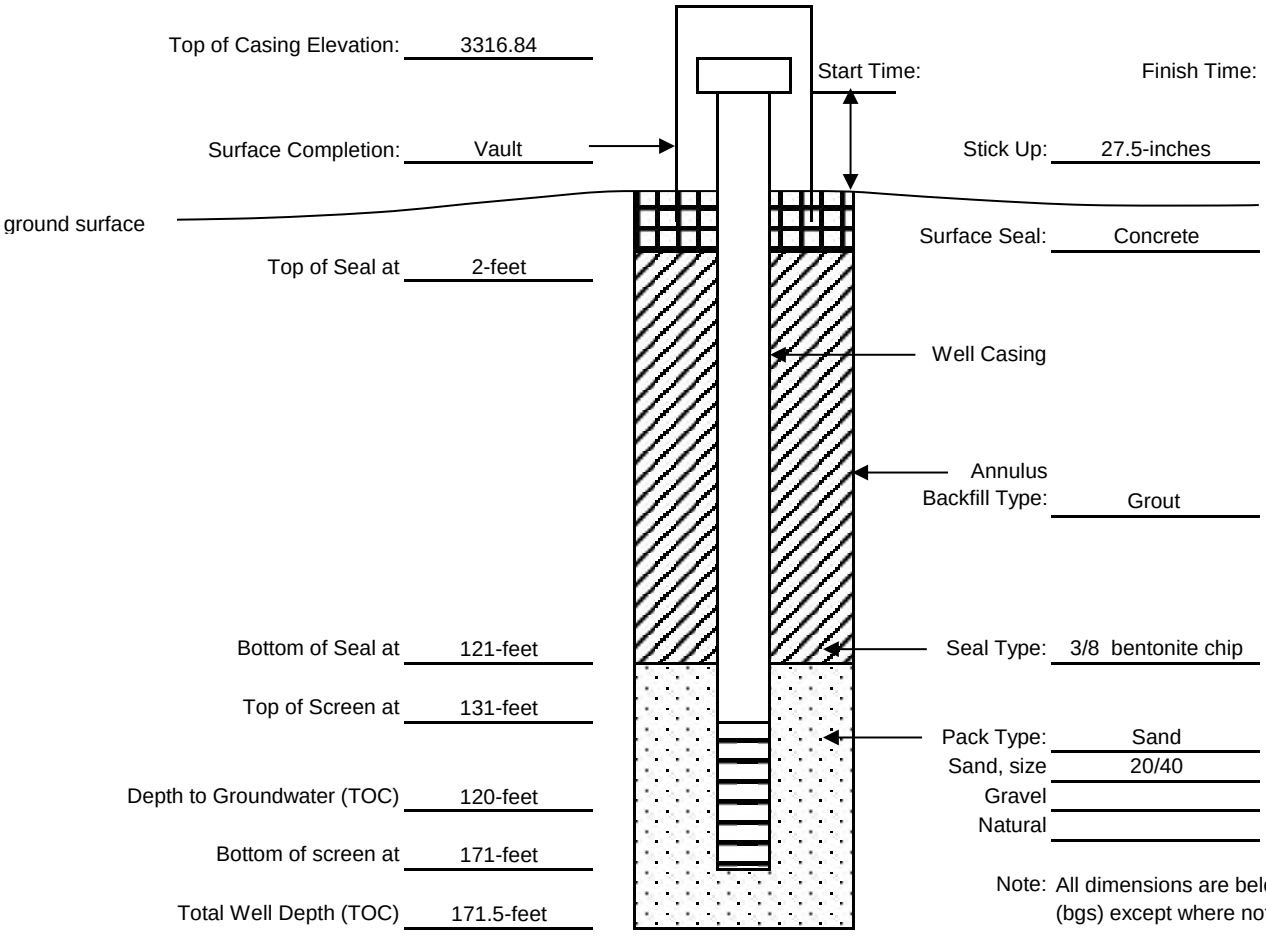
MONITORING WELL CONSTRUCTION DETAIL

Project: Cooper Jal Unit South Injection

No. MW-14

Client: CEMC

File No.: 039123
Date: 9/30/13
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin



Screen Type: ☑ slotted ☐ perforated other:

Screen Material: ☐ stainless steel ☑ PVC other:

Screen Length: 40-feet Screen Diameter: 4-inch Screen Slot Size: 0.010

Well Casing Material: PVC Well Casing Diameter: 4-inch

Development - Method: Pumping/Bailing Hole Diameter: 7 7/8"

Duration/Volume: 2hours/ 300 gallons (approx)

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. RW-2R

Client: CEMC

File No.: 039123 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Sand, fine grained, loose, tan, well sorted
						0					
								5			
								10			
						0					
								15			
						0					
								20			White with few calcareous nodules
								25			Cemented with carbonate - hard/compact
						0					
								30			Thin layers of carbonate cemented sand
						0					
								35			
						0					
								40			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. RW-2R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Color change to light brown to white, with thin cemented sand layers
						0					
								45			
						0					
								50			
						0					
								55			
						0					
								60			Sand, tan, well rounded, well sorted,very loose
						0					
								65			
						0					
								70			
						0					
								75			Cemented sand stone (carbonate cement)
						0					Sand, tan, well rounded, well sorted,very loose
								80			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. RW-2R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Sand, tan, well rounded, well sorted,very loose
						0					
								85			
						0					
								90			
						0					
								95			
						0					
								100			
											Switch to mud Rotary
						0					Sand, tan, well rounded, well sorted,very loose
								105			
						0					
								110			
						0					
								115			
						0					
								120			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. RW-2R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Sand, tan, well rounded, well sorted,very loose
						0					
								125			
						0					
								130			
						0					
								135			Cemented sand/sand stone
						0					Sand, tan, well rounded, well sorted,very loose
								140			
						0					
								145			
						0					
								150			
						0					
								155			
						0					
								160			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

