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January 9, 2015

Mr. William C. Renfro, P.G.
Senior Technical Coordinator
Railroad Commission of Texas
1701 North Congress
Austin, Texas 78711-2967

Re: August 2014 Wendkirk Oil Field BMP Sampling Event Results, Upper Colorado River Segment 1426 Downstream of E.V. Spence Reservoir, Wendkirk Oil Field, Coke County, Texas

Dear Mr. Renfro:

The purpose of this report is to present the results of the Best Management Practice (BMP) monitoring activities conducted during August 2014 at the Wendkirk Oil Field located in Coke County, Texas (Site). The Railroad Commission of Texas (RRC) requested that TRC Environmental Corporation (TRC) perform sampling of groundwater and surface water around the Site to monitor the current site conditions and support BMP development to reduce salinity loading to the Colorado River.

INTRODUCTION

In 2000, the Texas Commission on Environmental Quality (TCEQ) placed Segment 1426 on the State of Texas' 303(d) list as the surface water does not meet the water quality standards for total dissolved solids (TDS) and chloride (salinity parameters). The Site is located along Segment 1426 of the Upper Colorado River between the E.V. Spence and O.H. Ivie Reservoirs downstream of the town of Robert Lee (see Figure 1). Groundwater with elevated salinity at the Wendkirk Oil Field Site has been identified as contributing to elevated salinity in the Colorado River.

RRC staff completed phase 1 of this project in 2008 with funding from United States Environmental Protection Agency's (USEPA) Section 319 non-point source (NPS) program of the Clean Water Act (CWA), administered by the TCEQ, and RRC's Oil and Gas Regulation and Cleanup Fund. Phase 1 investigation activities were conducted between July 2006 and August

2008 to evaluate potential salinity loading to the Colorado River. Activities included the installation of 20 monitoring wells and one observation well, and collection of soil, groundwater, and surface water samples for analytical testing. Results from the phase 1 investigation revealed that groundwater south of the Colorado River in the area encompassing monitoring wells MW-05, MW-10, and MW-11 had elevated salinity. Based on the groundwater flow direction, surface water and groundwater elevations, and salinity concentrations in groundwater, RRC staff concluded that groundwater impacted with produced water is likely contributing elevated salinity into the Colorado River.

The phase 1 investigation conducted under the NPS grant indicated that the Mays-01 water well may have been a potential vertical conduit for saline impacts from the Coleman Junction formation, which is approximately 2,500 feet below ground surface and contains predominantly high sodium/chloride water. The Mays-01 water well appeared to have possibly been a plugged-back oil well that was converted to a water well. This well was plugged by the RRC on July 9, 2008, as a recommended BMP in order to prevent any potential salinity impacts from deeper formations via the Mays-01 well. During the plugging of the Mays-01 water well, it was determined that the total depth of the well (190 feet) was not sufficient to provide a conduit to the Coleman Junction formation, and it was confirmed that the well was drilled as a water well and not a plugged-back oil or gas well. A monitoring event was subsequently performed in January 2009 to evaluate the efficacy of the Mays-01 BMP. The results of the BMP evaluation indicated that water well Mays-01 does not appear to be a pathway for saline water to migrate from deeper formations. An additional monitoring event was performed in December 2011. Analytical results from this event indicated that chloride concentrations were consistent with previous events and exhibited increases in some of the wells.

In 2013, the USEPA awarded an additional NPS grant through the TCEQ to the RRC for the development/refinement of remediation/abatement alternatives or other BMPs and the implementation of the BMPs at the Wendkirk Oil Field. The grant is designated for fiscal years (September 1 to August 31) 2014, 2015, and 2016. The goal of the project is to design, install, and operate BMPs in order to mitigate the salinity load into the Colorado River from impacted groundwater beneath the Site. Tasks associated with this grant project include preparation of monitoring and modeling Quality Assurance Project Plans (QAPPs), investigation of optimum implementation locations for BMPs, implementation of a saline water extraction system, and BMP effectiveness monitoring.

The objectives of the August 2014 monitoring event was to collect current data on the distribution of salinity in groundwater and surface water, supplement the previous investigation results, determine if additional delineation of high salinity groundwater is needed, and support future groundwater modeling efforts. This report presents the data collected from the August 2014 monitoring event.

GROUNDWATER AND SURFACE WATER MONITORING

TRC conducted groundwater and surface water monitoring activities at the Wendkirk Oil Field Site from August 4 through August 7, 2014. TRC personnel coordinated field activities with the RRC San Angelo District 7C Office to obtain access to sample locations, which are located on private properties. Field activities during this monitoring event were completed in accordance with the Monitoring QAPP dated July 2014 and the Work Plan dated July 2014. Field activities included synoptic well gauging, surface water sampling, groundwater sampling, Quality Assurance/Quality Control (QA/QC) sampling, and investigation-derived waste (IDW) management. Surface water sampling and groundwater monitoring well locations are illustrated on Figure 2. The monitoring activities were completed in accordance with the Work Plan and QAPP with the following variances:

- A surface water sample was not collected from the seep (SP-01) or spring (SG-4314102) locations, because they were dry during the August 2014 monitoring event.
- Surface water samples were not collected from five river segment locations (RS-12, RS-13, RS-14, RS-16, and RS-17) due to the lack of surface water present in the Colorado River. TRC dug shallow excavations approximately 1.5 feet into the alluvial material of the river bed at river segment locations RS-12, RS-13, RS-14, RS-16, and RS-17 in an attempt to intercept groundwater base flow, which was last encountered at these locations during the December 2009 monitoring event. No base flow was noted in any of the excavations.
- Flow measurements of the Colorado River were not collected because of the lack of surface water during the August 2014 monitoring event. A pond of surface water was present at location RS-15, but no surface water was present either upstream or downstream from this location (i.e., no flow).

A synoptic groundwater gauging event was conducted on August 5, 2014, prior to groundwater sampling activities. The wells were subsequently purged and sampled using a disposable polyethylene bailer to remove at least three well casing volumes of groundwater or until three consecutive readings of field parameters indicated stability. Field parameters measured during purging included temperature, conductivity, pH, TDS, and oxidation-reduction potential (ORP). The field parameter information was recorded on Groundwater Sampling Forms, which are provided in Attachment 1. A copy of the field logbook is also provided in Attachment 1.

The single surface water sample was collected directly into laboratory containers at the sampling location (RS-15). Field parameters were measured *in situ* at the surface water sampling location using a properly calibrated YSI Model 6920 water quality meter. Field parameters consisted of pH, temperature, conductivity, TDS, and ORP. The Surface Water Sampling Form is also provided in Attachment 1, along with the YSI calibration log.

Surface water and groundwater samples were submitted to DHL Analytical (DHL) in Round Rock, Texas for the following laboratory analyses:

- Anions (Bromide, Chloride, Nitrate, and Sulfate) by EPA Method 300.0
- Alkalinity (Carbonate, Bicarbonate, and Total) EPA Method SM 2320B
- Cations (Calcium, Magnesium, Potassium, and Sodium) by EPA Method 6020A
- Total filterable residue (i.e., TDS) by EPA Method SM 2540C.

Copies of the DHL analytical reports and chain-of-custody forms are provided in Attachment 2. Groundwater and surface water sample locations are depicted in Figure 2. Discussion of analytical data in this report is based on chloride as the key analyte for the Site.

MONITORING RESULTS

Fluid Level Measurements

Twenty monitoring wells (MW-1 through MW-20), one observation well installed near the former Mays-01 water well (OW-1), and three water wells (Mays-02, Milford-01, Milford-02) were synoptically gauged on August 5, 2014. Table 1 presents the monitoring well gauging data including ground surface elevations, top of well casing elevations, depth-to-water level measurements from top of casing, and calculated water elevations. The groundwater potentiometric map for August 2014 is presented as Figure 3.

The driving hydraulic feature at the Site is the presence of the Colorado River; predominant groundwater flow is toward the river. North of the Colorado River, groundwater flow is to the southeast toward the river. South of the Colorado River, although there are localized variations in flow, groundwater generally flows to the north and northeast toward the river. The highest groundwater elevation was observed in the area near monitoring well MW-20. Groundwater elevations and flow directions are generally consistent with previous gauging events completed between August 2006 and December 2011.

Surface Water Level and Stream Flow Measurements

There are currently no stream gauging stations present for surface water level measurements. Additionally, surface water was absent at the Site, except at the RS-15 sampling location. A limited pond of surface water was observed at this location, but no surface water was present either upstream or downstream. No stream flow measurements could be collected.

Surface Water Analytical Results

Prior to the December 2011 monitoring event, surface water samples were collected from the Colorado River in July 2006, August 2006, April 2007, and January 2009. Surface water

samples were not collected from river segment sampling locations RS-12, RS-13, RS-14, RS-16, and RS-17 during the August 2014 monitoring event due to the lack of water in the Colorado River. Surface water was also absent at the Mays Ranch Creek, Mays Ranch Seep, and Spring 4314102 locations. The lack of surface water during the August 2014 monitoring event was consistent with the lack of surface water present during the December 2009 and December 2011 monitoring events. TRC dug shallow excavations approximately 1.5 feet into the alluvial material of the Colorado River bed at river segment locations RS-12, RS-13, RS-14, RS-16, and RS-17 to determine if groundwater base flow was present beneath the Colorado River bed for sampling. No water flowed into the shallow excavations for sampling.

A pool of standing water was observed at surface water sampling location RS-15 and was sampled according to the July 2014 QAPP and Work Plan. The chloride concentration detected in August 2014 (18,900 mg/L) was one to two orders of magnitude higher than the samples collected from July 2006 through January 2009. This location was dry during the December 2011 event. The pool of standing water exhibited evidence that it was shrinking due to evaporation. The elevated chloride concentrations detected at RS-15 in August 2014 may be the result of elevated-chloride base flow undiluted by the flow of the river from upstream sources or storm water runoff, or concentration of chlorides as a result of evaporation. A salt crust was noted on surface soils in several areas of the river. Storm water traveling as sheet flow may dissolve the precipitated salt and concentrate it in ephemeral pools such as the one found at location RS-15. Nearby groundwater monitoring wells upgradient of the RS-15 surface water pool generally contain lower chloride concentrations, suggesting that the elevated chloride concentration at this location may not be the result of groundwater base flow. Surface water analytical results are summarized in Table 2.

Groundwater Results

During the August 2014 monitoring event, groundwater samples were collected from twenty monitoring wells (MW-01 through MW-20), one observation well (OW-01), and six water wells (4313603, 4313605, 4313608, Mays-02, Milford-01, and Milford-02). The groundwater analytical results are summarized in Table 3. The chloride concentrations from August 2014 are presented on a chloride isoconcentration map as Figure 4.

The August 2014 analytical results for groundwater were similar to analytical results from previous sampling events completed between July 2008 and December 2011. Chloride concentrations were higher in groundwater south of the Colorado River in the Wendkirk Oil Field and ranged from 285 milligrams per liter (mg/L) in MW-2 to 27,100 mg/L in MW-18. For monitoring wells north of the Colorado River, chloride concentrations ranged from 244 mg/L in MW-7 to 8,470 mg/L in MW-13. The chloride concentrations in MW-9 and MW-13, located along the northern riverbank, increased between December 2011 and August 2014, which in conjunction with the absence of surface water in the river may indicate that the Colorado River is

not an effective hydrological barrier or divide to mixing of groundwater north and south of the river during periods of drought when the river is dry for an extended period of time. The plume appears to be expanding in that direction. Sample results from the Milford-01 and Milford-02 water wells located north of the river near RS-16 confirmed the lower chloride concentrations detected during the December 2011 event.

There is a broad area of groundwater impacted with elevated chloride concentrations exceeding 10,000 mg/L along the southern bank of the river stretching from well MW-18 past well MW-11. There appear to be multiple possible sources of elevated chlorides: in the vicinity of OW-1 (former Mays-01 well); and, near or upgradient of MW-18 and the Mays-02 well. In general, chloride concentrations decrease downgradient to cross-gradient of these areas to less than 10,000 mg/L, but slight increases in chloride concentrations were observed at wells MW-1 and MW-6, which are located approximately a mile or more cross-gradient from the suspected source area(s). Chloride concentrations have been consistently elevated at MW-1 and MW-6, which could be the result of variations associated with the hydrogeologic regime or could indicate other possible sources. A brief discussion of areas with notably high chloride levels is provided below.

Mays-02 and surrounding area

Chloride was detected in the Mays-02 well at a concentration 18,800 mg/L. Chloride decreased sharply upgradient at MW-20 to 999 mg/L during the August 2014 sampling event, but increased downgradient to a concentration of 27,100 mg/L at MW-18. A chloride concentration similar to those observed in the Mays-02 well was also detected in downgradient monitoring well MW-12 (19,000 mg/L), but concentrations appear to decrease downgradient in the direction of MW-19 (8,570 mg/L). Chloride concentrations in monitoring wells MW-12 and MW-18, located along the southern bank of the Colorado River, have been relatively stable since 2007. The presence of elevated chloride concentrations in MW-18 and water well Mays-02 suggests a possible source or sources upgradient of these wells in the south and southwest direction, where the lateral extent of the affected groundwater plume is not delineated.

OW-1 and surrounding area (former Mays-01 well area)

Well OW-1 was installed in the vicinity of the Mays-01 well to monitor groundwater conditions in that suspected source area after the Mays-01 well was plugged in 2008. Subsequent to the well plugging, it was determined that the Mays-01 well was unlikely to be a conduit for migration of high salinity groundwater from the deeper Coleman Junction formation; however, chloride concentrations remain elevated in that area. During the August 2014 sampling event, chloride was detected in OW-1 at a concentration of 25,500 mg/L. Chloride levels in OW-1 have remained consistently elevated since monitoring began in July 2008. Chloride concentrations in MW-17, located approximately 400 feet to the southeast and upgradient of OW-1, has

consistently been lower than OW-1. Chloride concentrations in wells downgradient and cross-gradient of OW-1 remain elevated for over 2,000 feet and extend across the Colorado River to MW-8 (7,170 mg/L), MW-13 (8,470), and MW-14 (5,880). Chloride concentrations appear to represent background levels further downstream of the river and downgradient at wells MW-2 (285 mg/L) and MW-7 (244 mg/L). This portion of the plume lacks delineation in all directions except to the northeast at wells MW-2 and MW-7.

Quality Assurance Project Plan

The analytical results were reviewed for compliance with the QA/QC criteria established in the July 2014 QAPP. The QA/QC analytical data review is presented in Attachment 4. QA/QC data associated with laboratory measurements indicate that measurement data are defensible and that measurement data reliability is generally within expected limits of sampling and analytical error given the data interpretation issues identified in the evaluation.

INVESTIGATION-DERIVED WASTE MANAGEMENT

The August 2014 sampling event generated approximately 165 gallons of IDW purge and decontamination water. The IDW water was temporarily stored in 55-gallon drums staged near monitoring well MW-04. Transportation and disposal of the IDW at a facility permitted to accept RRC exempt waste is currently being coordinated with the RRC San Angelo District 7C.

CONCLUSIONS

The following conclusions were developed based on the previous site investigation results and the August 2014 monitoring results:

- The August 2014 groundwater elevations are generally consistent with previous gauging events and indicate groundwater flow to the north of the Colorado River is to the southeast toward the river. South of the Colorado River, groundwater flow is generally to the north and northeast toward the river.
- Surface water was absent at all sampling locations except for RS-15, where a limited pond of non-flowing water was observed. No surface flow measurements were collected.
- Chloride concentrations in surface water sample RS-15 were significantly higher than previous sampling events. Concentrations were likely higher due to the absence of flowing surface water in the Colorado River and loss of water in the pond through evaporation.
- Chloride concentrations in August 2014 groundwater samples collected at the site were generally consistent with past monitoring events, with the exception of MW-9 and MW-13. Chloride concentrations in MW-9 and MW-13, located north across the river, had been relatively stable but exhibited increases in August 2014. Increasing chloride concentrations

across the river may indicate that the Colorado River is not an effective hydrological barrier or divide during extended times of drought, and the plume appears to be expanding in that direction.

- There is a broad area of groundwater impacted with elevated chloride concentrations exceeding 10,000 mg/L along the southern bank of the Colorado River stretching from well MW-18 past well MW-11. Possible sources of elevated chlorides appear to be present in the vicinity of OW-1 (former Mays-01 well), and near or upgradient of MW-18 and the Mays-02 water well. Chloride concentrations generally decrease downgradient to cross-gradient of these areas to less than 10,000 mg/L. Slight increases in chloride concentrations were observed at wells MW-1 and MW-6, which are located at a significant distance from the other monitoring wells and may indicate other possible source area(s).
- With the exception of downgradient locations MW-2 and MW-7, the lateral extent of salinity impacts in groundwater is not delineated. Additional monitoring wells are needed to define the lateral extent of the plume and to investigate other potential sources, particularly upgradient and cross-gradient of MW-18 and the Mays-02 water well.

RECOMMENDATIONS

Based on the data collected in August 2014 and previous investigations, the following actions are recommended:

- Continue groundwater and surface water monitoring to monitor chloride distribution and evaluate temporal trends in the areas exhibiting the most elevated salinity concentrations.
- Installation of stream gauges and piezometers to monitor the interaction of groundwater and surface water, evaluate when the river is a gaining versus a losing stream (when water is present), and to collect additional data associated with the surface water system for upcoming groundwater modeling efforts.
- Installation of additional monitoring wells to complete delineation of the high salinity groundwater plume. Proposed well locations are shown on Figure 5. Additional monitoring wells are recommended as follows:
 - East of well MW-3;
 - Southeast of well MW-1;
 - West of well MW-6;
 - Southwest of well Mays-02;
 - Southwest of well MW-18;
 - West of well MW-9; and,
 - Northwest of well MW-14.

Mr. William C. Renfro, P.G.

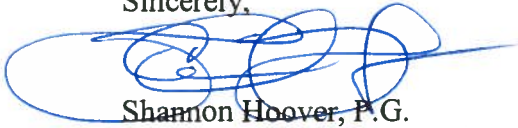
January 9, 2015

Page 9

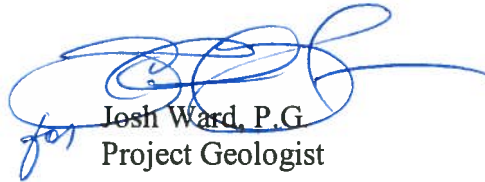
- Investigate other potentially leaking oil and gas wells or salinity sources in the area.

TRC appreciates the opportunity to assist the RRC with this project. If you have any further questions or comments, please do not hesitate to contact me at (512) 684-3127.

Sincerely,



Shannon Hoover, P.G.
Senior Project Manager



Josh Ward, P.G.
Project Geologist

cc: Brian Floyd, RRC District 7C, San Angelo, Texas

FIGURES

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Groundwater Potentiometric Surface Map - August 2014
Figure 4	Groundwater Chloride Isoconcentration Map
Figure 5	Proposed Monitoring Well Locations

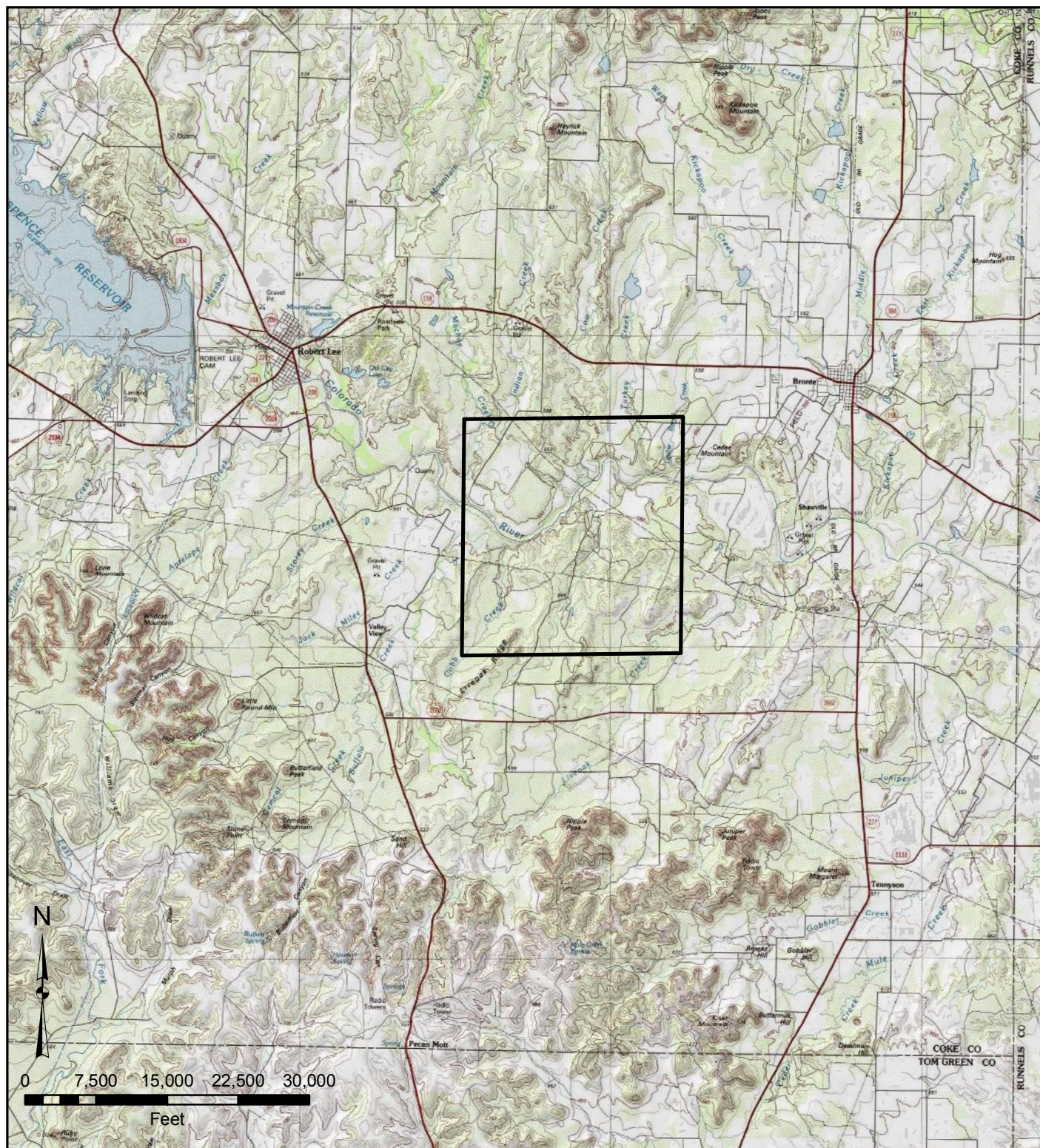
TABLES

Table 1	Groundwater Elevation Data
Table 2	Surface Water Data Summary
Table 3	Groundwater Data Summary

ATTACHMENTS

- Attachment 1 Field Forms
- Attachment 2 Laboratory Analytical Data Reports
- Attachment 3 Analytical Data Review/Data Validation Checklist

FIGURES



LEGEND:

— SITE AREA

SOURCE:

U.S.G.S. 100K SERIES TOPOGRAPHIC MAP,
ROBERT LEE, TEXAS (2010)

SITE LOCATION MAP

RAILROAD COMMISSION OF TEXAS
WENDKIRK OIL FIELD 2014 BMP MONITORING ACTIVITIES
COKE COUNTY, TEXAS

AUTHOR: MLOVELACE

SAVED: 10/02/2014

MXD: 219393_1

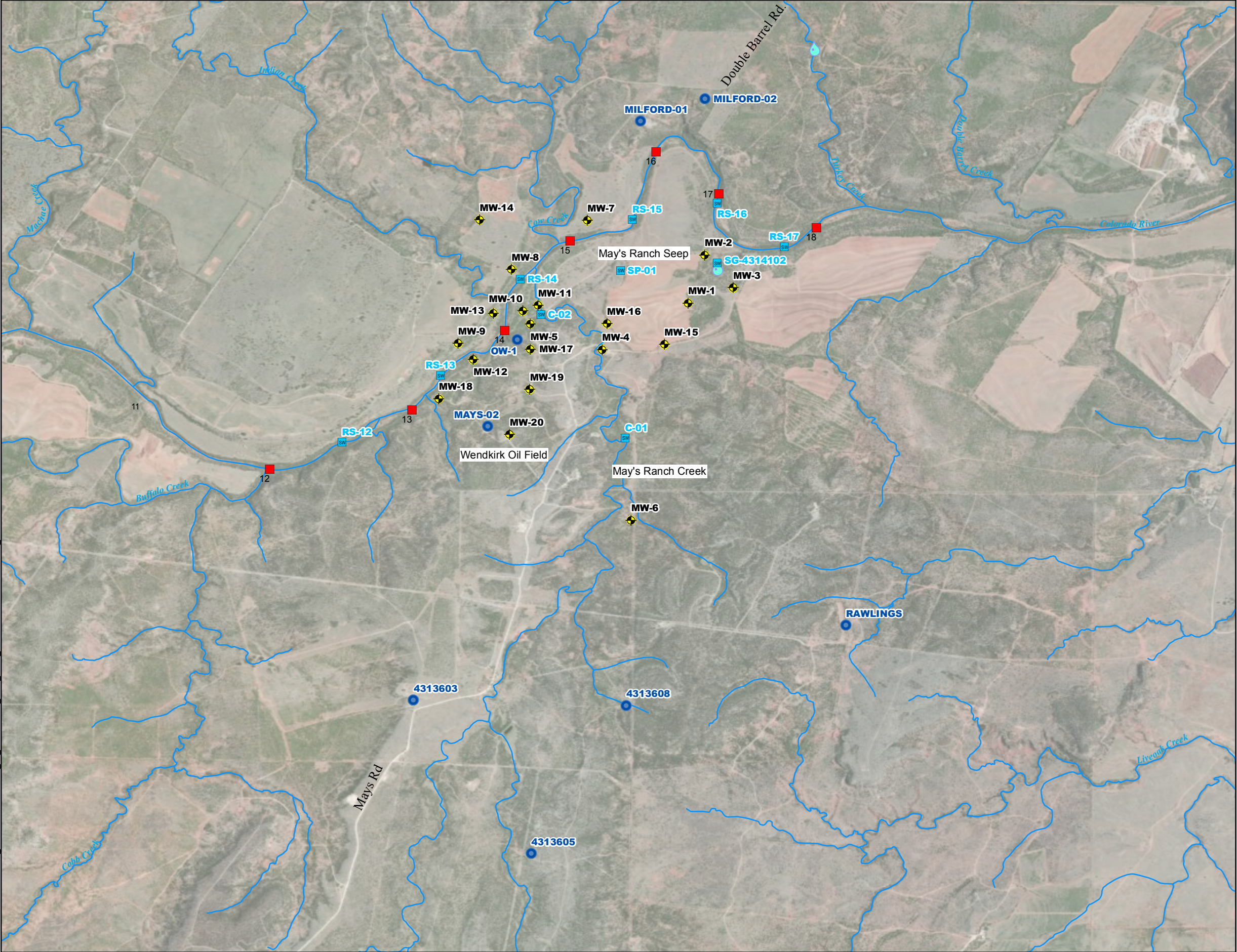


505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE

1

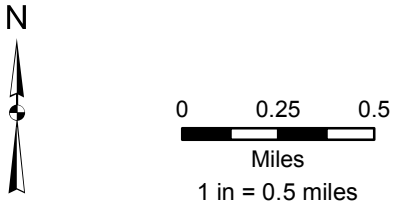
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LEGEND

- MONITORING WELL
- SURFACE WATER SAMPLE
- WATER WELL
- BUREAU OF ECONOMIC GEOLOGY RIVER SEGMENTS FOR MACHAE CREEK AREA (KILOMETER MARKERS)
- SPRINGS
- RIVERS/STREAMS

SOURCE:
1. National Hydrography Dataset (surface drainage).
2. Aerial imagery copyright Microsoft and their data partners.



SITE MAP

RAILROAD COMMISSION OF TEXAS
WENDKIRK OIL FIELD BMP MONITORING ACTIVITIES
COKE COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 10/2/2014	MXD: 219394_2
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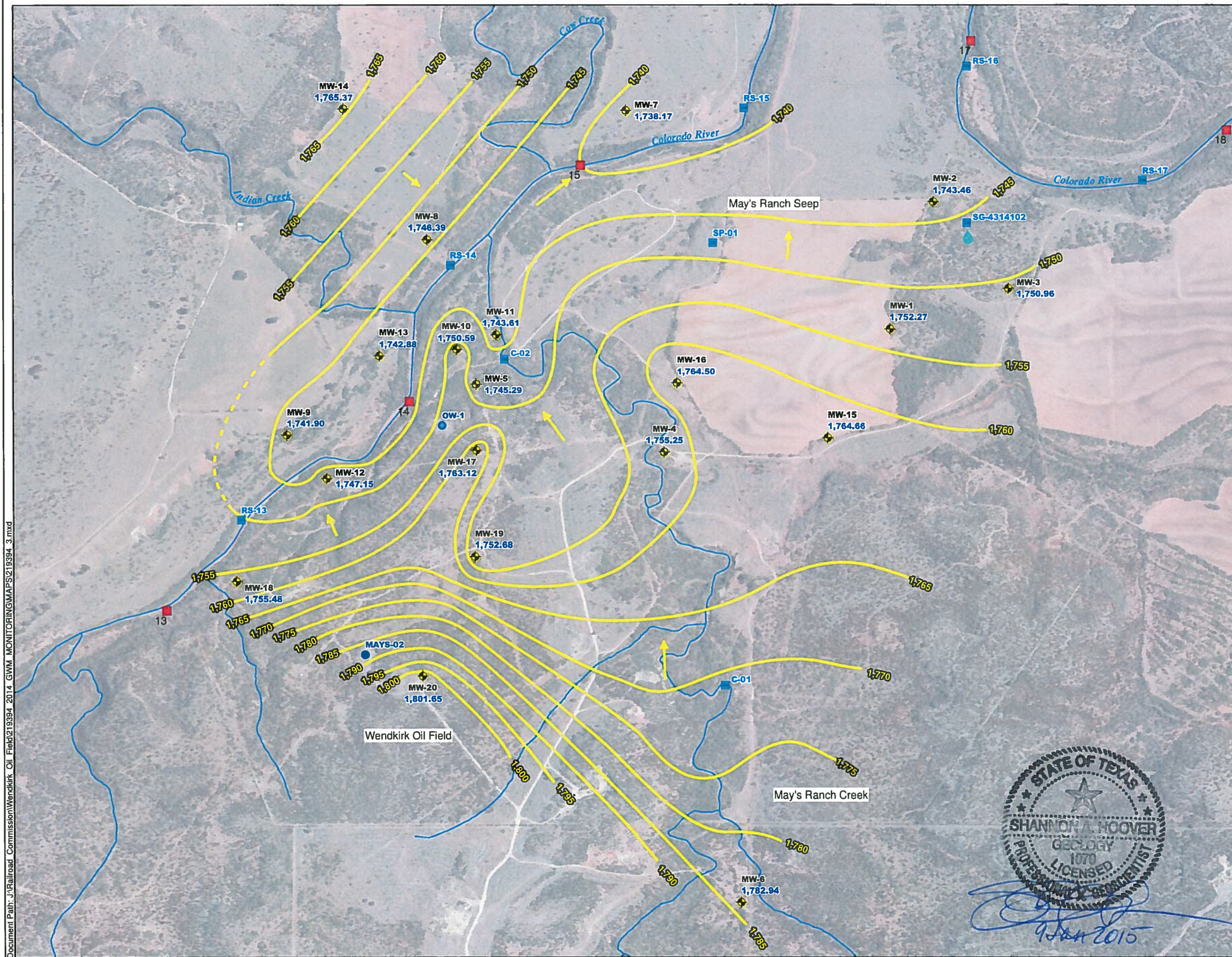


505 E. HUNTLAND DR.
SUITE 250
AUSTIN, TX 78752
PH:512-329-6080

FIGURE

2

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LEGEND

- ◆ MONITORING WELL
- SURFACE WATER SAMPLE
- WATER WELL
- BUREAU OF ECONOMIC GEOLOGY RIVER SEGMENTS FOR MACHAE CREEK AREA (KILOMETER MARKERS)
- SPRINGS
- FLOW LINES
- GROUNDWATER POTENTIOMETRIC CONTOURS - 1 FOOT INTERVALS (DASHED WHERE INFERRED)
- ~ RIVERS/STREAMS
- 1782.94 GROUNDWATER ELEVATION (FEET REFERENCED TO MEAN SEA LEVEL)

SOURCE:

1. BEG Airborne Geophysical Survey Report (ground conductivity, hydrochemical analysis, and surface water measurements)
2. National Hydrography Dataset (surface drainage).
3. Aerial imagery copyright Microsoft and their data partners.



0 500 1,000
Feet
1 inch = 1,000 feet



**GROUNDWATER POTENTIOMETRIC
SURFACE MAP - AUGUST 2014**
RAILROAD COMMISSION OF TEXAS
WENDKIRK OIL FIELD 2014 BMP MONITORING ACTIVITIES
COKE COUNTY, TEXAS

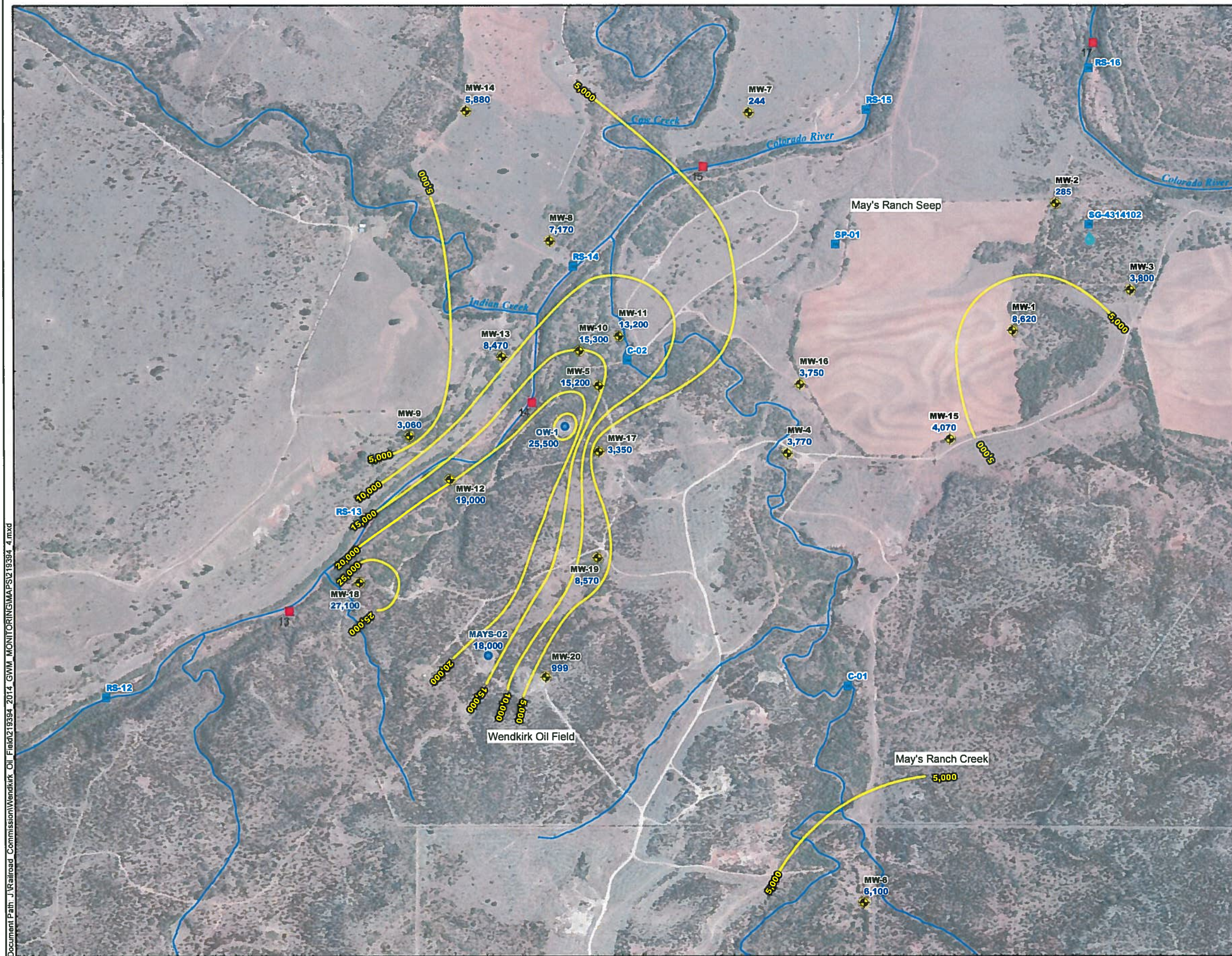
AUTHOR: MLOVELACE SAVED: 10/2/2014 MXD: 219394_3



505 E. HUNTLAND DR.
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**FIGURE
3**

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LEGEND

- MONITORING WELL
- SURFACE WATER SAMPLE
- WATER WELL
- BUREAU OF ECONOMIC GEOLOGY RIVER SEGMENTS FOR MACHAE CREEK AREA (KILOMETER MARKERS)
- SPRINGS
- CHLORIDE CONTOURS
- RIVERS/STREAMS



SOURCE:

- BEG Airborne Geophysical Survey Report (ground conductivity, hydrochemical analysis, and surface water measurements)
- National Hydrography Dataset (surface drainage)
- Aerial imagery copyright Microsoft and their data partners.
- Only monitoring wells OW-1 and Mays-02 used for contouring. Map scale reduced to show detail.