SOIL BORING LOG

Project: Cooper Jal Unit South Injection Site

No. RW-2R

Client: CEMC

File No.: 39123
Date: 9/30/2013
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin

LABORATORY TEST DATA (Results Reported in mg/kg)						FIELD DATA				BORING DATA	
Benzene	Toluene	Ethyl-benzene	Xylenes	Total TPH (C6-C35)	Chlorides	Photo-Ionization Detection Reading (ppm)	Sampling	Depth (feet)	Water Level	Screen Interval	Start Time: Finish Time:
											Sand, tan, well rounded, well sorted,very loose
						0					
								165			
						0					
								170			
											Sand and gravel to red/gray clay at bottom of unit
						0					TD = 173-feet
								175			
						0					
								180			
								185			
								190			
								195			
								200			

☒ Sampling Interval

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Water First Noted

Analyzed Sample

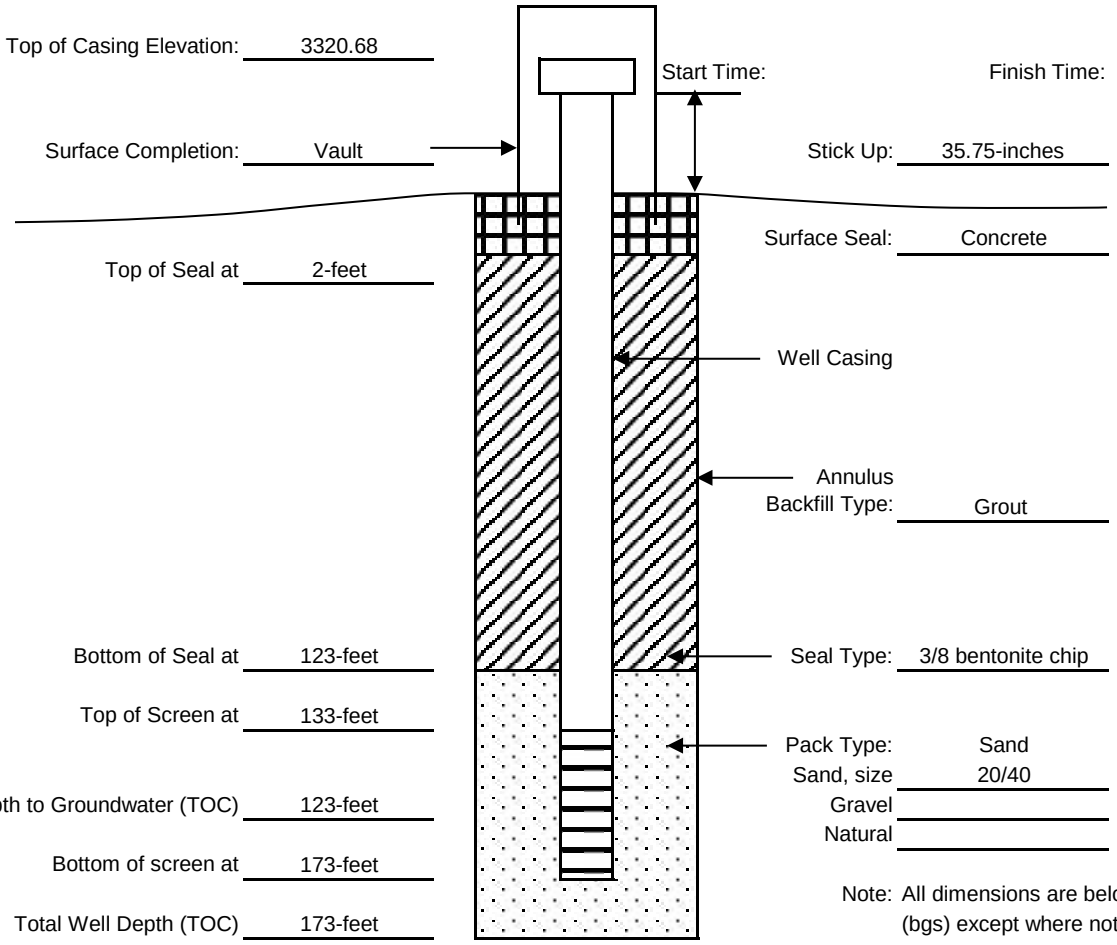
MONITORING WELL CONSTRUCTION DETAIL

Project: Cooper Jal Unit South Injection

Client: CEMC

No. RW-2R

File No.: 039123
Date: 9/30/13
Drilling Co.: Harrison & Cooper
Supervisor: Kenny Cooper
Type Rig: Air/Mud Rotary
Logged by: Jason Rankin



Screen Type: ☑ slotted ☐ perforated other:

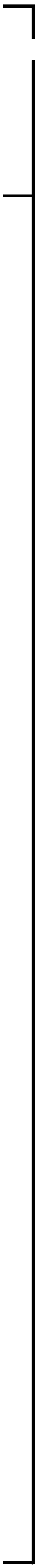
Screen Material: ☐ stainless steel ☑ PVC other:

Screen Length: 40-feet Screen Diameter: 6-inch Screen Slot Size: 20/40

Well Casing Material: PVC Well Casing Diameter: 6-inch

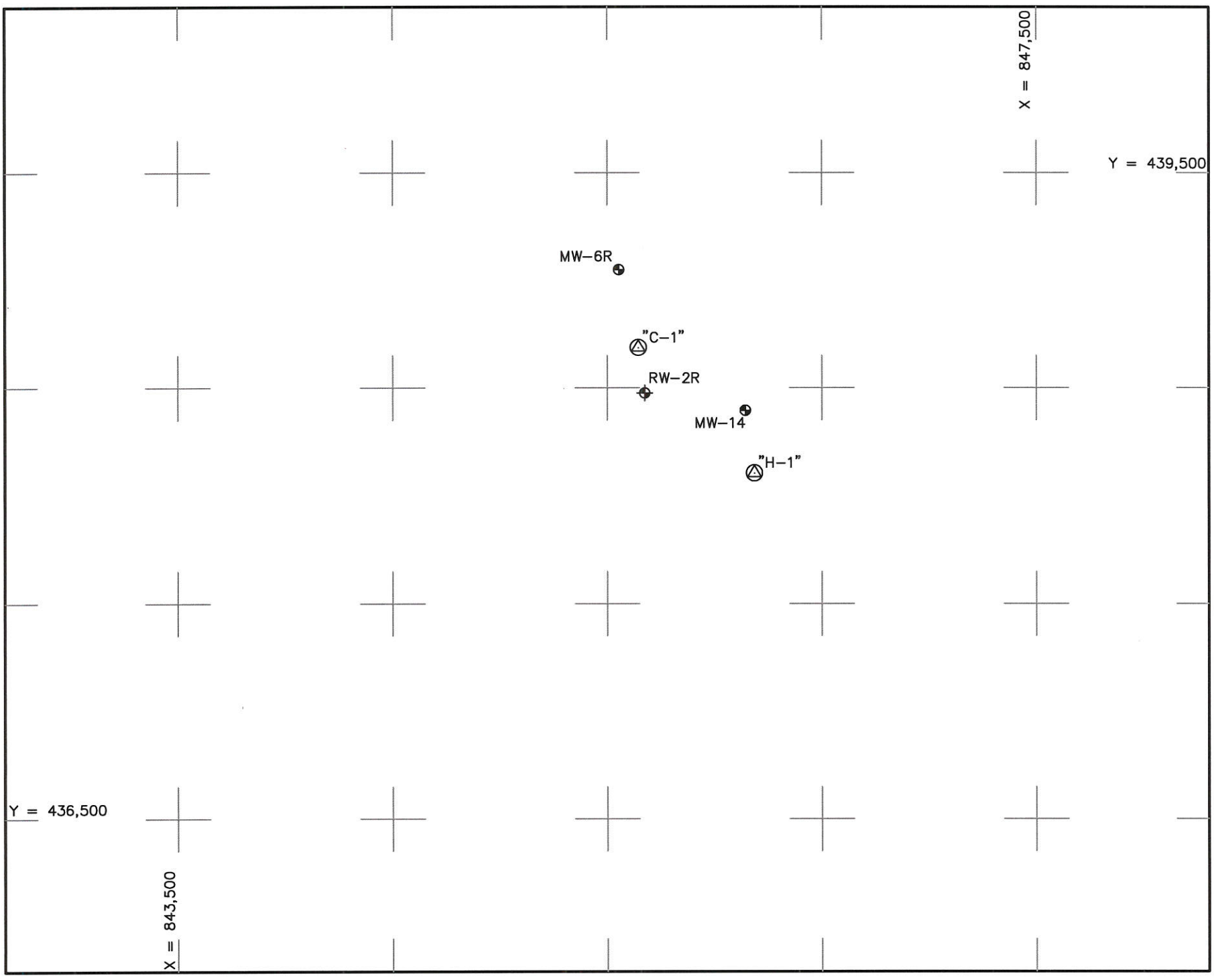
Development - Method: Bailing/Pumping Hole Diameter: 10"

Duration/Volume: 3 hour pump test/ 400 gallons (approx



Appendix D
Professional Survey – West Company of Midland, Inc.

B-2013-1497



THIS IS NOT A BOUNDARY SURVEY
Apparent property corners and property lines, if shown, are for information only.

Description	GEODETIC POSITIONS				STATE PLANE COORDINATES		Elevation		
	NORTH AMERICAN DATUM OF 1927				NAD '27 - New Mexico East Zone (US Ft.)		NGVD '29 (US Ft.)		
	Latitude (D.M.S.)	Longitude (D.M.S.)	Latitude (D.D.)	Longitude (D.D.)	Northing (Y)	Easting (X)	Top of Casing	Concrete Pad	Natural Ground
C-1	32°12'04.05" N	103°12'57.30" W	32.20112	-103.21592	438,685.31	845,644.54			3,318.6
H-1	32°11'58.24" N	103°12'51.08" W	32.19951	-102.21419	438,103.58	846,185.21			3,314.1
MW-6R	32°12'07.67" N	103°12'58.32" W	32.20213	-103.21620	439,050.20	845,553.45	3,321.50	3,319.33	3,319.1
RW-2R	32°12'01.97" N	103°12'56.98" W	32.68782	-102.81365	438,475.29	845,674.42	3,320.68	3,317.95	3,317.5
MW-14	32°12'01.12" N	103°12'51.53" W	32.30031	-103.21431	438,394.55	846,143.12	3,316.84	3,314.81	3,314.5

Date Surveyed: October 9, 2013
Weather: Warm & Breezy

NOTE:

1) Plane Coordinates shown hereon are Transverse Mercator Grid and Conform to the "New Mexico Coordinate System", New Mexico East Zone, North American Datum of 1927.

2) Elevations shown hereon reference the National Geodetic Vertical Datum of 1929.

3) Geodetic Coordinates shown hereon references the North American Datum of 1927, (Clarke Spheroid of 1866). Reference Stations – "ODESSA RRP2" – CORS (DF5393), "McDONALD VLBI" – CORS (AF9514) and "ROSWELL" – CORS (DG6517).

I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD IN A BONA FIDE SURVEY MADE UNDER MY SUPERVISION.

MACON McDONALD NEW MEXICO P.L.S. No. 12185

NEW MEXICO 12185 REGISTERED PROFESSIONAL SURVEYOR

WEST COMPANY
of Midland, Inc.
110 W. LOUISIANA, STE. 110
MIDLAND TEXAS, 79701
(432) 687-0865 – (432) 687-0868 FAX

GRID NORTH

LEGEND

- ⊕ – Denotes Monitor Well
- ⊕ – Denotes Recovery Well
- △ – Denotes Static GPS Control Station

600 0 600 1200
Graphic Scale in Feet

CONESTOGA-ROVERS & ASSOCIATES

Topographic Survey of
3 MONITOR WELLS
Located at the
Cooper Jal Site
Section 24
Township 24 South, Range 36 East, N.M.P.M.
Lea County, New Mexico

Drawn By: SJA	Date: November 1, 2013
Scale: 1" = 600'	Field Book: 376 / 77-80
Revision Date:	Quadrangle: Jal NW
W.O. No: 2013-1497	Dwg. No.: B-2013-1497

Appendix E
NMOSE Well Records, Logs and Plugging Report

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: MW-6

Well owner: CEMC Phone No.: _____

Mailing address: 1400 SMITH ST

City: HOUSTON State: TEXAS Zip code: 77002

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: HARRISON AND COOPER, INC.