0 500 1,000
Feet
1 inch = 1,000 feet

GROUNDWATER CHLORIDE ISOCONCENTRATION MAP - AUGUST 2014

RAILROAD COMMISSION OF TEXAS
WENDKIRK OIL FIELD 2014 BMP MONITORING ACTIVITIES
COKE COUNTY, TEXAS

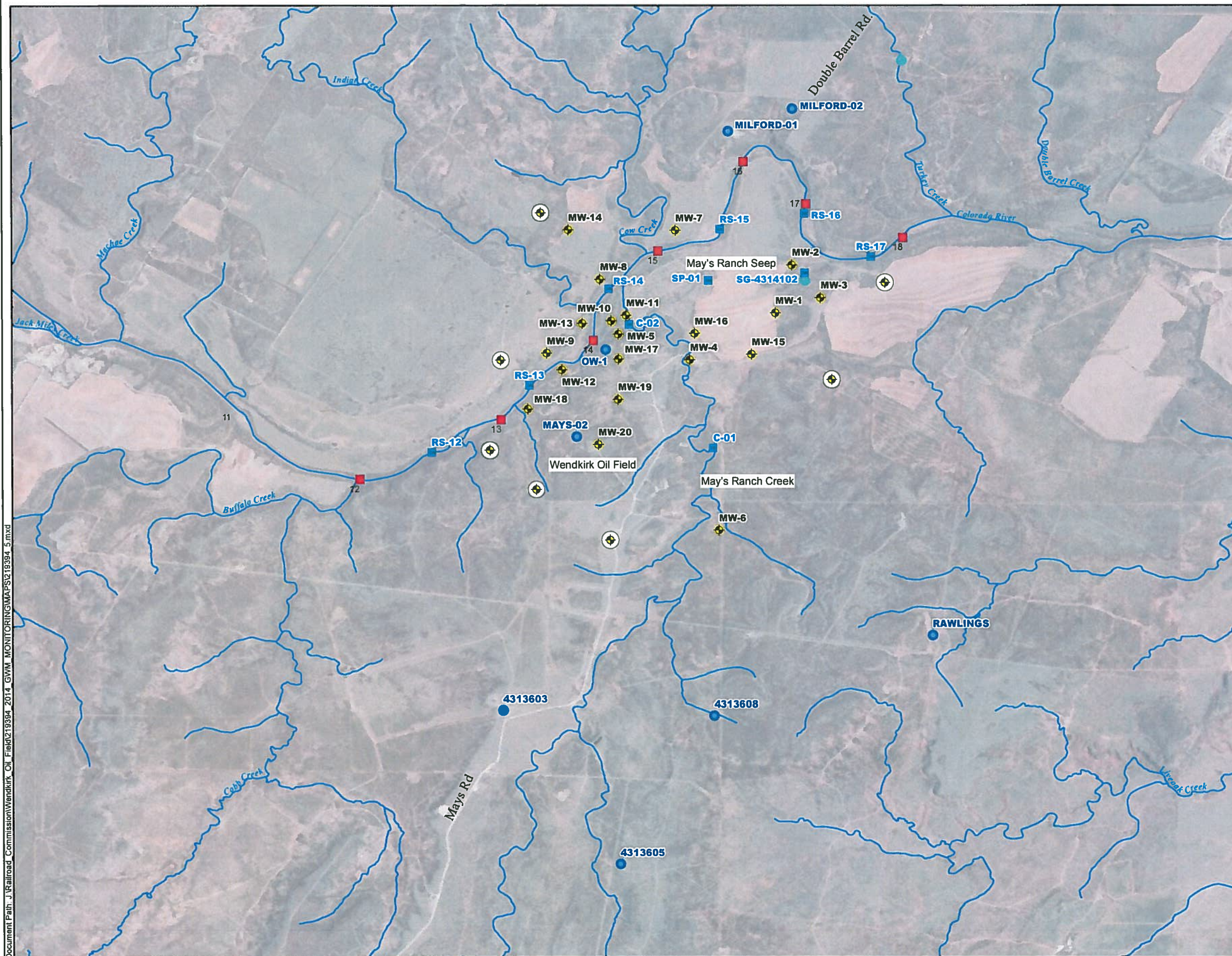
AUTHOR: RBLAISELL SAVED: 10/23/2014 MXD: 219394_4



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FIGURE
4

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LEGEND

- ◆ MONITORING WELL
- ◆ PROPOSED MONITORING WELL
- SURFACE WATER SAMPLE
- WATER WELL
- BUREAU OF ECONOMIC GEOLOGY RIVER SEGMENTS FOR MACHAE CREEK AREA (KILOMETER MARKERS)
- SPRINGS
- ~ RIVERS/STREAMS



SOURCE:

1. National Hydrography Dataset (surface drainage).
2. Aerial imagery copyright Microsoft and their data partners.



0 0.25 0.5
Miles
1 in = 0.5 miles

PROPOSED MONITORING WELL LOCATIONS

RAILROAD COMMISSION OF TEXAS
WENDKIRK OIL FIELD BMP MONITORING ACTIVITIES
COKE COUNTY, TEXAS

AUTHOR: RBLAISDELL

SAVED: 10/23/2014

MXD: 219394_5



505 E. HUNT LAND DR.
SUITE 250
AUSTIN, TX 78752
PH 512-329-6080

FIGURE

5

TABLES

Table 1
Groundwater Elevation Data
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Well Location	Date	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Total Depth of Well (feet btoc)	Depth to Groundwater (feet btoc)	Groundwater Elevation (ft amsl)
MW-01	08/30/06	1779.45	1782.62	43.25	24.16	1758.46
	10/26/06			NM	23.97	1758.65
	04/20/07			NM	25.92	1756.70
	08/04/08			43.10	25.16	1757.46
	01/19/09			NM	25.17	1757.45
	12/16/09			NM	26.78	1755.84
	12/15/11			44.12	27.68	1754.94
	08/05/14			43.12	30.35	1752.27
MW-02	08/30/06	1771.43	1775.03	39.05	27.02	1748.01
	10/26/06			NM	27.37	1747.66
	04/20/07			NM	27.98	1747.05
	08/04/08			38.44	27.68	1747.35
	01/19/09			NM	27.68	1747.35
	12/16/09			NM	28.66	1746.37
	12/15/11			39.30	29.70	1745.33
	08/05/14			38.62	31.57	1743.46
MW-03	08/30/06	1773.61	1776.09	40.20	21.69	1754.40
	10/26/06			NM	21.45	1754.64
	04/20/07			NM	21.73	1754.36
	06/20/07			NM	18.35	1757.74
	08/04/08			39.59	21.30	1754.79
	01/19/09			NM	20.90	1755.19
	12/16/09			NM	22.69	1753.40
	12/15/11			40.50	23.61	1752.48
MW-04	08/30/06	1772.28	1774.54	39.68	25.13	1750.96
	10/26/06			36.51	16.75	1757.79
	04/20/07			NM	16.91	1757.63
	08/04/08			NM	17.47	1757.07
	01/19/09			37.71	16.76	1757.78
	12/16/09			NM	16.41	1758.13
	12/16/11			NM	17.16	1757.38
	08/05/14			38.91	17.62	1756.92
MW-05	08/30/06	1760.71	1763.19	38.09	19.29	1755.25
	10/26/06			35.15	17.23	1745.96
	04/20/07			NM	16.43	1746.76
	06/20/07			NM	16.65	1746.54
	07/17/07			NM	15.80	1747.39
	07/07/08			NM	15.80	1747.39
	08/04/08			35.02	16.21	1746.98
	01/19/09			NM	16.32	1746.87
	12/16/09			NM	15.91	1747.28
	12/16/11			NM	17.00	1746.19
	08/05/14			35.57	19.60	1743.59
				35.02	17.90	1745.29

Table 1
Groundwater Elevation Data
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Well Location	Date	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Total Depth of Well (feet btoc)	Depth to Groundwater (feet btoc)	Groundwater Elevation (ft amsl)
MW-06	08/30/06	1831.77	1834.47	99.40	52.34	1782.13
	10/26/06			NM	51.53	1782.94
	04/20/07			NM	58.92	1775.55
	08/04/08			96.07	52.97	1781.50
	01/19/09			NM	51.57	1782.90
	12/16/09			NM	51.27	1783.20
	12/16/11			91.54	51.86	1782.61
	08/05/14			96.30	51.53	1782.94
MW-07	08/30/06	1767.97	1771.10	40.00	31.84	1739.26
	10/26/06			NM	31.07	1740.03
	04/20/07			NM	32.32	1738.78
	08/04/08			39.72	29.45	1741.65
	01/19/09			NM	29.56	1741.54
	12/16/09			NM	30.40	1740.70
	12/16/11			40.65	31.01	1740.09
	08/05/14			40.00	32.93	1738.17
MW-08	08/30/06	1777.30	1780.69	62.12	33.13	1747.56
	10/26/06			NM	32.86	1747.83
	04/20/07			NM	33.32	1747.37
	08/04/08			62.71	32.73	1747.96
	01/19/09			NM	32.14	1748.55
	12/16/09			NM	33.02	1747.67
	12/16/11			63.30	35.53	1745.16
	08/05/14			62.02	34.30	1746.39
MW-09	08/30/06	1757.12	1759.82	32.19	16.49	1743.33
	10/26/06			NM	16.20	1743.62
	04/20/07			NM	15.67	1744.15
	06/21/07			NM	14.95	1744.87
	08/04/08			30.82	16.45	1743.37
	01/19/09			NM	15.79	1744.03
	12/16/09			NM	16.74	1743.08
	12/16/11			31.24	17.85	1741.97
	08/05/14			31.13	17.92	1741.90
MW-10	04/20/07	1764.68	1767.02	72.30	14.90	1752.12
	06/20/07			72.30	14.20	1752.82
	07/07/08			72.40	14.19	1752.83
	08/04/08			72.66	14.34	1752.68
	01/19/09			NM	14.04	1752.98
	12/16/09			NM	14.85	1752.17
	12/16/11			73.87	15.14	1751.88
	08/05/14			73.07	16.43	1750.59

Table 1
Groundwater Elevation Data
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Well Location	Date	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Total Depth of Well (feet btoc)	Depth to Groundwater (feet btoc)	Groundwater Elevation (ft amsl)
MW-11	04/20/07	1764.60	1766.78	32.36	21.64	1745.14
	06/19/07			NM	20.90	1745.88
	07/17/07			NM	21.10	1745.68
	07/07/08			32.33	21.59	1745.19
	08/04/08			32.14	21.86	1744.92
	01/19/09			NM	21.43	1745.35
	12/16/09			NM	22.30	1744.48
	12/15/11			32.80	23.25	1743.53
	08/05/14			32.21	23.17	1743.61
MW-12	04/20/07	1763.54	1766.10	42.39	31.18	1734.92
	07/07/08			42.47	18.70	1747.40
	08/04/08			NM	18.66	1747.44
	01/19/09			NM	18.60	1747.50
	12/16/09			NM	18.54	1747.56
	12/17/11			43.33	18.56	1747.54
	08/05/14			42.70	18.95	1747.15
MW-13	04/20/07	1759.45	1762.49	27.95	17.54	1744.95
	07/18/07			NM	17.35	1745.14
	08/04/08			27.85	18.16	1744.33
	01/19/09			NM	17.33	1745.16
	12/16/09			NM	18.41	1744.08
	12/16/11			28.44	19.49	1743.00
	08/05/14			27.95	19.61	1742.88
MW-14	04/20/07	1787.19	1789.86	83.30	69.59	1720.27
	06/21/07			NM	27.21	1762.65
	08/04/08			83.02	24.68	1765.18
	01/19/09			NM	24.98	1764.88
	12/16/09			NM	24.98	1764.88
	12/16/11			81.91	25.34	1764.52
	08/05/14			81.19	24.49	1765.37
MW-15	04/20/07	1790.04	1792.87	43.50	25.85	1767.02
	08/04/08			42.72	25.09	1767.78
	01/19/09			NM	25.36	1767.51
	12/16/09			NM	25.85	1767.02
	12/15/11			43.43	27.45	1765.42
	08/05/14			39.00	28.21	1764.66
MW-16	04/20/07	1785.23	1788.19	38.07	32.33	1755.86
	08/04/08			37.75	15.85	1772.34
	01/19/09			NM	15.80	1772.39
	12/16/09			NM	16.26	1771.93
	12/16/11			38.58	16.51	1771.68
	08/05/14			37.94	23.69	1764.50

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Well Location	Date	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Total Depth of Well (feet btoc)	Depth to Groundwater (feet btoc)	Groundwater Elevation (ft amsl)
MW-17	04/20/07	1824.99	1827.63	73.00	65.83	1761.80
	07/08/08			72.95	65.81	1761.82
	08/04/08			NM	66.12	1761.51
	01/19/09			NM	66.06	1761.57
	12/16/09			NM	66.00	1761.63
	12/15/11			75.10	65.13	1762.50
	08/05/14			73.27	64.51	1763.12
MW-18	04/20/07	1773.10	1775.18	72.29	19.88	1755.30
	06/19/07			NM	22.33	1752.85
	08/04/08			NM	20.25	1754.93
	01/19/09			NM	20.12	1755.06
	12/16/09			NM	20.15	1755.03
	12/17/11			69.50	20.02	1755.16
	08/05/14			68.29	19.70	1755.48
MW-19	07/18/07	1827.10	1830.14	105.50	75.70	1754.44
	08/04/08			NM	75.50	1754.64
	01/19/09			NM	75.22	1754.92
	12/16/09			NM	75.83	1754.31
	12/17/11			110.50	76.55	1753.59
	08/05/14			NM	77.46	1752.68
MW-20	07/18/07	1888.48	1890.90	115.50	98.55	1792.35
	08/04/08			NM	91.08	1799.82
	01/19/09			NM	89.19	1801.71
	12/16/09			NM	89.40	1801.50
	12/16/11			118.07	89.27	1801.63
	08/05/14			NM	89.25	1801.65
Mays-01	08/30/06	1817.14	1820.66	190.00	68.30	1752.36
	10/26/06			NM	68.04	1752.62
	04/20/07			NM	68.26	1752.40
	06/20/07			NM	67.27	1753.39
Mays-02	08/06/08	NM	NM	NM	92.24	NA
	01/19/09			137.17	91.97	NA
	12/16/09			NM	92.42	NA
	12/16/11			NM	93.24	NA
	08/05/14			NM	93.80	NA
OW-01	07/17/07	1816.44	1818.56	97.81	66.54	1752.02
	07/07/08			96.95	47.56 ⁽¹⁾	1771.00
	08/04/08			NM	67.01	1751.55
	01/19/09			97.81	66.74	1751.82
	12/16/09			NM	68.09	1750.47
	12/20/11			97.80	69.09	1749.47
	08/05/14			97.35	69.78	1748.78

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Railroad Commission of Texas
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Well Location	Date	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Total Depth of Well (feet btoc)	Depth to Groundwater (feet btoc)	Groundwater Elevation (ft amsl)
Milford-01	07/14/06	1829.94	1832.20	180.50	83.15	1749.05
	08/30/06			NM	83.05	1749.15
	04/20/07			NM	82.94	1749.26
	08/04/08			NM	NM	NA
	01/19/09			NM	82.70	1749.50
	12/16/09			NM	82.94	1749.26
	12/16/11			NM	83.48	1748.72
	08/05/14			NM	84.15	1748.05
Milford-02	07/14/06	1814.59	1816.53	118.80	63.01	1753.52
	08/30/06			NM	63.30	1753.23
	04/20/07			NM	63.10	1753.43
	08/05/08			NM	63.28	1753.25
	01/19/09			NM	63.43	1753.10
	12/16/09			NM	63.82	1752.71
	12/16/11			NM	64.43	1752.10
	08/05/14			NM	64.71	1751.82

Notes:

(1) OW-1 is located adjacent to Mays-01. Mays-01 was plugged and abandoned during measurement on 7/7/2008, which appears to have influenced the water level elevation in OW-1.

amsl = above mean sea level

btoc = below top of casing

NA = not applicable

NM = not measured

DRY - Location was dry; therefore no measurement was taken.

Table 2
Surface Water Data Summary
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Sample ID	Sample Date	Alkalinity			Anions				Cations				Specific Conductance (umhos/cm)	Total Dissolved Solids (mg/L)
		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
W-RS-SSW-12 1 1 1	07/12/06	NA	NA	NA	NA	775	NA	325	91.5	NA	NA	460	NA	1780
	08/29/06	NA	NA	NA	NA	391	NA	226	90.8	NA	NA	231	NA	1060
	04/19/07	NA	NA	NA	NA	841	NA	632	136	NA	NA	441	NA	2300
	12/18/09	10 U	238	238	3 U	3110	NA	930	667	157	21.4	1490	10200	7020
	01/19/09	10 U	182	182	3.81	1200	NA	727	179	112	17.7	724	5020	3160
	12/16/11	DRY												
	08/05/14	DRY												
W-RS-SSW-13 1 1 1	07/12/06	NA	NA	NA	NA	794	NA	319	104	NA	NA	474	NA	1800
	08/29/06	NA	NA	NA	NA	378	NA	208	98.5	NA	NA	240	NA	1040
	04/19/07	NA	NA	NA	NA	884	NA	643	137	NA	NA	427	NA	2410
	12/18/09	10 U	62.2	62.2	3 U	4780	NA	2490	766	391	33.1	2410	17700	11800
	01/19/09	10 U	153	153	4.02	1310	NA	770	182	123	20.1	810	5380	3080
	12/16/11	DRY												
	08/05/14	DRY												
W-RS-SSW-14 1 Duplicate 1 1	07/14/06	NA	NA	NA	NA	859	NA	342	97.8	NA	NA	467	NA	2000
	08/29/06	NA	NA	NA	NA	364	NA	221	86.5	NA	NA	214	NA	1010
	04/18/07	NA	NA	NA	NA	899	NA	667	146	NA	NA	463	NA	2440
	12/18/09	10 U	409	409	3 U	6190	NA	1820	997	339	28.9	3060	20800	14000
	01/19/09	10 U	182	182	3.92	1280	NA	744	192	125	19.9	834	5230	3360
	01/19/09	10 U	183	183	3.98	1330	NA	753	187	121	19	824	5360	3270
	12/16/11	DRY												
W-RS-SSW-15 1 1 1 Duplicate, ¹	07/14/06	NA	NA	NA	NA	906	NA	351	106	NA	NA	499	NA	2070
	08/29/06	NA	NA	NA	NA	350	NA	211	84	NA	NA	213	NA	1020
	04/18/07	NA	NA	NA	NA	909	NA	665	147	NA	NA	497	NA	2440
	12/18/09	10 U	185	185	3 U	7310	NA	1370	646	276	26.1	3200	21800	14000
	01/19/09	10 U	189	189	4.09	1370	NA	767	200	125	19.6	834	5430	3340
	12/16/11	DRY												
	08/07/14	10 U	148	148	31.3	18900	1 U	3250	1580	868	87.5	9970	NA	37400
W-RS-SSW-16 1 1 1	08/07/14	10 U	146	146	31.8	18500	1 U	3260	1660	912	82.1	10500	NA	47200
	07/14/06	NA	NA	NA	NA	909	NA	352	99.6	NA	NA	473	NA	2070
	08/29/06	NA	NA	NA	NA	338	NA	193	87.2	NA	NA	214	NA	1020
	04/18/07	NA	NA	NA	NA	930	NA	677	140	NA	NA	454	NA	2480
	12/18/09	10 U	194	194	3 U	2310	NA	1010	304	176	17.7	1190	8420	5090
	01/19/09	10 U	190	190	4.33	1450	NA	803	194	121	18.5	810	5580	3580
	12/16/11	DRY												
	08/05/14	DRY												

Table 2
Surface Water Data Summary
Railroad Commission of Texas
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Sample ID	Sample Date	Alkalinity			Anions				Cations				Specific Conductance (umhos/cm)	Total Dissolved Solids (mg/L)
		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
W-RS-SSW-17 1 1 1	07/14/06	NA	NA	NA	NA	899	NA	354	98	NA	NA	471	NA	2050
	08/29/06	NA	NA	NA	NA	338	NA	185	84.9	NA	NA	212	NA	1010
	04/18/07	NA	NA	NA	NA	948	NA	677	148	NA	NA	483	NA	2470
	12/18/09	10 U	418	418	0.3 U	1170	NA	407	658	156	17.5	652	4520	2820
	01/19/09	10 U	190	190	4.39	1440	NA	798	213	128	20.7	873	5740	3680
	12/16/11	DRY												
	08/05/14	DRY												
W-SG-4314102-01	07/13/06	NA	NA	NA	NA	4400	NA	2300	61.2	NA	NA	168	NA	9980
	08/28/06	NA	NA	NA	NA	7640	NA	2480	858	NA	NA	2760	NA	15300
	04/09/07	NA	NA	NA	NA	6280	NA	2710	882	NA	NA	2750	NA	12200
	01/19/09	10 U	600	600	13.2	4510	NA	2760	667	457	18.9	2650	16400	12000
	12/17/09	10 U	450	450	11.2	4960	NA	2800	713	517	22.6	2920	19000	14700
	12/15/11	NA	NA	NA	13.9	9500	NA	3300				NA	NA	16900
	08/05/14	DRY												
W-SP-01	07/13/06	NA	NA	NA	NA	508	NA	461	84.3	NA	NA	393	NA	1630
	08/23/06	NA	NA	NA	NA	503	NA	471	95.2	NA	NA	384	NA	1650
	04/09/07	NA	NA	NA	NA	368	NA	393	87.3	NA	NA	304	NA	1330
	01/20/09	10 U	350	350	1.31	462	NA	443	124	82.8	23.2	361	2520	1630
	12/17/09	10 U	245	245	0.639 J	352	NA	381	75.7	64.4	8.6	324	2180	1440
	12/16/11	NA	NA	NA	0.3 U	347	NA	401				NA	NA	1270
	08/05/14	DRY												
W-C-01	07/13/06	NA	NA	NA	NA	133	NA	16.4	51	NA	NA	60.2	NA	396
	08/23/06	NA	NA	NA	NA	282	NA	9.51	41.6	NA	NA	141	NA	590
	04/09/07	NA	NA	NA	NA	23.8	NA	4.18	43	NA	NA	15.8	NA	169
	12/16/11	DRY												
	08/05/14	DRY												
W-C-02	04/09/07	NA	NA	NA	NA	75.6	NA	30.2	50	NA	NA	43.6	NA	291
	12/16/11	DRY												
	08/05/14	DRY												

Notes
mg/L = milligrams per liter
U = analyte not detected
J = estimated concentration
NA = not analyzed
¹ = River dry at time of sampling. A pit was dug and a sample collected if water appeared in the pit.

Table 3
Groundwater Data Summary
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Sample Location	Date	Alkalinity			Anions				Cations				Specific Conductance (umhos/cm)	Total Dissolved Solids (mg/L)
		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
MW-1	08/30/06	NA	NA	NA	NA	8250	NA	3750	751	NA	NA	5700	NA	19000
	04/13/07	NA	NA	NA	NA	8720	NA	5640	831	NA	NA	6140	NA	21900
	08/05/08	10 U	384	384	16.2	8180	NA	5410	664	679	63.0	4800	33800	22000
	01/21/09	10 U	519	519	14.1	7520	NA	5040	695	703	66.6	4940	31000	21200
	12/17/09	10 U	489	489	12.1	8570	NA	5580	852	784	69.4	5740	35600	22800
	12/15/11	NA	NA	NA	9.63 J	9470	NA	5480	NA	NA	NA	NA	NA	20100
	08/06/14	10 U	464	464	10.5 J	8620	0.612	5320	688	769	72.8	5870	NA	22000
MW-2 Duplicate	08/30/06	NA	NA	NA	NA	168	NA	1850	800	NA	NA	171	NA	3240
	04/10/07	NA	NA	NA	NA	148	NA	1950	942	NA	NA	145	NA	3290
	08/30/06	NA	NA	NA	NA	164	NA	1840	775	NA	NA	177	NA	3250
	08/05/08	10 U	185	185	0.595 J	156	NA	1980	738	166	9.72	106	3390	3310
	01/21/09	10 U	242	242	0.509 J	109	NA	1630	707	167	9.53	131	3240	3080
	12/17/09	10 U	228	228	0.556 J	125	NA	1720	1550	262	16.3	160	3290	3260
	12/15/11	NA	NA	NA	0.3 U	192	NA	2030	NA	NA	NA	NA	NA	3470
MW-3 Duplicate	08/06/14	10 U	332	332	0.3 U	285	0.29 J	2550	514	296	13.2	439	NA	2830
	08/28/06	NA	NA	NA	NA	4090	NA	3070	907	NA	NA	1880	NA	11600
	04/10/07	NA	NA	NA	NA	3910	NA	3290	1000	NA	NA	2030	NA	11900
	08/05/08	10 U	320	320	4.48	2450	NA	3360	585	576	17.9	1180	11400	9800
	01/21/09	10 U	428	428	3.22	1680	NA	2770	492	523	19.2	1040	9510	7620
	12/17/09	10 U	416	416	3	2150	NA	3180	533	630	22.2	1380	10600	8950
	12/15/11	NA	NA	NA	0.3 U	1980	NA	3180	NA	NA	NA	NA	NA	6990
MW-4 Duplicate Duplicate	08/06/14	10 U	770	770	3 U	3800	1 U	5470	817	1130	35.2	2300	NA	11300
	08/06/14	10 U	791	791	3 U	3750	1 U	5550	807	1140	37.2	2240	NA	13400
	08/24/06	NA	NA	NA	NA	7950	NA	1640	1120	NA	NA	3920	NA	15200
	04/10/07	NA	NA	NA	NA	6040	NA	2080	953	NA	NA	3810	NA	12700
	04/10/07	NA	NA	NA	NA	5940	NA	2030	1020	NA	NA	3760	NA	11800
	08/05/08	10 U	317	317	10.3	5820	NA	1750	724	317	67.0	3090	20300	12800
	01/20/09	10 U	458	458	8.33	4220	NA	1830	743	395	51.6	2310	14500	10100
MW-5	12/16/09	10 U	430	430	6.47 J	4340	NA	2000	678	393	57.5	2530	16900	10800
	12/16/09	10 U	427	427	6.49 J	4300	NA	1970	662	389	57.8	2500	16700	10900
	12/16/11	NA	NA	NA	3.68	4990	NA	2130	NA	NA	NA	NA	NA	10700
	08/06/14	10 U	357	357	4.31	3770	0.1 U	1380	586	335	48.4	2280	NA	10800
	08/24/06	NA	NA	NA	NA	14900	NA	2730	1120	NA	NA	7070	NA	27400
	04/10/07	NA	NA	NA	NA	15100	NA	2820	1030	NA	NA	8690	NA	27100
	07/07/08	NA	NA	NA	NA	14600	NA	2960	899	NA	NA	7040	NA	28700
MW-6	08/05/08	10 U	305	305	25.1	13900	NA	2740	885	325	109	7150	46700	27900
	01/21/09	10 U	328	328	25.5	13500	NA	2590	905	349	116	7710	45400	26200
	12/17/09	10 U	321	321	3 U	14500	NA	2760	958	362	115	8200	47600	28800
	12/16/11	NA	NA	NA	3 U	16600	NA	2900	NA	NA	NA	NA	NA	26900
	08/06/14	10 U	321	321	8.4 J	15200	1 U	2770	927	404	120	9150	NA	30200
	08/28/06	NA	NA	NA	NA	6020	NA	1100	469	NA	NA	2860	NA	11300
	04/13/07	NA	NA	NA	NA	6060	NA	1170	523	NA	NA	3620	NA	12400
	08/06/08	10 U	329	329	9.89	5750	NA	1040	376	286	55.0	2800	20200	11800
	01/21/09	10 U	354	354	9.52	5190	NA	1010	415	329	58.6	3180	17800	10700
	12/16/09	10 U	339	339	7.53 J	5960	NA	1120	448	340	62.4	3320	19400	11500
	12/16/11	NA	NA	NA	3 U	6930	NA	1190	NA	NA	NA	NA	NA	11900
	08/07/14	10 U	349	349	3 U	6110	1 U	1140	397	344	64	3430	NA	12200

Table 3
Groundwater Data Summary
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Sample Location	Date	Alkalinity			Anions				Cations				Specific Conductance (umhos/cm)	Total Dissolved Solids (mg/L)
		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
MW-7	08/25/06	NA	NA	NA	NA	179	NA	495	816	NA	NA	286	NA	1300
	04/11/07	NA	NA	NA	NA	189	NA	532	185	NA	NA	260	NA	1320
	08/05/08	10 U	269	269	0.569 J	184	NA	493	142	32.1	12.5	264	1930	1370
	01/20/09	10 U	290	290	0.652 J	202	NA	575	128	32.4	13.6	346	2150	1460
	12/17/09	10 U	263	263	0.446 J	215	NA	601	103	32.4	14.2	371	2190	1500
	12/16/11	NA	NA	NA	0.3 U	255	NA	714	NA	NA	NA	NA	NA	1560
	08/07/14	10 U	281	281	0.3 U	244	0.1 U	746	141	45.3	15.9	403	NA	2400
MW-8	08/25/06	NA	NA	NA	NA	8010	NA	7520	588	NA	NA	6950	NA	23200
	04/11/07	NA	NA	NA	NA	7550	NA	7660	599	NA	NA	6520	NA	23000
	08/05/08	10 U	384	384	10.9	4120	NA	5480	433	162	73.4	4560	22300	16100
	08/05/08	10 U	423	423	10.9	5530	NA	6700	426	188	84.6	4720	27300	19000
	01/20/09	10 U	423	423	10.3	5050	NA	5630	501	195	82.3	5050	24900	17800
	12/17/09	10 U	422	422	8.72 J	5870	NA	6260	514	233	90.8	6070	28800	20000
	12/16/11	NA	NA	NA	7.29 J	7530	NA	6990	NA	NA	NA	NA	NA	20300
MW-9	08/07/14	10 U	465	465	3 U	7170	1 U	7010	541	280	94.8	5790	NA	28400
	08/25/06	NA	NA	NA	NA	634	NA	862	490	NA	NA	672	NA	2600
	04/11/07	NA	NA	NA	NA	616	NA	1020	244	NA	NA	704	NA	2820
	08/05/08	10 U	440	440	0.850 J	217	NA	333	84.6	35.6	8.31	347	2220	1530
	01/20/09	10 U	623	623	0.796 J	157	NA	278	80.4	38.1	7.14	389	2070	1400
	12/17/09	10 U	525	525	1.57	220	NA	297	89.7	43.9	8.98	333	2030	1360
	12/16/11	NA	NA	NA	0.784 J	474	NA	592	NA	NA	NA	NA	NA	1920
MW-10	08/07/14	10 U	433	433	8.36	3060	0.1 U	1530	500	263	21	1910	NA	7500
	04/17/07	NA	NA	NA	NA	14600	NA	6700	881	NA	NA	11600	NA	30800
	07/07/08	NA	NA	NA	NA	14300	NA	6500	763	NA	NA	8380	NA	32300
	07/07/08	NA	NA	NA	NA	14400	NA	6510	760	NA	NA	8520	NA	32300
	08/05/08	10 U	408	408	26.2	13600	NA	6150	751	339	138	8850	51200	32200
	01/21/09	10 U	439	439	27.4	13900	NA	5980	730	362	152	9450	51200	32300
	12/18/09	10 U	428	428	3 U	15400	NA	6650	770	371	138	9390	52400	34600
MW-11	12/16/11	NA	NA	NA	15.6	16400	NA	6650	NA	NA	NA	NA	NA	31500
	08/06/14	10 U	346	346	3 U	15300	1.93 J	6360	739	406	150 J	10700	NA	42100
	04/13/07	NA	NA	NA	NA	7820	NA	1140	983	NA	NA	4210	NA	14900
	07/07/08	NA	NA	NA	NA	4160	NA	812	499	NA	NA	1840	NA	13300
	08/05/08	10 U	262	262	14.4	5250	NA	1070	764	273	53.0	4420	21800	13200
	01/21/09	10 U	332	332	21.9	7380	NA	1150	796	288	29.7	3920	25600	15500
	12/17/09	10 U	297	297	3 U	9840	NA	1330	1060	371	47.5	4890	33200	21100
MW-12	12/15/11	NA	NA	NA	22.5	13400	NA	1660	NA	NA	NA	NA	NA	22800
	08/06/14	10 U	245	245	16.7	13200	1 U	1780	1110	439	74.3	7090	NA	24700
	08/06/14	10 U	246	246	18.7	12700	1 U	1800	1100	435	76.2	6990	NA	25300
	04/16/07	NA	NA	NA	NA	16400	NA	5080	1320	NA	NA	10900	NA	31800
	07/08/08	NA	NA	NA	NA	18500	NA	5210	984	NA	NA	9410	NA	37700
	08/05/08	10 U	354	354	31.7	17500	NA	4610	1020	634	128	9190	58400	37400
	01/21/09	10 U	383	383	26.5	14800	NA	4810	963	674	127	8840	53400	33700
Duplicate	12/18/09	10 U	363	363	3 U	17400	NA	4820	1090	726	128	9780	57500	36600
	12/17/11	NA	NA	NA	3 U	21100	NA	5460	NA	NA	NA	NA	NA	34400
	08/06/14	10 U	360	360	12.2	19000	1 U	4850	999	740	135 J	10600	NA	41600

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Groundwater Data Summary
Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

Sample Location	Date	Alkalinity			Anions				Cations				Specific Conductance (umhos/cm)	Total Dissolved Solids (mg/L)
		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
MW-13	04/16/07	NA	NA	NA	NA	5880	NA	1980	1600	NA	NA	3670	NA	13200
	08/05/08	10 U	272	272	21	5590	NA	2160	748	262	24.2	2520	21000	13200
	01/20/09	10 U	392	392	20.3	4810	NA	2180 J	814	303	26.4	3260	18100	12700
	12/17/09	ND	372	372	15.0	4930	NA	1890	774	287	29.0	2800	18200	11200
	12/16/11	NA	NA	NA	12.1	5020	NA	2010	NA	NA	NA	NA	NA	10800
	08/07/14	10 U	1040	1040	23.3	8470	1 U	3370	1100	492	38	4710	NA	20000
MW-14	04/17/07	NA	NA	NA	NA	5770	NA	6540	574	NA	NA	5980	NA	18200
	08/06/08	10 U	424	424	30 U	5870	NA	6760	532	277	82.0	5100	30800	20800
	01/20/09	10 U	465	465	11.1	5240	NA	6540	576	315	90.8	5960	26800	19300
	12/17/09	10 U	447	447	8.98	5610	NA	6660	551	355	78.7	4800	30000	19600
	12/16/11	NA	NA	NA	3 U	7350	NA	7440	NA	NA	NA	NA	NA	18500
	08/07/14	10 U	463	463	3 U	5880	1 U	7150	571	369	89.8	5680	NA	24600
MW-15	04/16/07	NA	NA	NA	NA	3080	NA	2600	474	NA	NA	2060	NA	8980
	08/05/08	10 U	373	373	6.69	2620	NA	4670	574	465	37.2	1850	12600	10500
	01/21/09	10 U	402	402	6.09	2990	NA	2520	482	357	39.7	1970	13400	9660
	12/17/09	10 U	416	416	3.47	2110	NA	4160	702	530	37.2	1850	11700	9850
	12/15/11	NA	NA	NA	4.8	5650	NA	6990	NA	NA	NA	NA	NA	17400
	08/06/14	10 U	422	422	3 U	4070	1 U	3630	584	551	43.1	2900	NA	12300
MW-16	04/17/07	NA	NA	NA	NA	4990	NA	3190	888	NA	NA	2560	NA	13200
	08/05/08	10 U	237	237	3.46	1440	NA	888	233	138	25.6	571	4520	3070
	01/20/09	10 U	286	286	4.95	1390	NA	893	286	183	35	807	5300	3610
	12/17/09	10 U	248	NA	3 U	1300	NA	942	332	202	26.5	626	5490	4090
	12/16/11	NA	NA	NA	3 U	2210	NA	1290	NA	NA	NA	NA	NA	4950
	08/06/14	10 U	468	468	3 U	3750	1 U	2650	761	653	50.9	1770	NA	12700
MW-17	04/18/07	NA	NA	NA	NA	3870	NA	2650	418	NA	NA	2680	NA	10100
	07/08/08	NA	NA	NA	NA	3800	NA	2310	404	NA	NA	2400	NA	10500
	08/06/08	10 U	325	325	7.45	3540	NA	2230	414	187	46.7	2320	16300	10200
	01/22/09	10 U	341	341	5.83	3600	NA	2350	396	195	48.6	2350	14000	9780
	12/18/09	10 U	326	326	0.3 U	3910	NA	2470	429	205	50.4	2480	15200	9480
	12/15/11	NA	NA	NA	3 U	4240	NA	2710	NA	NA	NA	NA	NA	10000
MW-18 Duplicate	08/06/14	10 U	340	340	3 U	3350	1 U	2460	437	224	56.6	2730	NA	11000
	04/18/07	NA	NA	NA	NA	29000	NA	4620	1450	NA	NA	14900	NA	47900
	04/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	08/06/08	10 U	286	286	44.2	25600	NA	4180	1390	603	175	13700	89200	49300
	01/21/09	10 U	312	312	43.9	25700	NA	3940	1470	631	187	14000	79900	47500
	01/21/09	10 U	315	315	44	26500	NA	4090	1550	658	193	14200	79100	47700
	12/18/09	10 U	301	301	3 U	26900	NA	4280	1510	670	184	14200	86700	50400
	12/17/11	NA	NA	NA	20.5	30700	NA	4640	NA	NA	NA	NA	NA	47700
MW-19 Duplicate	12/17/11	NA	NA	NA	22.4	30500	NA	4540	NA	NA	NA	NA	NA	47700
	08/06/14	10 U	310	310	23.7	27100	1 U	4320	1420	716	192	16300	NA	49200
	07/18/07	NA	NA	NA	NA	14100	NA	3910	958	NA	NA	7410	NA	28600
	07/18/07	NA	NA	NA	NA	13900	NA	3700	951	NA	NA	7360	NA	28500
	08/06/08	10 U	301	301	18.7	12600	NA	3950	971	360	98.7	6930	35800	22100
	01/22/09	10 U	349	349	38.7	8760	NA	3330	757	317	85.2	5410	31700	21400
	12/18/09	10 U	370	370	0.3 U	9050	NA	3000	734	365	74.7	5190	32700	19600
	12/17/11	NA	NA	NA	9.66 J	10800	NA	3370	NA	NA	NA	NA	NA	18900
MW-19 Duplicate	08/06/14	10 U	391	391	3 U	8570	1 U	2790	654	404	77	5350	NA	22100