2) New Mexico Well Driller License No.: WD-1670 Expiration Date: 4/30/15

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): KEN COOPER

4) Date well plugging began: 9/30/13 Date well plugging concluded: 9/30/13

5) GPS Well Location: Latitude: 32 deg, 12 min, 07.6 sec
Longitude: 103 deg, 12 min, 58.3 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 175 ft below ground level (bgl), by the following manner: TAPE MEASURE

7) Static water level measured at initiation of plugging: _____ ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 8/20/13

9) Were all plugging activities consistent with an approved plugging plan? YES If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	CEMENT W/PORTLAND BENTONITE MIX	131	130	TREMMIE	

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, KEN COOPER, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

K. Cooper — Signature of Well Driller

2/13/14 — Date

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): MW-6R	OSE FILE NUMBER(S): CP-1188
WELL OWNER NAME(S): Chevron EMC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 1400 Smith St	CITY: Houston STATE: TX ZIP: 77002

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	12	07.6	N
LONGITUDE	103	12	58.3	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1271	Ken Cooper	Harrison & Cooper, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
9/30/13	9/30/13	176	176	

COMPLETED WELL IS: ( ) ARTESIAN ( ) DRY HOLE (•) SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 120

DRILLING FLUID: ( ) AIR ( ) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: (•) ROTARY ( ) HAMMER ( ) CABLE TOOL ( ) OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	176	7 7/8	SCH 40 PVC Riser w/40' scr	FJ	4	1/4	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	7 7/8	cement	0.5	pour
2	126	7 7/8	bentonite grout	28	tremmie
126	176	7 7/8	silica sand 20/40	9	pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	60	60	tan sand	○ Y ◉ N	
60	110	50	red sand	○ Y ◉ N	
110	170	60	reddish tan sand	◉ Y ○ N	
170	176	6	red and blue clay	○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

KEN LOPER — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

2/13/14 — DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): MW-14	OSE FILE NUMBER(S): CP-1188
WELL OWNER NAME(S): Chevron EMC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 1400 Smith St	CITY: Houston STATE: TX ZIP: 77002

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	12	02.1	N
LONGITUDE	103	12	49.7	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

2. DRILLING & CASING INFORMATION

LICENSE NUMBER: WD-1271	NAME OF LICENSED DRILLER: Ken Cooper		NAME OF WELL DRILLING COMPANY: Harrison & Cooper, Inc.
DRILLING STARTED: 9/30/13	DRILLING ENDED: 9/30/13	DEPTH OF COMPLETED WELL (FT): 171	BORE HOLE DEPTH (FT): 171
DEPTH WATER FIRST ENCOUNTERED (FT):			
COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED)			STATIC WATER LEVEL IN COMPLETED WELL (FT): 120
DRILLING FLUID: ○ AIR ○ MUD ADDITIVES – SPECIFY:			
DRILLING METHOD: ◉ ROTARY ○ HAMMER ○ CABLE TOOL ○ OTHER – SPECIFY:			

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	171	7 7/8	SCH 40 PVC Riser w/40' scr	FJ	4	1/4	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	7 7/8	cement	0.5	pour
2	121	7 7/8	bentonite grout	28	tremmie
121	171	7 7/8	silica sand 20/40	9	pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	60	60	tan sand	○ Y ◉ N	
60	110	50	red sand	○ Y ◉ N	
110	170	60	reddish tan sand	◉ Y ○ N	
170	171	1	red and blue clay	○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