Table 3
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Railroad Commission of Texas
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		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
MW-20	07/18/07	NA	NA	NA	NA	1720	NA	1500	270	NA	NA	1300	NA	5080
	08/06/08	10 U	322	322	2.99	945	NA	1160	342	165	21.2	675	5470	4120
	01/22/09	10 U	358	358	2.96	1030	NA	1240	331	164	19.2	628	5680	4120
	12/18/09	10 U	339	339	0.3 U	1090	NA	1220	419	201	22.2	754	5520	4040
	12/17/11	NA	NA	NA	1.27	1180	NA	1290	NA	NA	NA	NA	NA	3670
	08/06/14	10 U	346	346	0.956 J	999	0.1 U	1270	323	182	19.3	705	NA	4160
W-OW-01 Duplicate Duplicate	07/07/08	NA	NA	NA	NA	29400	NA	1960	3660	NA	NA	9580	NA	63800
	08/06/08	10 U	288	288	163	28900	NA	1420	4090	1080	61.7	9430	89500	53900
	08/06/08	10 U	286	286	164	28400	NA	1490	4090	1100	61.6	9540	85500	54400
	01/22/09	10 U	303	303	147	29500	NA	1410	4060	1130	66.5	10600	80100	52000
	12/18/09	10 U	289	289	91.9	28600	NA	1720	3940	1110	72.6	10200	86800	54900
	12/18/09	10 U	289	289	140	30200	NA	1610	4050	1150	76.2	10300	88000	56100
	12/17/11	NA	NA	NA	78.8	30400	NA	2410				NA	NA	52600
	08/06/14	10 U	303	303	81.6	25500	1.05 J	1810	3770	1240	84.5	11200	NA	58200
W-WW-4313302	07/12/06	NA	NA	NA	NA	100	NA	1090	256	NA	NA	150	NA	1950
	08/28/06	NA	NA	NA	NA	98.3	NA	1050	288	NA	NA	149	NA	2040
	04/12/07	NA	NA	NA	NA	98.3	NA	1090	261	NA	NA	139	NA	1990
	08/06/08	10 U	51.6	51.6	0.703 J	85	NA	900	101	97.5	7.95	111	1590	1210
	12/16/11	DRY												
W-WW-4313603 Duplicate	07/13/06	NA	NA	NA	NA	1500	NA	540	147	NA	NA	955	NA	3370
	07/13/06	NA	NA	NA	NA	1500	NA	545	144	NA	NA	937	NA	3340
	08/23/06	NA	NA	NA	NA	1410	NA	510	158	NA	NA	932	NA	3320
	04/11/07	PUMP NOT OPERATING												
	12/16/11	DRY												
	08/07/14	10 U	342	342	0.74 J	995	0.12 J	435	105	67.9	17.4	677	NA	3520
W-WW-4313605	08/23/06	NA	NA	NA	NA	519	NA	490	106	NA	NA	437	NA	1740
	04/09/07	NA	NA	NA	NA	563	NA	506	131	NA	NA	470	NA	1970
	12/16/11	DRY												
	08/07/14	10 U	423	423	0.509 J	419	0.1 U	442	133	87.2	18.5	453	NA	1880
W-WW-4313608	07/13/06	NA	NA	NA	NA	210	NA	112	51.8	NA	NA	205	NA	763
	08/23/06	NA	NA	NA	NA	197	NA	104	56.8	NA	NA	191	NA	718
	04/11/07	PUMP NOT OPERATING												
	12/16/11	DRY												
	08/07/14	10 U	314	314	0.3 U	215	0.229 J	130	57.6	35.8	11.7	221	NA	1100
W-WW-Mays-01 Duplicate (73.5') ¹ (98.5') ¹	08/23/06	NA	NA	NA	NA	27200	NA	1390	4320	NA	NA	12300	NA	47000
	04/09/07	NA	NA	NA	NA	27900	NA	1650	3720	NA	NA	10600	NA	50600
	04/09/07	NA	NA	NA	NA	28700	NA	1670	3630	NA	NA	10300	NA	51900
	06/21/07	NA	NA	NA	NA	36000	NA	1350	4580	NA	NA	11900	NA	58200
	06/21/07	NA	NA	NA	NA	35800	NA	1600	4630	NA	NA	12100	NA	57900
	12/16/11	DRY												
W-WW-Mays-02	08/06/08	10 U	237	237	34.7	19200	NA	3480	1140	575	125	9160	59400	36700
	01/21/09	10 U	270	270	85.8	17700	NA	3300	1160	608	131	10000	57900	35600
	12/18/09	10 U	267	267	3 U	19200	NA	3330	1250	628	129	10000	63700	37300
	12/16/11	NA	NA	NA	3 U	20800	NA	3460	NA	NA	NA	NA	NA	35900
	08/06/14	10 U	242	242	13.5	18800	1 U	3450	1220	687	141 J	11400	NA	39300

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Railroad Commission of Texas
Wendkirk Oil Field, Robert Lee, Texas

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		Alkalinity, Carbonate (mg/L)	Alkalinity, Bicarbonate (mg/L)	Alkalinity, Total (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)		
Milford-01 Duplicate Duplicate	07/14/06	NA	NA	NA	NA	659	NA	2960	77.4	NA	NA	754	NA	5210
	07/14/06	NA	NA	NA	NA	467	NA	2020	69.4	NA	NA	691	NA	3730
	08/24/06	NA	NA	NA	NA	878	NA	3930	191	NA	NA	1680	NA	7260
	08/24/06	NA	NA	NA	NA	640	NA	2830	157	NA	NA	1670	NA	5340
	04/11/07	NA	NA	NA	NA	1480	NA	6810	258	NA	NA	3450	NA	12400
	12/16/11	NA	NA	NA	0.3 U	40.3	NA	56	NA	NA	NA	NA	NA	130
	08/07/14	10 U	10 U	20 U	0.3 U	23.9	5.34	19.4	11	1.01 J	2.87	14.4	NA	140
Milford-02	07/14/06	NA	NA	NA	NA	786	NA	5110	195	NA	NA	2450	NA	7450
	08/24/06	NA	NA	NA	NA	756	NA	5110	235	NA	NA	2870	NA	8860
	04/11/07	NA	NA	NA	NA	798	NA	5710	242	NA	NA	2520	NA	9500
	08/05/08	10 U	431	431	1.38	800	NA	4890	229	118	44.2	2470	11200	9980
	12/16/11	NA	NA	NA	0.3 U	81.6	NA	355	NA	NA	NA	NA	NA	1130
	08/07/14	10 U	36.3	36.3	0.3 U	21.6	5.53	44.1	22.4	1.43 J	2.74	15.2	NA	202
W-WW-Rawlings	07/13/06	NA	NA	NA	NA	175	NA	126	59.8	NA	NA	184	NA	780
	12/16/11	DRY												
	08/05/14	DRY												

Notes
mg/L = milligrams per liter
U = analyte not detected
J = estimated concentration
NA = not analyzed
¹ = Grab sample for qualitative analysis only

ATTACHMENT 1

Field Forms

TITLE

RRC Wandkirk

Project No.

219394

Book No.

0309

From Page No. —

8/4/14

1340

JOHN LIARD - TS Chandler on-site @ Phys gate.
No code for gate call Troyce McKnight.
Code is 3437.

KLS

JOHN & TS Chandler of RRC

TROYCE McKnight at RRC on-site

Safety meeting - Hart shows & biologics

90°F partly cloudy 28% humidity

PPH - safety trees, safety glasses CR gloves, sun-screen.

Orland draws at Junk button.

1430

Begin open wells.

1530

Depart site

JOHN LIARD - Field Team leader

TS Chandler - Field staff

Troyce McKnight - RRC representative.

To Page No.

Witnessed & Understood by me,

Date

Invented by:

Date

8/4/14

Recorded by:

Project No. 219394
Book No. 0809

TITLE RRC Wendtink

From Page No.

8/5/14

0730

Troyce McNight - RRC representative

Josh Ward - TRC field tech

TJ Chandler - TRC field tech

arrive on-site

Clear 96°F 78% humidity

Standard RRC - steep toe, safety glasses, OR gloves.

0745

Safety meeting - heat stress, biological.

0800

Begin gauging

Decon probe with Alconox & Distilled Water spray bottles

Check River locations during gauging.

RS-12 dry

RS-13 dry

RS-14 dry

RS-15 small pool of standing water

RS-16 dry

RS-17 dry

C-01 dry

C-02 dry

SG-43/4/02 - dry

SP-01 dry.

1830

Depart site

1900

San Angelo.

Geotech interface probe Serial number 3117

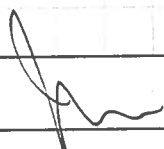
Probe decontaminated with Alconox & distilled water spray

To Page N

Witnessed & Understood by me, 

Date

8/5/14

Invented by: 

Date

8/5/14

TITLE

RRC Wend Kirk

Project No.

219394

Book No.

0309

From Page No. _____

8/5/14

Well.	DTW	ITD	TD	WC	3xOV	Notes.
MU-1	30.35	—	43.12	12.77	6.3	
MU-2	Blocked.	—	29.96			Heavy roots & sand
MU-3	25.13	—	39.68	14.55	7.1	Roots
MU-4	19.29	—	38.09	18.80	9.2	
MU-5	17.90	—	35.02	17.12	8.4	
MU-6	51.53	—	96.30	44.77	21.9	
MU-7	32.93	—	40.00	7.07	3.5	
MU-8	34.30	—	62.02	27.72	13.6	
MU-9	17.92	—	31.13	13.21	6.5	
MU-10	16.43	—	73.07	56.64	27.8	
MU-11	23.17	—	32.21	9.04	4.4	
MU-12	18.95	—	42.70	23.75	11.6	
MU-13	19.61	—	27.95	8.34	4.1	Roots
MU-14	24.49	—	81.19	56.70	27.8	
MU-15	28.21	—	39.00	10.79	5.3	Roots
MU-16	23.69	—	37.94	14.25	7.0	
MU-17	64.51	—	73.27	8.76	4.3	
MU-18	19.70	—	68.29	48.59	23.8	Hinge broken
MU-19	77.46	—	NM (110.50)	33.04	16.2	
MU-20	89.25	—	NM (118.07)	28.82	14.1	
MU-21	93.80	—	NM (137.17)	43.37	21.2	
MU-22	84.15	—	NM (180.50)	96.35	47.2	Casing open
MU-23	64.71	—	NM (178.80)	54.09	26.5	
Old 1	69.78	—	97.35	27.57	13.5	
4313603	Could not gauge, well electric, remaining					
4313605	Well not previously gauged. DTW deeper than 100'					
4313608	Could not gauge, well electric, remaining.					
Runnings.	DRY Windmill turning, pump rod connected. No water					

To Page

Witnessed & Understood by me,

Date

Invented by:

Date

8/5/14

Project No. 219394
Book No. 0309

TITLE RRC Wendtink

From Page No. _____

8/6/14

0730

~~Start~~ ^{Start} ~~Josea Wm~~ - TREC light locker
TS Chandler - TREC light locker
Troyce McKnight - RRC represents the
Arrive on site

100°F 30% humidity clear.

0745

0800

Standard. RRC - Start toes, scaly slugs, all slugs
Safety meeting heat, biology, organics.

Clear roots ML-2

ML-2 DT4-31.57 TD 38.62 WC-7.05 3cu - 3.5

Calibrate Myron L GP Ultrameter SN# 618073

pH 7.0 → 7.00

4.0 → 4.00

10.0 → 10.00

Cal 1431 → 1431

0815

Begin scaly shells

0920

Collect ML-3, DUP-1, MS/MSD

0940

Collect ML-2

1020

Collect ML-1

1040

Collect ML-15

1116

Collect ML-16

1130

Collect ML-11 Collect DUP-2

1150

Collect ML-10

1200

Collect ML-5

1230

Collect ML-12

1305

Collect ML-18

1330

Collect MAYS-2

Witnessed & Understood by me

Date

8/6/14

Invented by:

Recorded by:

Date

8/6/14

To Page No. -

TITLE

RRC Wentkirk

Project No.

215344

Book No.

0309

From Page No. _____

8/6/14 cond.

1400 Collect MU-20

1430 Collect MU-19

1500 Collect MU-17

1520 Collect OW-1.

1545 Collect MU-4

1610

1630

1745

Clean up, dump purge water & tanks
depart tank batteries
depart MAYS ranch
Ship samples.

Gauged MU-2 with geotech interface probe serial number 3111
cleaned with Alconox & distilled water spray.

Witnessed & Understood by me,

Date

Invented by:

Date

To Page

8/6/14

From Page No. _____

8/7/14

0745

Josh Wend - TRC field leader
 JS Chandler - TRC field staff on²
 Arrive on-site

103°F 30% humidity clear

Safety meeting - heat, biology, ergonomics,

PPE: Steel toe, safety glasses, CR gloves

0800

Calibrate Myron GP Ultrameter SN - G18073

cond. ~~1431~~ → 1491 L 1413 → 1413

pH 7.0 → 7.00

4.0 → 4.00

10.0 → 10.04

Calibrate YSI on separate form

0850

Collect MW-13

0915

Collect MW-9

1120

Collect MW-8

1130

Collect MW-14

1200

Collect MW-7

1220

Collect RS-15, DUP-3, ms/mid

1300

Collect Milford-01

1325

Collect Milford-02

1605

Collect MW-6

1645

Collect 4313608

1715

Collect 4313603

1810

Collect 4313605

Witnessed & Understood by me,

Date

Invented by:

Date

To Page No

8/7/14

TITLE

TRC Wondkirk

Project No.

219394

Book No.

0309

From Page No. _____

8/7/14
1820

cont.

Begin clean up & dump purge water

3 Purge drums

2 Trash / PPE drums

5 total drums on-site

1910
2000

Depart site.

Shin kyale

Drums stored on-site by tank battery near MW-4

Shannon Hoover - TRC project manager on-site 1400-1600.

To Page

Witnessed & Understood by me,

Date

Invented by:

Date

8/7/14

		Sample Location		ML-1	
		Client		RRC	
		Site		Cleveland	
Depth to Water (ft)	Before Sampling	30.35	Sample Collection Time	1020	
	After Sampling			bar 1	
Total Depth (ft)		43.12	Sample Method	Clear scrub	
	Standing Water Column (ft)	12.77			
One Purge Volume (gal)		2.1	Sampling Personnel	J Ward	

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
8/6/14	9:55	0.3	0.3		6.92 7.01	24.0	20600 20600		59		
8/6/14	9:59	0.4	0.7		6.92	23.1	21240		58		
8/6/14	10:02	1.3	2		6.87	22.8	25650		64		
8/6/14	10:04	1	3		6.84	22.6	20900		67		
8/6/14	10:06	1	4		6.74	22.7	29520		67		
8/6/14	10:08	1	5		7.00	22.7	21760		16		
8/6/14	10:10	0.5	5.5		7.05	22.8	25640		52		
8/6/14	10:12	0.5	6.0		7.03	22.7	25680		44		
8/6/14	10:14	0.5	6.5		6.94	22.6	21370		51		
8/6/14	10:15	0.5	7		6.87	22.7	25720		66		
			Day								

GROUNDWATER SAMPLING FORM

		Sample Location		ML-2	
		Client		RRR	
		Site		Wendover	
Depth to Water (ft)	Before Sampling	31.57	Sample Collection Time	0940	
	After Sampling	—	Purge Method	bar 7	
Total Depth (ft)		38.62	Sample Method	SPS	
Standing Water Column (ft)		2.05	Water Description	Dark Grey w/ Rust Material	
One Purge Volume (gal)		1.1	Sampling Personnel	J. Williams	

[illegible]

		Sample Location		ML-3
		Client		RRC
		Site		Windward
Depth to Water (ft)	Before Sampling	25.13	Sample Collection Time	0920
	After Sampling	39.68 —	Purge Method	bal
Total Depth (ft)		39.68	Sample Method	subs
Standing Water Column (ft)		14.55	Water Description	Tan slightly cloudy
One Purge Volume (gal)		2.4	Sampling Personnel	J. Wares

[illegible]

			Sample Location		ML-5
			Client		RRC
			Site		Wendover
Depth to Water (ft)	Before Sampling	17.90	Sample Collection Time		1200
	After Sampling	—	Purge Method		bul
Total Depth (ft)		35.02	Sample Method		snb
Standing Water Column (ft)		17.12	Water Description		Red tint
One Purge Volume (gal)		2.8	Sampling Personnel		J. Garza

[illegible]

GROUNDWATER SAMPLING FORM

		Sample Location		NW-6	
		Client		RRL	
		Site		West Fork	
Depth to Water (ft)	Before Sampling	57.53	Sample Collection Time	1605	
	After Sampling	—	Purge Method	bwl	
Total Depth (ft)		96.30	Sample Method	Syn	
	Standing Water Column (ft)	44.77	Water Description	Clear	
One Purge Volume (gal)		7.3	Sampling Personnel	J. L. Laro	

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
8-7-14	3:44	1	1		6.91	27.0	15950		-81		
8-7-14	3:48	1	2		6.93	23.5	16450		-79		
8-7-14	3:50	0.5	2.5		7.00	24.2	16550		-76		
8-7-14	3:52	0.5	3		7.01	24.0	16530		-73		
8-7-14	3:56	1	4		6.82	24.0	16620		-76		
8-7-14	3:58	0.5	4.5		6.91	23.7	16760		-75		
8-7-14	3:00	0.5	5		6.90	23.4	16790		-70		
8-7-14	3:02	0.5	5.5		6.93	23.1	16920		-65		
8-7-14	3:04	0.5	6		7.03	23.0	16900		-68		
8-7-14	3:07	1	7		7.00	23.3	16820		-60		
8-7-14	3:10	1	8		6.95	23.1	16920		-67		
8-7-14	3:12	1	9		7.03	22.8	16800		-71		
8-7-14	3:16	1	10		7.06	23.2	16700		-71		
8-7-14	3:18	0.5	10.5		6.97	23.0	16700		-70		
8-7-14	3:20	1	11.5		7.04	22.9	16830		-60		
8-7-14	3:25	1.5	13		6.99	22.2	16780		-52		
8-7-14	3:28	1	14		7.07	22.5	16900		-57		
8-7-14	3:32	1	15		7.09	22.6	16920		-63		
8-7-14	3:35	1	16		6.96	23.0	16870		-60		
8-7-14	3:40	1	17		6.90	22.9	16830		-59		
8-7-14	3:44	1	18		6.91	23.2	16760		-65		
8-7-14	3:50	1	19		7.01	22.8	16950		-52		
8-7-14	3:52	1	20		7.06	23.0	16920		-50		

Day

GROUNDWATER SAMPLING FORM

		Sample Location		NW-7	
		Client		PAC	
		Site		Wendkirk	
Depth to Water (ft)	Before Sampling	32.93	Sample Collection Time	1200	
	After Sampling	-	Purge Method	bar?	
Total Depth (ft)		40.00	Sample Method		
Standing Water Column (ft)		7.07	Water Description	light grey f.i.f	
One Purge Volume (gal)		1.2	Sampling Personnel	J. Wards	

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
8-7-14	11:45	0.5	0.5	/	7.35	24.2	2307	/	-20		
8-7-14	11:48	0.5	1		7.33	23.8	2429		-67		
8-7-14	11:50	1	2		7.32	23.6	2788		-93		
8-7-14	11:53	1	3		7.39	23.6	2827		-100		
8-7-14	11:55	1	4		7.50	23.7	2614		-94		
			Day	/				/			

[illegible]

GROUNDWATER SAMPLING FORM

		Sample Location		MW-9	
		Client		RRC	
		Site		Wardkirh	
Depth to Water (ft)	Before Sampling	17.92	Sample Collection Time	09/5	
	After Sampling	-	Purge Method	bail	
Total Depth (ft)		31.13	Sample Method		
	Standing Water Column (ft)	13.21	Water Description	light Brown f.t	
One Purge Volume (gal)		2.2	Sampling Personnel	J. LIND	

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
8-7-14	8:58	0.5	0.5	1	7.13	21.8	735		-12		
8-7-14	9:00	0.5	1		7.01	20.9	7923		-26		
8-7-14	9:03	1	2		6.90	20.6	10920		-23		
8-7-14	9:05	1	3		6.87	20.5	12110		-35		
8-7-14	9:08	1	4		6.89	20.5	11890		-35		
8-7-14	9:10	1	5		7.08	20.7	10900		-40		
			Dry								

GROUNDWATER SAMPLING FORM



		Sample Location		ML-46
		Client		RRL
		Site		Wendkerh
Depth to Water (ft)	Before Sampling	16.43	Sample Collection Time	1150
	After Sampling		Purge Method	baul
Total Depth (ft)		73.07	Sample Method	gwb
		56.64	Water Description	Clear
Standing Water Column (ft)		9.73	Sampling Personnel	J. L. M. R. B.
One Purge Volume (gal)				

[illegible]

		Sample Location		ML-11
		Client		RRC
		Site		Wankin
Depth to Water (ft)	Before Sampling	23.17	Sample Collection Time	1130
	After Sampling	32.21	Purge Method	bed
Total Depth (ft)		32.21	Sample Method	Grub
Standing Water Column (ft)		9.04	Water Description	light Brown fine cloudiness
One Purge Volume (gal)		1.5	Sampling Personnel	J. Wilson

[illegible]

[illegible]

		Sample Location		NW-13
		Client		RLC
		Site		Wendish
Depth to Water (ft)	Before Sampling	19.61	Sample Collection Time	0850
	After Sampling	<u> </u>	Purge Method	barl
Total Depth (ft)		22.95	Sample Method	
Standing Water Column (ft)		8.34	Water Description	slight tan color w/ some muddy odor
One Purge Volume (gal)		1.4	Sampling Personnel	gurb J. Woods

Form Date: 01/24/07

			Sample Location		LW-14
			Client		PRL
			Site		Wendover
Depth to Water (ft)	Before Sampling	24.44	Sample Collection Time		1130
	After Sampling		Purge Method		bad
Total Depth (ft)		81.19	Sample Method		gws
Standing Water Column (ft)		56.70	Water Description		Clear
One Purge Volume (gal)		9.2	Sampling Personnel		J. Webb

[illegible]

[illegible]

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
8/6/14	10:48	0.3	0.3		6.91	24.1	12810		-39		
8/6/14	10:50	0.4	0.7		6.71	23.2	12500		-30		
8/6/14	10:52	0.5	1.2		6.64	22.7	12210		-34		
8/6/14	10:54	1	2.2		6.53	22.8	12020		4		
8/6/14	10:56	0.6	3		6.7	22.6	12170		20		
8/6/14	10:58	0.5	3.5		6.52	22.4	12400		39		
8/6/14	11:00	0.5	4		6.62	22.5	12520		25		
8/6/14	11:02	0.5	4.5		6.72	22.9	12660		-15		
			Dry								

		Sample Location		440-161 NW-17	
		Client		RRC	
		Site		Wendover	
Depth to Water (ft)	Before Sampling	64.51	Sample Collection Time	1500	
	After Sampling	~	Purge Method	bub	
Total Depth (ft)		73.27	Sample Method		
Standing Water Column (ft)		8.76	Water Description	Beach f. 10 to 15 ft	
One Purge Volume (gal)		14	Sampling Personnel	J. L. H. 10/10	

[illegible]

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
8/6/14	12:46	0.5	0.5		6.58	24.6	60500		97		
8/6/14	12:48	1	1.5		6.72	23.4	61020		74		
8/6/14	12:50	1.5	3		6.68	23.4	61000		48		
8/6/14	12:52	1	4		6.65	22.8	61030		46		
8/6/14	12:54	1	5		6.73	23.5	60560		23		
8/6/14	12:56	1	6		6.68	24.0	61020		-3		
8/6/14	12:56	0.5	6.5		6.71	23.2	61220		-11		
8/6/14	1:00	0.5	7		6.69	23.1	61220		-013		
			2.5								

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

		Sample Location		4313605
		Client		RRC
		Site		Wentworth
Depth to Water (ft)	Before Sampling		Sample Collection Time	1800
	After Sampling		Purge Method	bed
Total Depth (ft)			Sample Method	grab
Standing Water Column (ft)			Water Description	Clear
One Purge Volume (gal)			Sampling Personnel	J. Lutz

Form Date: 01/24/07

Initial SAX Date 7/11/14 Page 1 of 1

[illegible]

SURFACE WATER SAMPLING FORM

	Sample Location	RS-15
	Client	RRC
	Site	Wendland
Sample Collection Time	1220	
Sample Method	Grab	
Water Description	Muddy brown / black	
Sampling Personnel	S. Ward	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
8-7-14	12:15	7.28	30.30	52640	—	-57.4

Date: <u>8-7-14</u>		Time: <u>8:00am</u>		Employee name: <u>Thomas Chandler</u>	
Battery Voltage: <u>95%</u>		Sonde Type and Serial No. <u>YSI 6820V2 / SN: 13103325</u>			
Calibration					
Function	Temp. of Standard	Value of Standard	Initial Reading	Calibrated to	Comments
Specific conductance > 1,000 μ S/cm	<u>30.06°C</u>	1.413	<u>1520</u>	<u>1413</u>	Zero Check ☐ Pass ☐ Fail; Value =
Conductivity cell constant		<u>1.413</u>	10000	<u>4.61986</u>	Range 5.0 $\pm$ 0.5
pH calibrated (~7)	<u>29.44°C</u>	<u>7.00</u>	<u>7.09</u>	<u>7.00</u>	
pH mv for pH 7 solution	<u>29.44°C</u>	<u>7.00</u>	<u>-20.1</u>		Range 0 $\pm$ 50 mv
pH slope (~ 4/10)			<u>-0.897</u>		
pH mv for pH 10			<u>-176.1</u>		Range: -130 to -230 mv
pH mv for pH 4			<u>157.9</u>		Range: 130 to 230 mv
Dissolved oxygen (%sat) *					
Dissolved oxygen charge					Range 25 to 75
Dissolved oxygen gain					Range 0.7 to 1.4
Optional Sensors (include parameter: turbidity, etc.)					
DATA NEEDED FOR DISSOLVED OXYGEN CALIBRATION					
Altitude (A) = _____ feet above msl		Barometric pressure _____ inches _____ mm			
Barometric Pressure (BP) Options		Barometric Pressure Formulas			
Barometer _____		Barometric pressure (inches) _____ $\times$ 25.4 = BP _____ mm			
From local source after correction (CBP) _____		BP _____ mm = CBP _____ mm - 2.5 (altitude _____ /100)			
Estimated from altitude only _____		BP _____ mm = 760 mm - 2.5 (altitude _____ /100)			
DO % saturation standard calculation * _____		DO% sat Standard = Absolute BP mm Hg/760 $\times$ 100			
Deployment Checklist (required for data logging only)					
Logging interval: Yes ☒ No ☐	SDI-12 Autosleep enabled: Yes ☒ No ☐	RS 232 autosleep enabled: Yes ☒ No ☐	DO warm-up time: _____	Battery volts in Sonde (days): _____	Available memory in Sonde (days): _____
Post-Calibration Check					
Date: <u>8-7-14</u>		Time: <u>6:42pm</u>		Employee Name: <u>Thomas Chandler</u>	
Battery Voltage: <u>95%</u>		Sonde Type and Serial No. <u>YSI 6820V2 / SN: 13103325</u>			
Function	Temp. of Standard	Value of Standard	Initial Reading	Pass Post-Cal?	Comments
Specific conductance	<u>32.70°C</u>	<u>1.413</u>	<u>1.542</u>	☒ Yes ☐ No	
pH calibrated (~7)	<u>31.84</u>	<u>7</u>	<u>7.49</u>	☒ Yes ☐ No	
pH slope (~ 4/10)	<u>31.9</u>	<u>4 pH</u>	<u>-153.2</u>	☒ Yes ☐ No	<u>3.99 pH Initial</u>
Dissolved oxygen (%sat) *	<u>32.58</u>		<u>-176.2</u>	☐ Yes ☐ No	<u>10.44 pH Initial</u>
Optional Sensors (include parameter: turbidity, etc.)				☐ Yes ☐ No	
Location of Deployment, Routine Run, or Special Study: <u>Wendrich</u>				Date/Time Deployed: <u>8/7/14 8:00</u>	Date/Time Retrieved: <u>8/7/14 1842</u>
Use(circle one):		24-hour		Continuous ☒ Grab	
MAINTENANCE —Refer to Chapter 8 for maintenance requirements—Perform temperature check along with regular maintenance. The laboratory thermometer must be checked against NIST traceable thermometer annually.					
Sensor	Date	Initials	Maintenance Completed		
pH					
DO					
Specific Conductance					
Annual NIST traceable check	Date:	NIST Temp:	Lab Thermometer Temp:	Correction Factor:	
Maintenance temperature check	Date:	Sonde Temp:	Lab Thermometer Temp:		
Factory maintenance/repair notes:					

Attachment 2

Laboratory Analytical Data Reports



August 18, 2014

Shannon Hoover
TRC Environmental Corp.
505 East Huntland Drive
Suite 250
Austin, Texas 78752
TEL: (512) 329-6080
FAX (512) 329-8750
RE: RRC-Wendkirk

Order No.: 1408053

Dear Shannon Hoover:

DHL Analytical, Inc. received 18 sample(s) on 8/7/2014 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read "John DuPont".

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification
Number: T104704211-14-12



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[illegible]

4

ORIGIN ID: SJTA (512) 565-0366
JOSH WARD
TRC ENVIRONMENTAL
505 E. HUNTLAND DR.
STE. 250
AUSTIN, TX 78752
UNITED STATES US

SHIP DATE: 06AUG14
ACTWGT: 62.0 LB
CAD: 6992517/SSFO1504
DIMS: 26x15x14 IN
BILL THIRD PARTY

TO RECEIVING
DHL ANALYTICAL
2300 DOUBLE CREEK

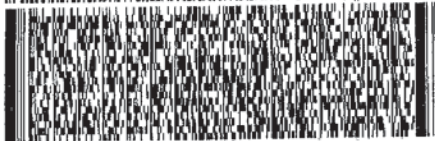
ROUND ROCK TX 78

(512) 888-6222
INVT
POT

REF:

513
B28

1 D
6940
08.07



FedEx
Express



REL#
3785346

TRK# 7801 0076 6940
0201

THU - 07 AUG AA
STANDARD OVERNIGHT

44 BSMA

78664
TX-US AUS



CUSTODY SEAL

DATE

SIGNATURE

QEC

Quality Environmental Containers
800-255-3950 • 304-255-3900

TABLE 1

RT 513
B28
EZ

D
8276
08.07

REF:

INU:

DEPT



FedEx
Express



REL#
3785346

THU - 07 AUG AA
STANDARD OVERNIGHT

78664
TX-US AUS



SIGNATURE

GEC
Quality

Quality Environmental Containers
800-255-3950 • 304-255-3900

Sample Receipt Checklist

Client Name TRC Environmental Corp.

Date Received: 8/7/2014

Work Order Number 1408053

Received by MD

Checklist completed by:

[Signature]
Signature

8/7/2014

Date

Reviewed by

[Initials]
Initials

8/7/2014

Date

Carrier name FedEx 1day

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 ☐	0.4 °C 24
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH<2 acceptable upon receipt?	Yes ☒	No ☐	NA ☐ LOT # 8086
	Adjusted? <u>no</u>	Checked by <u>B</u>	
Water - pH>9 (S) or pH>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☒ LOT #
	Adjusted? _____	Checked by _____	

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc.							
Laboratory Review Checklist: Reportable Data							
Project Name: RRC - Wendkirk				Date: 8/18/14			
Reviewer Name: Carlos Castro				Laboratory Work Order: 1408053			
Prep Batch Number(s): See Prep Dates Report				Run Batch: See Analytical Dates Report			
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
		Chain-of-Custody (C-O-C)					
R1	OI	1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				R1-01
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and Quality Control (QC) Identification					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test Reports					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	Surrogate Recovery Data					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	Test Reports/Summary Forms for Blank Samples					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MQL?	X				
R6	OI	Laboratory Control Samples (LCS):					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R7-03
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical Duplicate Data					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	Method Quantitation Limits (MQLs):					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other Problems/Anomalies					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				R10-01
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: RRC - Wendkirk		Date: 8/18/14					
Reviewer Name: Carlos Castro		Laboratory Work Order: 1408053					
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
S1	OI	Initial Calibration (ICAL)					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			S2-02
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	Mass Spectral Tuning:					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal Standards (IS):					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw Data (NELAC Section 5.5.10)					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual Column Confirmation					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively Identified Compounds (TICs):					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) Results:					
		1) Were percent recoveries within method QC limits?	X				
S9	I	Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
S10	OI	Method Detection Limit (MDL) Studies					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSSs?	X				
S11	OI	Proficiency Test Reports:					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards Documentation					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/Analyte Identification Procedures					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of Analyst Competency (DOC)					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/Validation Documentation for Methods (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory Standard Operating Procedures (SOPs):					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC Chapter 5,
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 6-10, 2013. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director


Signature

08/18/14

Date

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Lab Order: 1408053

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 8/7/14. A total of 18 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 8/7/14 and 8/8/14 (batches 65102 & 65117) the matrix spikes and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (batch 65117) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (batch 65102) was from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/15/14 the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis most samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S2-02

For Metals analysis performed on 8/15/14 the LCVLs (LCVL5-140815, LCVL6-140815, LCVL7-140815 & LCVL8-140815) were above control limits for Sodium. These are flagged accordingly in the QC summary report. The associated CCVs (CCV5-140815, CCV6-140815, CCV7-140815 & CCV8-140815) were within control limits for this analyte. No further corrective actions were taken.

Exception Report S9-01

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Lab Order: 1408053

CASE NARRATIVE

For Metals analysis performed on 8/15/14 the RPD for the serial dilution was slightly above control limits for Sodium. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Lab Order: 1408053

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1408053-01	MW-3		08/06/14 09:20 AM	8/7/2014
1408053-02	MW-2		08/06/14 09:40 AM	8/7/2014
1408053-03	MW-1		08/06/14 10:20 AM	8/7/2014
1408053-04	MW-15		08/06/14 10:40 AM	8/7/2014
1408053-05	MW-16		08/06/14 11:10 AM	8/7/2014
1408053-06	MW-11		08/06/14 11:30 AM	8/7/2014
1408053-07	MW-10		08/06/14 11:50 AM	8/7/2014
1408053-08	MW-5		08/06/14 12:00 PM	8/7/2014
1408053-09	MW-12		08/06/14 12:30 PM	8/7/2014
1408053-10	MW-18		08/06/14 01:05 PM	8/7/2014
1408053-11	MAYS-02		08/06/14 01:30 PM	8/7/2014
1408053-12	MW-20		08/06/14 02:00 PM	8/7/2014
1408053-13	MW-19		08/06/14 02:30 PM	8/7/2014
1408053-14	MW-17		08/06/14 03:00 PM	8/7/2014
1408053-15	OW-1		08/06/14 03:20 PM	8/7/2014
1408053-16	MW-4		08/06/14 03:45 PM	8/7/2014
1408053-17	DUP-1		08/06/14	8/7/2014
1408053-18	DUP-2		08/06/14	8/7/2014