[signature] KEN COOK — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

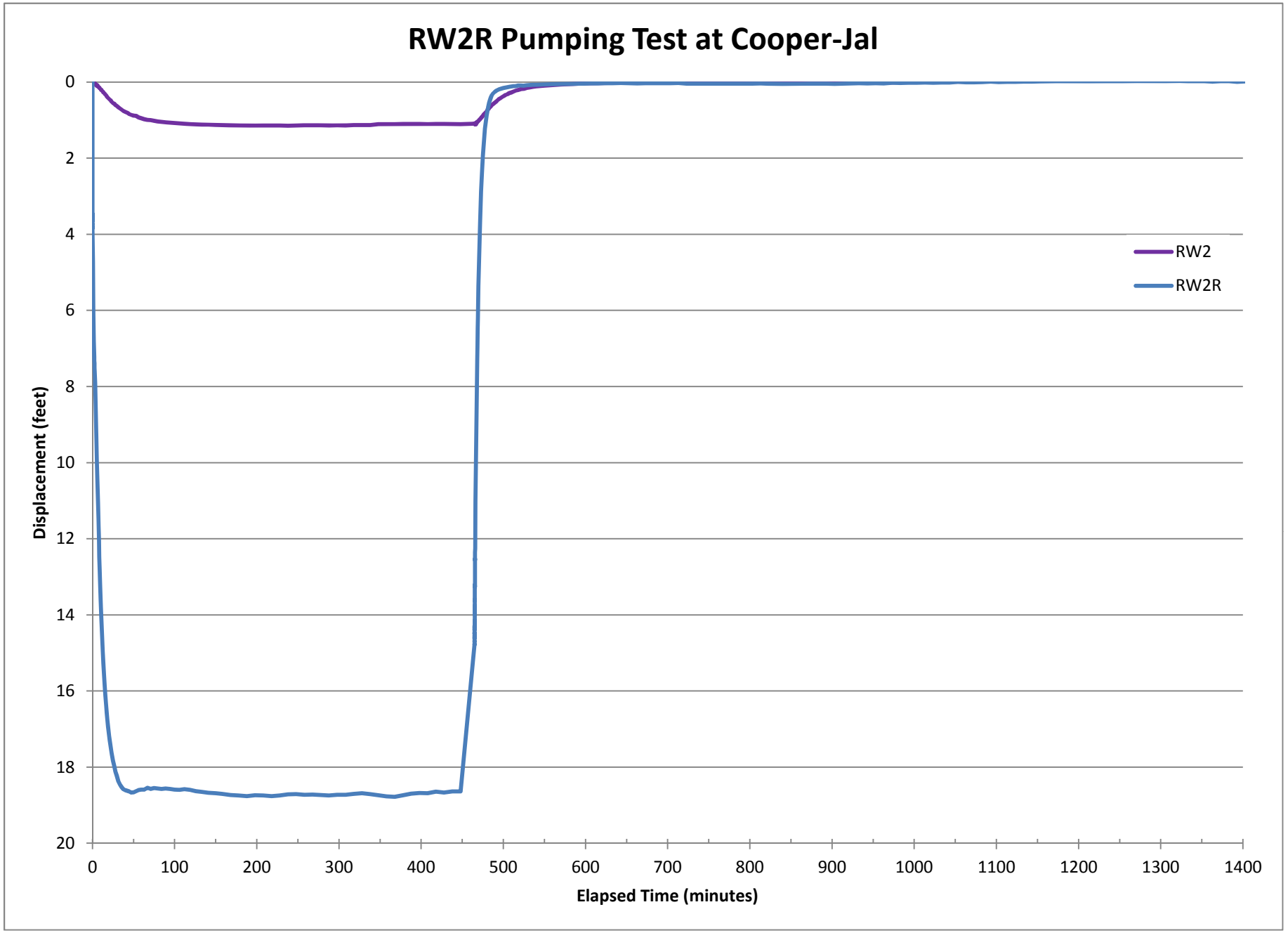
2/13/14 — DATE

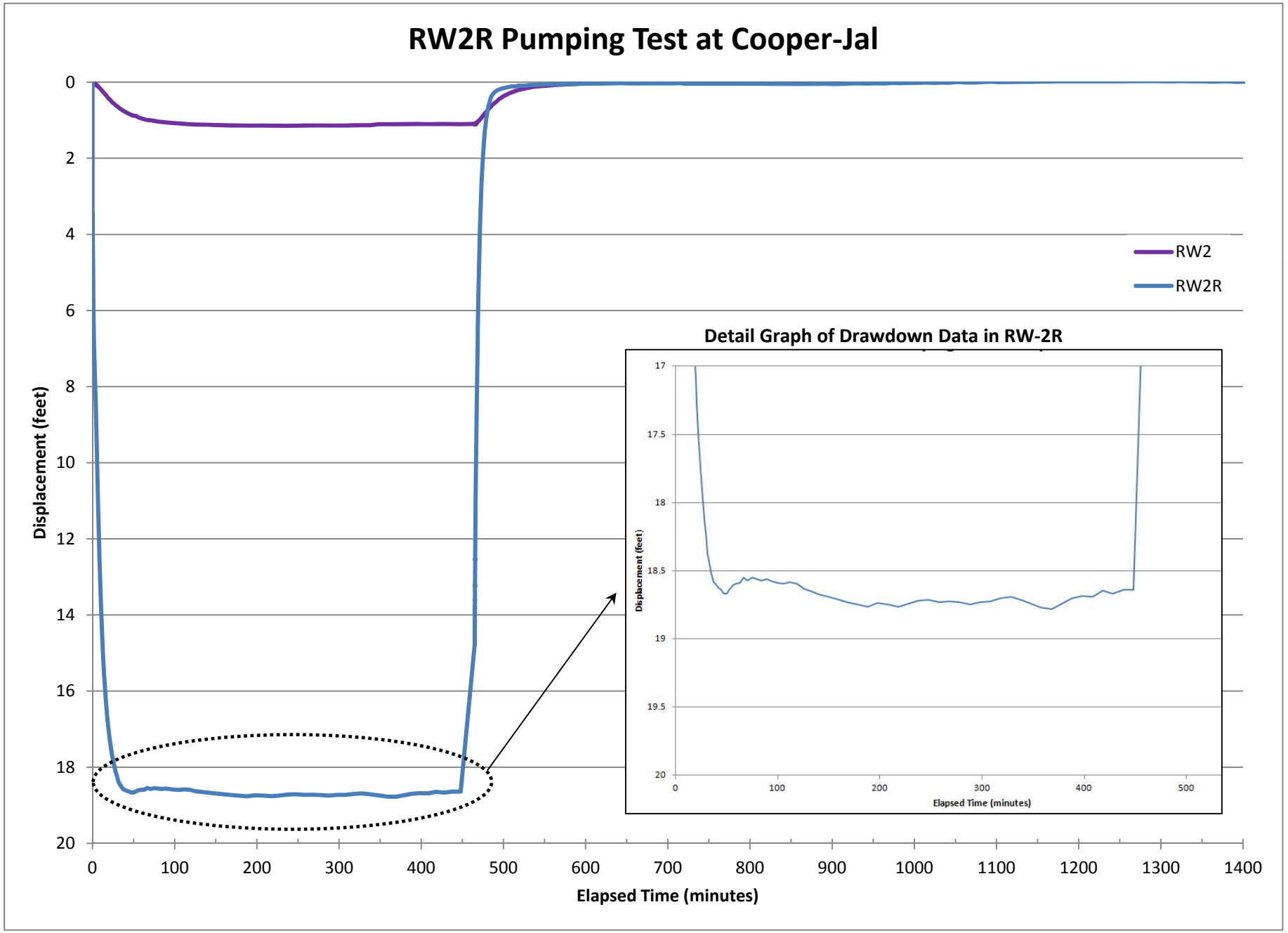
FOR OSE INTERNAL USE

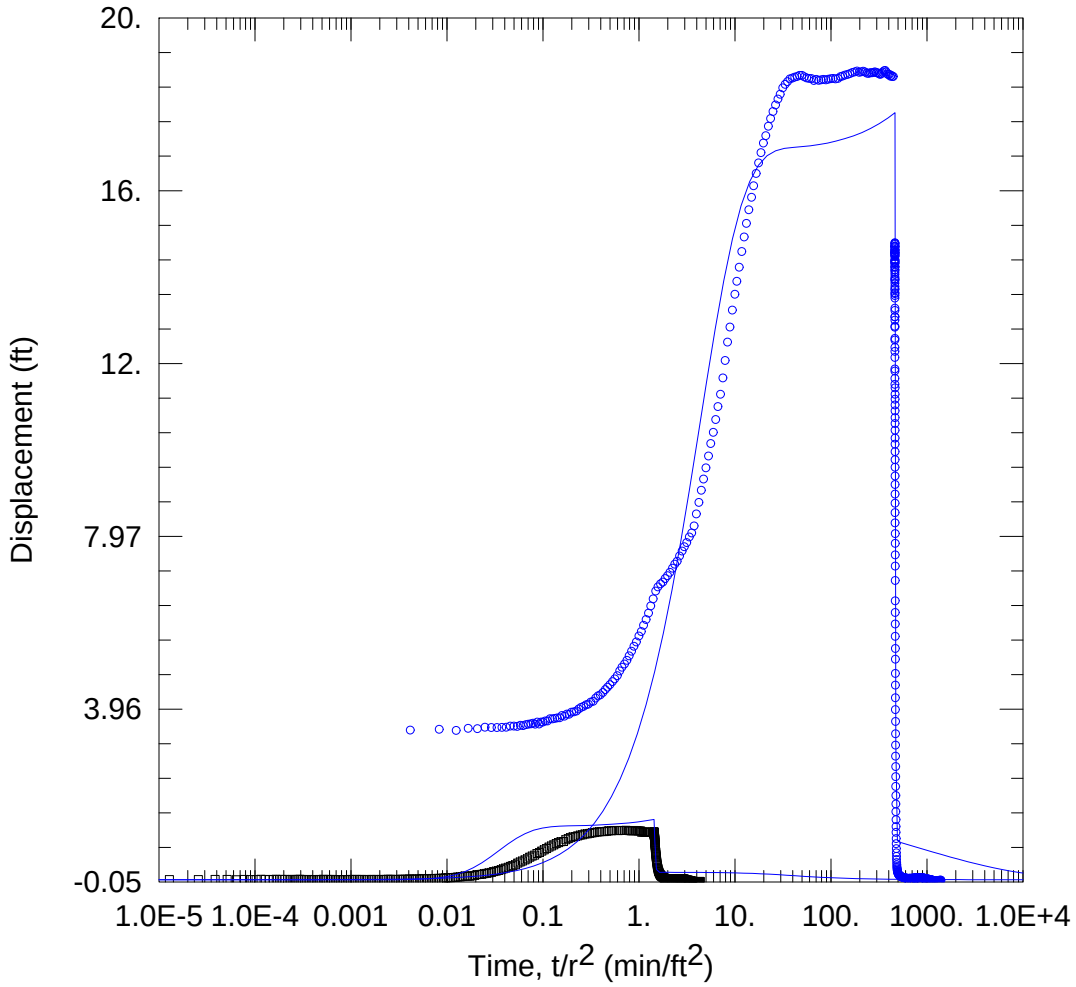
WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2

Appendix F
Aquifer Test Data


RW2R Pumping Test at Cooper-Jal
Displacement (feet)
0
2
4
6
8
10
12
14
16
18
20
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
Elapsed Time (minutes)
RW2
RW2R


RW2R Pumping Test at Cooper-Jal
Displacement (feet)
Elapsed Time (minutes)
RW2
RW2R
Detail Graph of Drawdown Data in RW-2R
Displacement (feet)
Elapsed Time (minutes)



RW2R PUMPING TEST

AQUIFER DATA

Saturated Thickness: 36. ft

Anisotropy Ratio (Kz/Kr): 3.741

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RW2R	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
○ RW2R	0	0
□ RW2	18	0

SOLUTION

Aquifer Model: Unconfined

Solution Method: Moench

T = 25.62 ft^2/day

Sy = 0.5

Sw = 0.