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408053-01A	MW-3	08/06/14 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-3	08/06/14 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-01B	MW-3	08/06/14 09:20 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-3	08/06/14 09:20 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-3	08/06/14 09:20 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-3	08/06/14 09:20 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
	MW-3	08/06/14 09:20 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-02A	MW-2	08/06/14 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-2	08/06/14 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-02B	MW-2	08/06/14 09:40 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-2	08/06/14 09:40 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-2	08/06/14 09:40 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-2	08/06/14 09:40 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-2	08/06/14 09:40 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-03A	MW-1	08/06/14 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-1	08/06/14 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-03B	MW-1	08/06/14 10:20 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-1	08/06/14 10:20 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-1	08/06/14 10:20 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-1	08/06/14 10:20 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-1	08/06/14 10:20 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-04A	MW-15	08/06/14 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-15	08/06/14 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-04B	MW-15	08/06/14 10:40 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-15	08/06/14 10:40 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-15	08/06/14 10:40 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-15	08/06/14 10:40 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-05A	MW-16	08/06/14 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-16	08/06/14 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408053-05B	MW-16	08/06/14 11:10 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-16	08/06/14 11:10 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-16	08/06/14 11:10 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-16	08/06/14 11:10 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-06A	MW-11	08/06/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-11	08/06/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-06B	MW-11	08/06/14 11:30 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-11	08/06/14 11:30 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-11	08/06/14 11:30 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-11	08/06/14 11:30 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-11	08/06/14 11:30 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-07A	MW-10	08/06/14 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-10	08/06/14 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-07B	MW-10	08/06/14 11:50 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-10	08/06/14 11:50 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-10	08/06/14 11:50 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-10	08/06/14 11:50 AM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-10	08/06/14 11:50 AM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-08A	MW-5	08/06/14 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-5	08/06/14 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-08B	MW-5	08/06/14 12:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-5	08/06/14 12:00 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-5	08/06/14 12:00 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-5	08/06/14 12:00 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-5	08/06/14 12:00 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-09A	MW-12	08/06/14 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-12	08/06/14 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-09B	MW-12	08/06/14 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408053-09B	MW-12	08/06/14 12:30 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-12	08/06/14 12:30 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-12	08/06/14 12:30 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-12	08/06/14 12:30 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-10A	MW-18	08/06/14 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-18	08/06/14 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-18	08/06/14 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-10B	MW-18	08/06/14 01:05 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-18	08/06/14 01:05 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-18	08/06/14 01:05 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-18	08/06/14 01:05 PM	Aqueous	E300	Anion Preparation	08/07/14 10:00 AM	65102
	MW-18	08/06/14 01:05 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-11A	MAYS-02	08/06/14 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MAYS-02	08/06/14 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-11B	MAYS-02	08/06/14 01:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MAYS-02	08/06/14 01:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MAYS-02	08/06/14 01:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MAYS-02	08/06/14 01:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MAYS-02	08/06/14 01:30 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-12A	MW-20	08/06/14 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-20	08/06/14 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-12B	MW-20	08/06/14 02:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-20	08/06/14 02:00 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-20	08/06/14 02:00 PM	Aqueous	E300	Anion Preparation	08/08/14 08:04 AM	65117
	MW-20	08/06/14 02:00 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-20	08/06/14 02:00 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-13A	MW-19	08/06/14 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-19	08/06/14 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408053-13B	MW-19	08/06/14 02:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-19	08/06/14 02:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-19	08/06/14 02:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-19	08/06/14 02:30 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-19	08/06/14 02:30 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-14A	MW-17	08/06/14 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-17	08/06/14 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-14B	MW-17	08/06/14 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-17	08/06/14 03:00 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-17	08/06/14 03:00 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-17	08/06/14 03:00 PM	Aqueous	M2540C	TDS Preparation	08/12/14 08:30 AM	65196
1408053-15A	OW-1	08/06/14 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	OW-1	08/06/14 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-15B	OW-1	08/06/14 03:20 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	OW-1	08/06/14 03:20 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	OW-1	08/06/14 03:20 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	OW-1	08/06/14 03:20 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	OW-1	08/06/14 03:20 PM	Aqueous	M2540C	TDS Preparation	08/12/14 09:11 PM	65197
1408053-16A	MW-4	08/06/14 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	MW-4	08/06/14 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-16B	MW-4	08/06/14 03:45 PM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-4	08/06/14 03:45 PM	Aqueous	E300	Anion Preparation	08/08/14 08:04 AM	65117
	MW-4	08/06/14 03:45 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-4	08/06/14 03:45 PM	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	MW-4	08/06/14 03:45 PM	Aqueous	M2540C	TDS Preparation	08/12/14 09:11 PM	65197
1408053-17A	DUP-1	08/06/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	DUP-1	08/06/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-17B	DUP-1	08/06/14	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408053-17B	DUP-1	08/06/14	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	DUP-1	08/06/14	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	DUP-1	08/06/14	Aqueous	M2540C	TDS Preparation	08/12/14 09:11 PM	65197
1408053-18A	DUP-2	08/06/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
	DUP-2	08/06/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/12/14 11:06 AM	65186
1408053-18B	DUP-2	08/06/14	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	DUP-2	08/06/14	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	DUP-2	08/06/14	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	DUP-2	08/06/14	Aqueous	E300	Anion Preparation	08/07/14 01:43 PM	65111
	DUP-2	08/06/14	Aqueous	M2540C	TDS Preparation	08/12/14 09:11 PM	65197

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408053-01A	MW-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:05 PM	ICP-MS4_140815C
	MW-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:38 PM	ICP-MS4_140815C
1408053-01B	MW-3	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 12:16 PM	TITRATOR_140811A
	MW-3	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 11:50 AM	IC_140807A
	MW-3	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 04:44 PM	IC_140807A
	MW-3	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-02A	MW-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:41 PM	ICP-MS4_140815C
	MW-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:09 PM	ICP-MS4_140815C
1408053-02B	MW-2	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 12:41 PM	TITRATOR_140811A
	MW-2	Aqueous	E300	Anions by IC method - Water	65102	1	08/07/14 12:04 PM	IC_140807A
	MW-2	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 03:17 PM	IC_140807A
	MW-2	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 05:28 PM	IC_140807A
	MW-2	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-03A	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:11 PM	ICP-MS4_140815C
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:43 PM	ICP-MS4_140815C
1408053-03B	MW-1	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 12:52 PM	TITRATOR_140811A
	MW-1	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 05:43 PM	IC_140807A
	MW-1	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 09:07 PM	IC_140807A
	MW-1	Aqueous	E300	Anions by IC method - Water	65102	1	08/07/14 12:19 PM	IC_140807A
	MW-1	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-04A	MW-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	50	08/15/14 12:45 PM	ICP-MS4_140815C
	MW-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:13 PM	ICP-MS4_140815C
1408053-04B	MW-15	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:02 PM	TITRATOR_140811A
	MW-15	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 12:33 PM	IC_140807A
	MW-15	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 05:58 PM	IC_140807A
	MW-15	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-05A	MW-16	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:47 PM	ICP-MS4_140815C
	MW-16	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:15 PM	ICP-MS4_140815C

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408053-05B	MW-16	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:13 PM	TITRATOR_140811A
	MW-16	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 12:48 PM	IC_140807A
	MW-16	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 06:12 PM	IC_140807A
	MW-16	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-06A	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:49 PM	ICP-MS4_140815C
	MW-11	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:17 PM	ICP-MS4_140815C
1408053-06B	MW-11	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:19 PM	TITRATOR_140811A
	MW-11	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 01:14 PM	IC_140807A
	MW-11	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 06:27 PM	IC_140807A
	MW-11	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 09:51 PM	IC_140807A
	MW-11	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-07A	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:51 PM	ICP-MS4_140815C
	MW-10	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:19 PM	ICP-MS4_140815C
1408053-07B	MW-10	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:29 PM	TITRATOR_140811A
	MW-10	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 10:06 PM	IC_140807A
	MW-10	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 01:29 PM	IC_140807A
	MW-10	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 06:41 PM	IC_140807A
	MW-10	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-08A	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:53 PM	ICP-MS4_140815C
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:21 PM	ICP-MS4_140815C
1408053-08B	MW-5	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:38 PM	TITRATOR_140811A
	MW-5	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 01:43 PM	IC_140807A
	MW-5	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 06:56 PM	IC_140807A
	MW-5	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 10:20 PM	IC_140807A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-09A	MW-12	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:55 PM	ICP-MS4_140815C
	MW-12	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:23 PM	ICP-MS4_140815C
1408053-09B	MW-12	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 01:48 PM	TITRATOR_140811A

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408053-09B	MW-12	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 01:58 PM	IC_140807A
	MW-12	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 07:11 PM	IC_140807A
	MW-12	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 10:35 PM	IC_140807A
	MW-12	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-10A	MW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:25 PM	ICP-MS4_140815C
	MW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	2500	08/15/14 03:36 PM	ICP-MS4_140815C
	MW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 12:57 PM	ICP-MS4_140815C
1408053-10B	MW-18	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:03 PM	TITRATOR_140811A
	MW-18	Aqueous	E300	Anions by IC method - Water	65102	10	08/07/14 02:13 PM	IC_140807A
	MW-18	Aqueous	E300	Anions by IC method - Water	65102	100	08/07/14 07:25 PM	IC_140807A
	MW-18	Aqueous	E300	Anions by IC method - Water	65102	1000	08/07/14 10:50 PM	IC_140807A
	MW-18	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-11A	MAYS-02	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:01 PM	ICP-MS4_140815C
	MAYS-02	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:38 PM	ICP-MS4_140815C
1408053-11B	MAYS-02	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:17 PM	TITRATOR_140811A
	MAYS-02	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 05:38 PM	IC2_140807B
	MAYS-02	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 08:04 PM	IC2_140807B
	MAYS-02	Aqueous	E300	Anions by IC method - Water	65111	1000	08/07/14 10:30 PM	IC2_140807B
	MAYS-02	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-12A	MW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:03 PM	ICP-MS4_140815C
	MW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	50	08/15/14 03:40 PM	ICP-MS4_140815C
1408053-12B	MW-20	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:25 PM	TITRATOR_140811A
	MW-20	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 05:53 PM	IC2_140807B
	MW-20	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 08:19 PM	IC2_140807B
	MW-20	Aqueous	E300	Anions by IC method - Water	65117	1	08/08/14 11:22 AM	IC2_140808A
	MW-20	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-13A	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:05 PM	ICP-MS4_140815C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:42 PM	ICP-MS4_140815C

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408053-13B	MW-19	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:35 PM	TITRATOR_140811A
	MW-19	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 06:08 PM	IC2_140807B
	MW-19	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 08:33 PM	IC2_140807B
	MW-19	Aqueous	E300	Anions by IC method - Water	65111	1000	08/07/14 10:59 PM	IC2_140807B
	MW-19	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
1408053-14A	MW-17	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:44 PM	ICP-MS4_140815C
	MW-17	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:07 PM	ICP-MS4_140815C
1408053-14B	MW-17	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:43 PM	TITRATOR_140811A
	MW-17	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 06:22 PM	IC2_140807B
	MW-17	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 08:48 PM	IC2_140807B
	MW-17	Aqueous	M2540C	Total Dissolved Solids	65196	1	08/13/14 09:22 AM	WC_140812B
	OW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:09 PM	ICP-MS4_140815C
1408053-15A	OW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:46 PM	ICP-MS4_140815C
	OW-1	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 02:55 PM	TITRATOR_140811A
1408053-15B	OW-1	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 06:37 PM	IC2_140807B
	OW-1	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 09:02 PM	IC2_140807B
	OW-1	Aqueous	E300	Anions by IC method - Water	65111	1000	08/07/14 11:28 PM	IC2_140807B
	OW-1	Aqueous	M2540C	Total Dissolved Solids	65197	1	08/13/14 10:56 AM	WC_140812C
	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:11 PM	ICP-MS4_140815C
1408053-16A	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	100	08/15/14 03:48 PM	ICP-MS4_140815C
	MW-4	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 03:03 PM	TITRATOR_140811A
1408053-16B	MW-4	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 06:51 PM	IC2_140807B
	MW-4	Aqueous	E300	Anions by IC method - Water	65117	1	08/08/14 11:36 AM	IC2_140808A
	MW-4	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 09:17 PM	IC2_140807B
	MW-4	Aqueous	M2540C	Total Dissolved Solids	65197	1	08/13/14 10:56 AM	WC_140812C
	1408053-17A	DUP-1	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:13 PM	ICP-MS4_140815C
1408053-17A	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	100	08/15/14 03:50 PM	ICP-MS4_140815C
	1408053-17B	DUP-1	M2320 B	Alkalinity	65150	1	08/11/14 03:22 PM	TITRATOR_140811A

Lab Order: 1408053
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408053-17B	DUP-1	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 09:32 PM	IC2_140807B
	DUP-1	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 07:06 PM	IC2_140807B
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	65197	1	08/13/14 10:56 AM	WC_140812C
1408053-18A	DUP-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	500	08/15/14 03:52 PM	ICP-MS4_140815C
	DUP-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65186	5	08/15/14 02:15 PM	ICP-MS4_140815C
1408053-18B	DUP-2	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 03:29 PM	TITRATOR_140811A
	DUP-2	Aqueous	E300	Anions by IC method - Water	65111	10	08/07/14 07:20 PM	IC2_140807B
	DUP-2	Aqueous	E300	Anions by IC method - Water	65111	100	08/07/14 09:46 PM	IC2_140807B
	DUP-2	Aqueous	E300	Anions by IC method - Water	65111	1000	08/08/14 12:12 AM	IC2_140807B
	DUP-2	Aqueous	M2540C	Total Dissolved Solids	65197	1	08/13/14 10:56 AM	WC_140812C

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-3
Lab ID: 1408053-01
Collection Date: 08/06/14 09:20 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	817	50.0	150		mg/L	500	08/15/14 03:05 PM
Magnesium	1130	50.0	150		mg/L	500	08/15/14 03:05 PM
Potassium	35.2	0.500	1.50		mg/L	5	08/15/14 12:38 PM
Sodium	2300	50.0	150		mg/L	500	08/15/14 03:05 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 11:50 AM
Chloride	3800	30.0	100		mg/L	100	08/07/14 04:44 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 11:50 AM
Sulfate	5470	100	300		mg/L	100	08/07/14 04:44 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	770	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:16 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:16 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:16 PM
Alkalinity, Total (As CaCO ₃)	770	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:16 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	11300	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053**Client Sample ID:** MW-2
Lab ID: 1408053-02
Collection Date: 08/06/14 09:40 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	514	50.0	150		mg/L	500	08/15/14 03:09 PM
Magnesium	296	50.0	150		mg/L	500	08/15/14 03:09 PM
Potassium	13.2	0.500	1.50		mg/L	5	08/15/14 12:41 PM
Sodium	439	50.0	150		mg/L	500	08/15/14 03:09 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<0.300	0.300	1.00		mg/L	1	08/07/14 12:04 PM
Chloride	285	3.00	10.0		mg/L	10	08/07/14 03:17 PM
Nitrate-N	0.290	0.100	0.500	J	mg/L	1	08/07/14 12:04 PM
Sulfate	2550	100	300		mg/L	100	08/07/14 05:28 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	332	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 12:41 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 12:41 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 12:41 PM
Alkalinity, Total (As CaCO ₃)	332	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 12:41 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	2830	50.0	50.0		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-1
Lab ID: 1408053-03
Collection Date: 08/06/14 10:20 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	688	50.0	150		mg/L	500	08/15/14 03:11 PM
Magnesium	769	50.0	150		mg/L	500	08/15/14 03:11 PM
Potassium	72.8	0.500	1.50		mg/L	5	08/15/14 12:43 PM
Sodium	5870	50.0	150		mg/L	500	08/15/14 03:11 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	10.5	0.300	1.00		mg/L	1	08/07/14 12:19 PM
Chloride	8620	300	1000		mg/L	1000	08/07/14 09:07 PM
Nitrate-N	0.612	0.100	0.500		mg/L	1	08/07/14 12:19 PM
Sulfate	5320	100	300		mg/L	100	08/07/14 05:43 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	464	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:52 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:52 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:52 PM
Alkalinity, Total (As CaCO ₃)	464	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 12:52 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	22000	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-15
Lab ID: 1408053-04
Collection Date: 08/06/14 10:40 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	584	50.0	150		mg/L	500	08/15/14 03:13 PM
Magnesium	551	5.00	15.0		mg/L	50	08/15/14 12:45 PM
Potassium	43.1	5.00	15.0		mg/L	50	08/15/14 12:45 PM
Sodium	2900	50.0	150		mg/L	500	08/15/14 03:13 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 12:33 PM
Chloride	4070	30.0	100		mg/L	100	08/07/14 05:58 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 12:33 PM
Sulfate	3630	100	300		mg/L	100	08/07/14 05:58 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	422	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:02 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:02 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:02 PM
Alkalinity, Total (As CaCO ₃)	422	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:02 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	12300	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-16
Lab ID: 1408053-05
Collection Date: 08/06/14 11:10 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	761	50.0	150		mg/L	500	08/15/14 03:15 PM
Magnesium	653	50.0	150		mg/L	500	08/15/14 03:15 PM
Potassium	50.9	0.500	1.50		mg/L	5	08/15/14 12:47 PM
Sodium	1770	50.0	150		mg/L	500	08/15/14 03:15 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 12:48 PM
Chloride	3750	30.0	100		mg/L	100	08/07/14 06:12 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 12:48 PM
Sulfate	2650	100	300		mg/L	100	08/07/14 06:12 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	468	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:13 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:13 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:13 PM
Alkalinity, Total (As CaCO ₃)	468	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:13 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	12700	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-11
Lab ID: 1408053-06
Collection Date: 08/06/14 11:30 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1110	50.0	150		mg/L	500	08/15/14 03:17 PM
Magnesium	439	50.0	150		mg/L	500	08/15/14 03:17 PM
Potassium	74.3	0.500	1.50		mg/L	5	08/15/14 12:49 PM
Sodium	7090	50.0	150		mg/L	500	08/15/14 03:17 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	16.7	3.00	10.0		mg/L	10	08/07/14 01:14 PM
Chloride	13200	300	1000		mg/L	1000	08/07/14 09:51 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 01:14 PM
Sulfate	1780	100	300		mg/L	100	08/07/14 06:27 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	245	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:19 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:19 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:19 PM
Alkalinity, Total (As CaCO ₃)	245	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:19 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	24700	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053**Client Sample ID:** MW-10
Lab ID: 1408053-07
Collection Date: 08/06/14 11:50 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	739	50.0	150		mg/L	500	08/15/14 03:19 PM
Magnesium	406	50.0	150		mg/L	500	08/15/14 03:19 PM
Potassium	150	50.0	150	J	mg/L	500	08/15/14 03:19 PM
Sodium	10700	50.0	150		mg/L	500	08/15/14 03:19 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 01:29 PM
Chloride	15300	300	1000		mg/L	1000	08/07/14 10:06 PM
Nitrate-N	1.93	1.00	5.00	J	mg/L	10	08/07/14 01:29 PM
Sulfate	6360	100	300		mg/L	100	08/07/14 06:41 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	346	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:29 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:29 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:29 PM
Alkalinity, Total (As CaCO ₃)	346	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 01:29 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	42100	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-5
Lab ID: 1408053-08
Collection Date: 08/06/14 12:00 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	927	50.0	150		mg/L	500	08/15/14 03:21 PM
Magnesium	404	50.0	150		mg/L	500	08/15/14 03:21 PM
Potassium	120	0.500	1.50		mg/L	5	08/15/14 12:53 PM
Sodium	9150	50.0	150		mg/L	500	08/15/14 03:21 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	8.40	3.00	10.0	J	mg/L	10	08/07/14 01:43 PM
Chloride	15200	300	1000		mg/L	1000	08/07/14 10:20 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 01:43 PM
Sulfate	2770	100	300		mg/L	100	08/07/14 06:56 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	321	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:38 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:38 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:38 PM
Alkalinity, Total (As CaCO ₃)	321	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:38 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	30200	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053**Client Sample ID:** MW-12
Lab ID: 1408053-09
Collection Date: 08/06/14 12:30 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	999	50.0	150		mg/L	500	08/15/14 03:23 PM
Magnesium	740	50.0	150		mg/L	500	08/15/14 03:23 PM
Potassium	135	50.0	150	J	mg/L	500	08/15/14 03:23 PM
Sodium	10600	50.0	150		mg/L	500	08/15/14 03:23 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	12.2	3.00	10.0		mg/L	10	08/07/14 01:58 PM
Chloride	19000	300	1000		mg/L	1000	08/07/14 10:35 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 01:58 PM
Sulfate	4850	100	300		mg/L	100	08/07/14 07:11 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	360	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:48 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:48 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:48 PM
Alkalinity, Total (As CaCO ₃)	360	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 01:48 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	41600	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053**Client Sample ID:** MW-18
Lab ID: 1408053-10
Collection Date: 08/06/14 01:05 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1420	50.0	150		mg/L	500	08/15/14 03:25 PM
Magnesium	716	50.0	150		mg/L	500	08/15/14 03:25 PM
Potassium	192	50.0	150		mg/L	500	08/15/14 03:25 PM
Sodium	16300	250	750		mg/L	2500	08/15/14 03:36 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	23.7	3.00	10.0		mg/L	10	08/07/14 02:13 PM
Chloride	27100	300	1000		mg/L	1000	08/07/14 10:50 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 02:13 PM
Sulfate	4320	100	300		mg/L	100	08/07/14 07:25 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	310	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:03 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:03 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:03 PM
Alkalinity, Total (As CaCO ₃)	310	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:03 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	49200	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MAY5-02
Lab ID: 1408053-11
Collection Date: 08/06/14 01:30 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1220	50.0	150		mg/L	500	08/15/14 03:38 PM
Magnesium	687	50.0	150		mg/L	500	08/15/14 03:38 PM
Potassium	141	50.0	150	J	mg/L	500	08/15/14 03:38 PM
Sodium	11400	50.0	150		mg/L	500	08/15/14 03:38 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	13.5	3.00	10.0		mg/L	10	08/07/14 05:38 PM
Chloride	18800	300	1000		mg/L	1000	08/07/14 10:30 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 05:38 PM
Sulfate	3450	100	300		mg/L	100	08/07/14 08:04 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	242	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:17 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:17 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:17 PM
Alkalinity, Total (As CaCO ₃)	242	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:17 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	39300	1000	1000		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-20
Lab ID: 1408053-12
Collection Date: 08/06/14 02:00 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	323	5.00	15.0		mg/L	50	08/15/14 03:40 PM
Magnesium	182	5.00	15.0		mg/L	50	08/15/14 03:40 PM
Potassium	19.3	0.500	1.50		mg/L	5	08/15/14 02:03 PM
Sodium	705	5.00	15.0		mg/L	50	08/15/14 03:40 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	0.956	0.300	1.00	J	mg/L	1	08/08/14 11:22 AM
Chloride	999	30.0	100		mg/L	100	08/07/14 08:19 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/08/14 11:22 AM
Sulfate	1270	10.0	30.0		mg/L	10	08/07/14 05:53 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	346	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:25 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:25 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:25 PM
Alkalinity, Total (As CaCO ₃)	346	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:25 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	4160	50.0	50.0		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-19
Lab ID: 1408053-13
Collection Date: 08/06/14 02:30 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	654	50.0	150		mg/L	500	08/15/14 03:42 PM
Magnesium	404	50.0	150		mg/L	500	08/15/14 03:42 PM
Potassium	77.0	0.500	1.50		mg/L	5	08/15/14 02:05 PM
Sodium	5350	50.0	150		mg/L	500	08/15/14 03:42 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 06:08 PM
Chloride	8570	300	1000		mg/L	1000	08/07/14 10:59 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 06:08 PM
Sulfate	2790	100	300		mg/L	100	08/07/14 08:33 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	391	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:35 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:35 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:35 PM
Alkalinity, Total (As CaCO ₃)	391	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 02:35 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	22100	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-17
Lab ID: 1408053-14
Collection Date: 08/06/14 03:00 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	437	50.0	150		mg/L	500	08/15/14 03:44 PM
Magnesium	224	50.0	150		mg/L	500	08/15/14 03:44 PM
Potassium	56.6	0.500	1.50		mg/L	5	08/15/14 02:07 PM
Sodium	2730	50.0	150		mg/L	500	08/15/14 03:44 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 06:22 PM
Chloride	3350	30.0	100		mg/L	100	08/07/14 08:48 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 06:22 PM
Sulfate	2460	100	300		mg/L	100	08/07/14 08:48 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	340	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:43 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:43 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:43 PM
Alkalinity, Total (As CaCO ₃)	340	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:43 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	11000	200	200		mg/L	1	08/13/14 09:22 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: OW-1
Lab ID: 1408053-15
Collection Date: 08/06/14 03:20 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	3770	50.0	150		mg/L	500	08/15/14 03:46 PM
Magnesium	1240	50.0	150		mg/L	500	08/15/14 03:46 PM
Potassium	84.5	0.500	1.50		mg/L	5	08/15/14 02:09 PM
Sodium	11200	50.0	150		mg/L	500	08/15/14 03:46 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	81.6	3.00	10.0		mg/L	10	08/07/14 06:37 PM
Chloride	25500	300	1000		mg/L	1000	08/07/14 11:28 PM
Nitrate-N	1.05	1.00	5.00	J	mg/L	10	08/07/14 06:37 PM
Sulfate	1810	100	300		mg/L	100	08/07/14 09:02 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	303	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:55 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:55 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:55 PM
Alkalinity, Total (As CaCO ₃)	303	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 02:55 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	58200	1000	1000		mg/L	1	08/13/14 10:56 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: MW-4
Lab ID: 1408053-16
Collection Date: 08/06/14 03:45 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	586	10.0	30.0		mg/L	100	08/15/14 03:48 PM
Magnesium	335	10.0	30.0		mg/L	100	08/15/14 03:48 PM
Potassium	48.4	0.500	1.50		mg/L	5	08/15/14 02:11 PM
Sodium	2280	10.0	30.0		mg/L	100	08/15/14 03:48 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	4.31	0.300	1.00		mg/L	1	08/08/14 11:36 AM
Chloride	3770	30.0	100		mg/L	100	08/07/14 09:17 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/08/14 11:36 AM
Sulfate	1380	10.0	30.0		mg/L	10	08/07/14 06:51 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	357	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:03 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:03 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:03 PM
Alkalinity, Total (As CaCO ₃)	357	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:03 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	10800	200	200		mg/L	1	08/13/14 10:56 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053