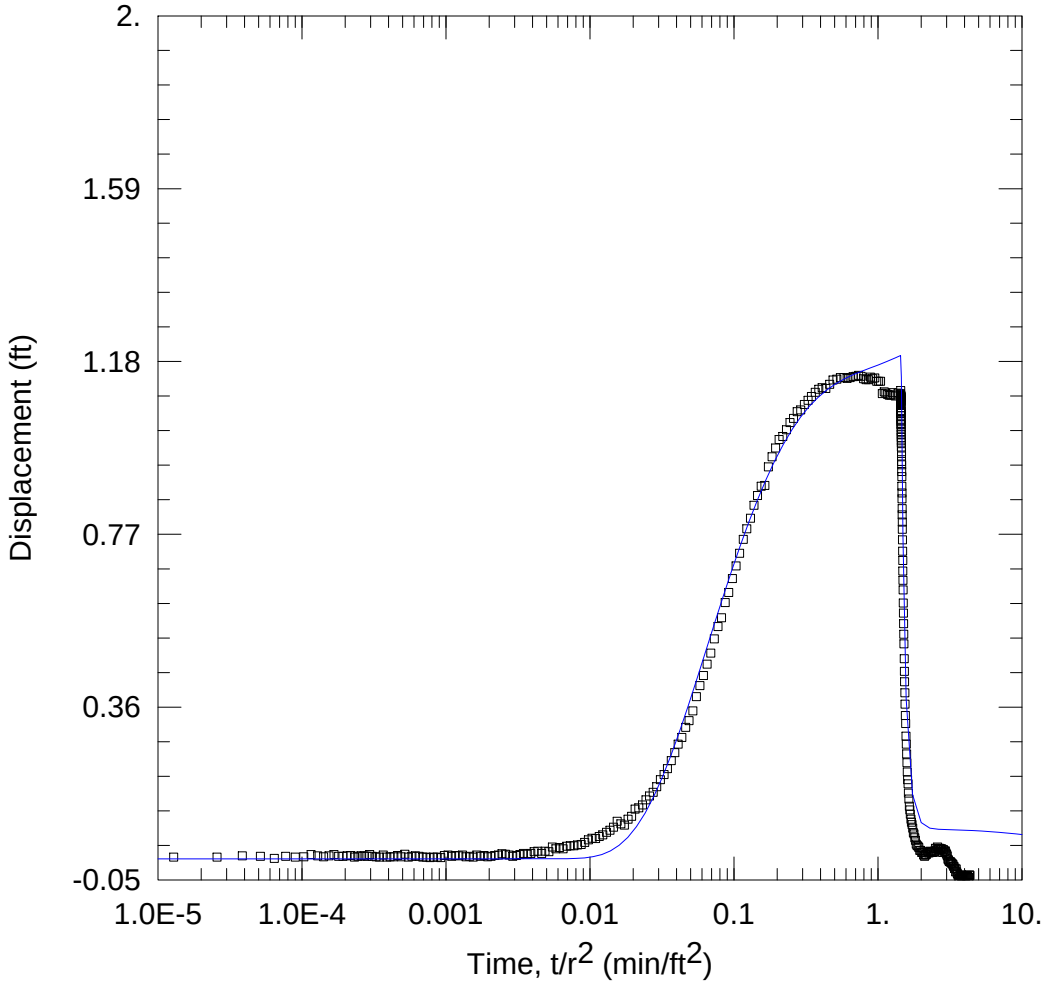
r(c) = 0.25 ft

S = 0.0002193

Kz/Kr = 3.741

r(w) = 1. ft

alpha = 1.0E+30 min^{-1}



RW2R PUMPING TEST

AQUIFER DATA

Saturated Thickness: 36. ft

Anisotropy Ratio (Kz/Kr): 0.6329

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RW2R	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
RW2	18	0

SOLUTION

Aquifer Model: Unconfined

Solution Method: Moench

T = 100.5 ft^2/day

Sy = 0.5

Sw = 0.

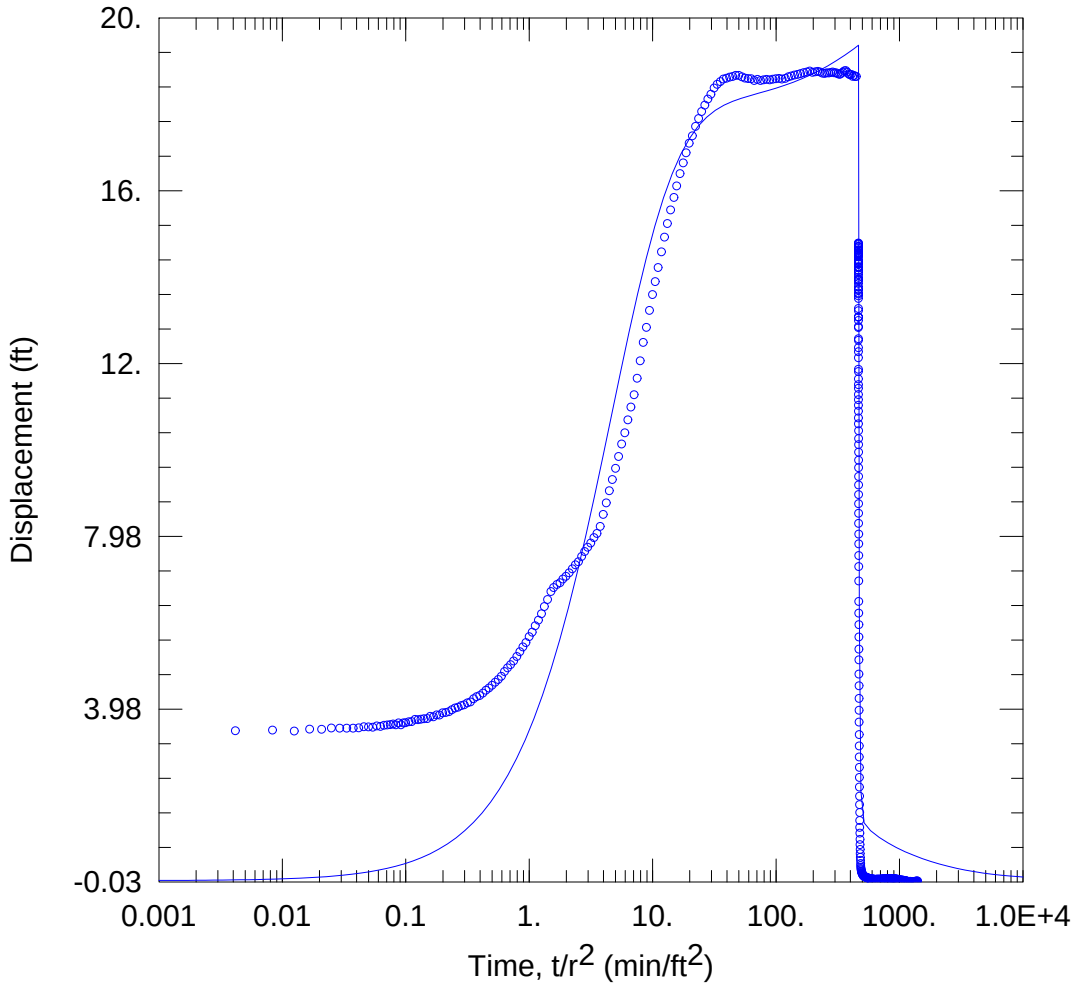
r(c) = 0.25 ft

S = 0.005641

ß = 0.1582

r(w) = 0.3 ft

alpha = 1.0E+30 min^{-1}



RW2R PUMPING TEST

AQUIFER DATA

Saturated Thickness: 36. ft

Anisotropy Ratio (Kz/Kr): 0.01296

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RW2R	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
○ RW2R	0	0

SOLUTION

Aquifer Model: Unconfined

Solution Method: Moench

T = 52.13 ft^2/day

Sy = 0.001

Sw = 0.

r(c) = 0.25 ft

S = 1.448E-5

ß = 1.0E-5

r(w) = 1. ft

alpha = 1.0E+30 min^{-1}

Appendix G
Waste Documentation/Bills of Lading

This Memorandum

is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. _____

Carrier No. _____

Page 1 of 1

Nabors

(Name of carrier) (SCAC)

Date _____

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee Nabors Completion & Production Services (Permian) LLC

Street 3221 N W County Rd

City Hobbs State New Mexico Zip Code 88240

FROM:
Shipper Chevron Environmental Management Co.

Street Unit Letter J, NW 1/4 SE 1/4 Section 24 T-24-S, R-36-E Lea County

City _____ State NM Zip Code 88240

24 hr. Emergency Contact Tel. No. 432 202 9933

Route

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
		Non DOT Regulated Waste (Caustic)	500 barrel tank			

PLACARDS TENDERED: YES ☐ NO ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

_____ Signature

REMIT C.O.D. TO:
ADDRESS

COD Amt: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Chevron Environmental Management Co.

PER _____

CARRIER _____

PER NOPS

DATE 10/7/13

4

Permanent post-office address of shipper.

This Memorandum

is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. _____

Carrier No. _____

Page 1 of 1

Nubors
(Name of carrier) (SCAC)

Date _____

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee Nubors State AB SWD
Street 3221 NW County Road
City Hobbs State NM Zip Code 88240

FROM:
Shipper Chevron Environmental Management Company
Street Unit Letter J, NW 14, Sec 14, Section 24 T-24-S R-38E
City Lea County State NM Zip Code 88240
24 hr. Emergency Contact Tel. No. 432 202 9700

Route .

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
		Non DOT Regulated material (water)	80 bbl			

PLACARDS TENDERED: YES ☐ NO ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

_____ Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Chevron Environmental Management Co.
PER Emilie Robinson Agent on behalf of CEMC.

CARRIER Wayne M Kemp
PER
DATE 10-7-13

4

Permanent post-office address of shipper.

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
			0012937

GENERATOR

5. Generator's Name and Mailing Address

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1.	1	cm	20		
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name — Signature — Month — Day — Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Uriel Flores	Uriel Flores	10	7	15
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month — Day — Year

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
			0012938

5. Generator's Name and Mailing Address

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1.	1	cm	20		
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name — Signature — Month — Day — Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Rudy Lopez — Signature: Rudy Lopez — Month: 10 — Day: 17 — Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month — Day — Year

24 HOUR SERVICE

SUNDANCE SERVICES, Inc.

P.O. Box 1737 Eunice, New Mexico 88231 (575) 394-2511

PRC #1750108

12971

AUTHORIZATION FOR WORK

DATE 10/7/13

YOUR NO. 7802

COMPANY Chevron

LEASE Cooper Jal

MAIL INVOICE TO: Chevron EMC

WELL Freddie Robinson (authorized agent)

DESCRIPTION OF WORK

Pick & dispose of (soil cuttings)

Equipment Used	Rolloff	@$		Hrs. worked		Total	
Box Rent	✓	@$		Hrs. worked		Total	
Liner	✓	@$		Hrs. worked		Total	
Jet Out		@$		Hrs. worked		Total	
Disposal	✓	@$		Hrs. worked		Total	
Disposal Facility	SSI	@$		Hrs. worked		Total	
Box No. Delivered		@$		Hrs. worked		Total	
Box No. Picked Up	64	@$		Hrs. worked	1.50	Total	

24-HOUR SERVICE

SUNDANCE SERVICES, Inc.

P.O. Box 1737 Eunice, New Mexico 88231 (575) 394-2511

PRC #1750108

12972

AUTHORIZATION FOR WORK

DATE 10/7/13

YOUR NO. 286005

COMPANY Chevron

LEASE Cooper Jal

MAIL INVOICE TO: Chevron EMC

WELL Freddie Robinson (agent)

DESCRIPTION OF WORK

Pick & dispose (soil cuttings)

Equipment Used	Rolloff	@$		Hrs. worked		Total	
Box Rent	✓	@$		Hrs. worked		Total	
Liner	✓	@$		Hrs. worked		Total	
Jet Out		@$		Hrs. worked		Total	
Disposal	✓	@$		Hrs. worked		Total	
Disposal Facility	SSI	@$		Hrs. worked		Total	
Box No. Delivered		@$		Hrs. worked		Total	
Box No. Picked Up		@$		Hrs. worked		Total	

24-HOUR SERVICE

SUNDANCE SERVICES, Inc.

P.O. Box 1737 Eunice, New Mexico 88231 (575) 394-2511

PRC #1750108

12665

AUTHORIZATION FOR WORK

DATE 9/25/13

YOUR NO. _____

COMPANY Chevron

LEASE Cooper Jal

MAIL INVOICE TO: Chevron EMC 1400 Smith St Houston, TX

WELL Freddie Robinson (another agent)

DESCRIPTION OF WORK

Deliver 2 bins to location

Equipment Used	@$	Hrs. worked		Total
Box Rent	@$	Hrs. worked		Total
Liner	@$	Hrs. worked		Total
Jet Out	@$	Hrs. worked		Total
Disposal	@$	Hrs. worked		Total
Disposal Facility	@$	Hrs. worked		Total
Box No. Delivered	@$	Hrs. worked		Total
Box No. Picked Up	@$	Hrs. worked		Total