Client Sample ID: DUP-1
Lab ID: 1408053-17
Collection Date: 08/06/14
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	807	10.0	30.0		mg/L	100	08/15/14 03:50 PM
Magnesium	1140	10.0	30.0		mg/L	100	08/15/14 03:50 PM
Potassium	37.2	0.500	1.50		mg/L	5	08/15/14 02:13 PM
Sodium	2240	10.0	30.0		mg/L	100	08/15/14 03:50 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/07/14 07:06 PM
Chloride	3750	30.0	100		mg/L	100	08/07/14 09:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 07:06 PM
Sulfate	5550	100	300		mg/L	100	08/07/14 09:32 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	791	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:22 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:22 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:22 PM
Alkalinity, Total (As CaCO ₃)	791	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:22 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	13400	200	200		mg/L	1	08/13/14 10:56 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 18-Aug-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408053**Client Sample ID:** DUP-2
Lab ID: 1408053-18
Collection Date: 08/06/14
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1100	50.0	150		mg/L	500	08/15/14 03:52 PM
Magnesium	435	50.0	150		mg/L	500	08/15/14 03:52 PM
Potassium	76.2	0.500	1.50		mg/L	5	08/15/14 02:15 PM
Sodium	6990	50.0	150		mg/L	500	08/15/14 03:52 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	18.7	3.00	10.0		mg/L	10	08/07/14 07:20 PM
Chloride	12700	300	1000		mg/L	1000	08/08/14 12:12 AM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/07/14 07:20 PM
Sulfate	1800	100	300		mg/L	100	08/07/14 09:46 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	246	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:29 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:29 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:29 PM
Alkalinity, Total (As CaCO ₃)	246	20.0	20.0		mg/L @ pH 4.52	1	08/11/14 03:29 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	25300	1000	1000		mg/L	1	08/13/14 10:56 AM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT**RunID: ICP-MS4_140815C**

The QC data in batch 65186 applies to the following samples: 1408053-01A, 1408053-02A, 1408053-03A, 1408053-04A, 1408053-05A, 1408053-06A, 1408053-07A, 1408053-08A, 1408053-09A, 1408053-10A, 1408053-11A, 1408053-12A, 1408053-13A, 1408053-14A, 1408053-15A, 1408053-16A, 1408053-17A, 1408053-18A

Sample ID MB-65186	Batch ID: 65186	TestNo: SW6020A	Units: mg/L
SampType: MBLK	Run ID: ICP-MS4_140815C	Analysis Date: 8/15/2014 12:30:00 PM	Prep Date: 8/12/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID LCS-65186	Batch ID: 65186	TestNo: SW6020A	Units: mg/L
SampType: LCS	Run ID: ICP-MS4_140815C	Analysis Date: 8/15/2014 12:32:00 PM	Prep Date: 8/12/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.85	0.300	5.00	0	97.0	80	120			
Magnesium	5.18	0.300	5.00	0	104	80	120			
Potassium	4.95	0.300	5.00	0	99.0	80	120			
Sodium	5.39	0.300	5.00	0	108	80	120			

Sample ID LCSD-65186	Batch ID: 65186	TestNo: SW6020A	Units: mg/L
SampType: LCSD	Run ID: ICP-MS4_140815C	Analysis Date: 8/15/2014 12:34:00 PM	Prep Date: 8/12/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.72	0.300	5.00	0	94.3	80	120	2.80	15	
Magnesium	4.99	0.300	5.00	0	99.8	80	120	3.78	15	
Potassium	4.78	0.300	5.00	0	95.6	80	120	3.54	15	
Sodium	5.11	0.300	5.00	0	102	80	120	5.48	15	

Sample ID 1408053-01A SD	Batch ID: 65186	TestNo: SW6020A	Units: mg/L
SampType: SD	Run ID: ICP-MS4_140815C	Analysis Date: 8/15/2014 12:39:00 PM	Prep Date: 8/12/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	35.2	7.50	0	35.2				0.050	10	

Sample ID 1408053-01A PDS	Batch ID: 65186	TestNo: SW6020A	Units: mg/L
SampType: PDS	Run ID: ICP-MS4_140815C	Analysis Date: 8/15/2014 12:59:00 PM	Prep Date: 8/12/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	63.7	1.50	25.0	35.2	114	80	120			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140815C

Sample ID	1408053-01A MS	Batch ID:	65186	TestNo:	SW6020A	Units:	mg/L				
SampType:	MS	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 1:00:00 PM	Prep Date:	8/12/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		824	1.50	5.00	826	-31.0	80	120			S
Magnesium		1040	1.50	5.00	1040	-29.0	80	120			S
Potassium		39.8	1.50	5.00	35.2	93.4	80	120			
Sodium		2130	1.50	5.00	2110	402	80	120			S

Sample ID	1408053-01A MSD	Batch ID:	65186	TestNo:	SW6020A	Units:	mg/L				
SampType:	MSD	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 1:02:00 PM	Prep Date:	8/12/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		817	1.50	5.00	826	-175	80	120	0.875	15	S
Magnesium		1050	1.50	5.00	1040	33.5	80	120	0.299	15	S
Potassium		40.2	1.50	5.00	35.2	101	80	120	0.963	15	
Sodium		2100	1.50	5.00	2110	-98.1	80	120	1.18	15	S

Sample ID	1408053-01A SD	Batch ID:	65186	TestNo:	SW6020A	Units:	mg/L			
SampType:	SD	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:07:00 PM	Prep Date:	8/12/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	876	750	0	817				6.98	10	
Magnesium	1170	750	0	1130				3.63	10	
Sodium	2610	750	0	2300				12.5	10	R

Sample ID	1408053-01A PDS	Batch ID:	65186	TestNo:	SW6020A	Units:	mg/L			
SampType:	PDS	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:27:00 PM	Prep Date:	8/12/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	3420	150	2500	817	104	80	120			
Magnesium	4000	150	2500	1130	115	80	120			
Sodium	5060	150	2500	2300	110	80	120			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140815C

Sample ID	ICV-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	ICV	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 10:06:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.54	0.300	2.50	0	101	90	110			
Magnesium	2.68	0.300	2.50	0	107	90	110			
Potassium	2.62	0.300	2.50	0	105	90	110			
Sodium	2.66	0.300	2.50	0	107	90	110			

Sample ID	LCVL-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 10:10:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.0991	0.300	0.100	0	99.1	70	130			
Magnesium	0.104	0.300	0.100	0	104	70	130			
Potassium	0.0989	0.300	0.100	0	98.9	70	130			
Sodium	0.109	0.300	0.100	0	109	70	130			

Sample ID	CCV4-140815			Batch ID:	R74937		TestNo:	SW6020A		Units:	mg/L	
SampType:	CCV			Run ID:	ICP-MS4_140815C		Analysis Date:	8/15/2014 12:11:00 PM		Prep Date:		
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.78	0.300	5.00	0	95.7	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Potassium	4.89	0.300	5.00	0	97.9	90	110			
Sodium	5.22	0.300	5.00	0	104	90	110			

Sample ID	LCVL4-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L			
SampType:	LCVL	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 12:19:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.110	0.300	0.100	0	110	70	130			
Magnesium	0.103	0.300	0.100	0	103	70	130			
Potassium	0.101	0.300	0.100	0	101	70	130			
Sodium	0.129	0.300	0.100	0	129	70	130			

Sample ID	CCV5-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 1:09:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.94	0.300	5.00	0	98.8	90	110			
Magnesium	5.18	0.300	5.00	0	104	90	110			
Potassium	4.99	0.300	5.00	0	99.8	90	110			
Sodium	5.44	0.300	5.00	0	109	90	110			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140815C

Sample ID	LCVL5-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 1:12:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.108	0.300	0.100	0	108	70	130			
Potassium	0.105	0.300	0.100	0	105	70	130			
Sodium	0.310	0.300	0.100	0	310	70	130			S

Sample ID	CCV6-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 2:22:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.84	0.300	5.00	0	96.8	90	110			
Magnesium	5.13	0.300	5.00	0	103	90	110			
Potassium	4.94	0.300	5.00	0	98.7	90	110			
Sodium	5.51	0.300	5.00	0	110	90	110			

Sample ID	LCVL6-140815			Batch ID:	R74937		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCVL			Run ID:	ICP-MS4_140815C		Analysis Date:	8/15/2014 2:27:00 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Calcium	0.102	0.300	0.100	0	102	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Potassium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.289	0.300	0.100	0	289	70	130			S

Sample ID	CCV7-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:29:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.89	0.300	5.00	0	97.7	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Potassium	4.99	0.300	5.00	0	99.7	90	110			
Sodium	5.30	0.300	5.00	0	106	90	110			

Sample ID	LCVL7-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:32:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.103	0.300	0.100	0	103	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Potassium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.181	0.300	0.100	0	181	70	130			S

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140815C

Sample ID	CCV8-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	CCV	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:54:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		4.87	0.300	5.00	0	97.4	90	110			
Magnesium		5.14	0.300	5.00	0	103	90	110			
Potassium		5.02	0.300	5.00	0	100	90	110			
Sodium		5.24	0.300	5.00	0	105	90	110			

Sample ID	LCVL8-140815	Batch ID:	R74937	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140815C	Analysis Date:	8/15/2014 3:58:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.0986	0.300	0.100	0	98.6	70	130			
Magnesium		0.106	0.300	0.100	0	106	70	130			
Potassium		0.107	0.300	0.100	0	107	70	130			
Sodium		0.166	0.300	0.100	0	166	70	130			S

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140807A

The QC data in batch 65102 applies to the following samples: 1408053-01B, 1408053-02B, 1408053-03B, 1408053-04B, 1408053-05B, 1408053-06B, 1408053-07B, 1408053-08B, 1408053-09B, 1408053-10B

Sample ID	MB-65102		Batch ID:	65102		TestNo:	E300		Units:	mg/L	
SampType:	MBLK		Run ID:	IC_140807A		Analysis Date:	8/7/2014 10:27:53 AM		Prep Date:	8/7/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-65102		Batch ID:	65102		TestNo:	E300		Units:	mg/L	
SampType:	LCS		Run ID:	IC_140807A		Analysis Date:	8/7/2014 10:42:29 AM		Prep Date:	8/7/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.0	1.00	20.00	0	100	90	110			
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Nitrate-N	5.07	0.500	5.000	0	101	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID	LCSD-65102		Batch ID:	65102		TestNo:	E300		Units:	mg/L	
SampType:	LCSD		Run ID:	IC_140807A		Analysis Date:	8/7/2014 10:57:06 AM		Prep Date:	8/7/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.9	1.00	20.00	0	99.7	90	110	0.368	20	
Chloride	9.90	1.00	10.00	0	99.0	90	110	0.190	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	0.124	20	
Sulfate	30.2	3.00	30.00	0	101	90	110	0.079	20	

Sample ID: 1408053-01BMS	Batch ID: 65102	TestNo: E300	Units: mg/L							
SampType: MS	Run ID: IC_140807A	Analysis Date: 8/7/2014 3:46:19 PM	Prep Date: 8/7/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	170	10.0	200.0	0	84.9	90	110			S
Nitrate-N	38.7	5.00	45.16	0	85.8	90	110			S

Sample ID: 1408053-01BMSD	Batch ID: 65102	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC_140807A	Analysis Date: 8/7/2014 4:00:55 PM	Prep Date: 8/7/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	171	10.0	200.0	0	85.4	90	110	0.515	20	S
Nitrate-N	38.7	5.00	45.16	0	85.8	90	110	0.021	20	S

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140807A

Sample ID	1408053-01BMS	Batch ID:	65102	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC_140807A	Analysis Date:	8/7/2014 4:59:35 PM	Prep Date:	8/7/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5380	100	2000	3803	78.7	90	110			S
Sulfate	7610	300	2000	5466	107	90	110			

Sample ID	1408053-01BMSD	Batch ID:	65102	TestNo:	E300	Units:	mg/L			
SampType:	MSD	Run ID:	IC_140807A	Analysis Date:	8/7/2014 5:14:11 PM	Prep Date:	8/7/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5360	100	2000	3803	78.0	90	110	0.241	20	S
Sulfate	7590	300	2000	5466	106	90	110	0.183	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140807A

Sample ID	ICV-140807	Batch ID:	R74804	TestNo:	E300	Units:	mg/L				
SampType:	ICV	Run ID:	IC_140807A	Analysis Date:	8/7/2014 10:05:55 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	50.7	1.00	50.00	0	101	90	110			
Chloride	24.9	1.00	25.00	0	99.7	90	110			
Nitrate-N	12.8	0.500	12.50	0	102	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID	CCV1-140807	Batch ID:	R74804	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC_140807A	Analysis Date:	8/7/2014 2:53:04 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.9	1.00	20.00	0	99.5	90	110			
Chloride	10.7	1.00	10.00	0	107	90	110			
Nitrate-N	5.00	0.500	5.000	0	100	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID	CCV2-140807	Batch ID:	R74804	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC_140807A	Analysis Date:	8/7/2014 4:15:32 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.6	1.00	20.00	0	97.8	90	110			
Chloride	10.2	1.00	10.00	0	102	90	110			
Nitrate-N	4.98	0.500	5.000	0	99.5	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID	CCV3-140807	Batch ID:	R74804	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC_140807A	Analysis Date:	8/7/2014 7:54:52 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.9	1.00	20.00	0	99.5	90	110			
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Nitrate-N	5.07	0.500	5.000	0	101	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID	CCV4-140807	Batch ID:	R74804	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC_140807A	Analysis Date:	8/7/2014 11:19:22 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.5	1.00	20.00	0	97.7	90	110			
Chloride	9.81	1.00	10.00	0	98.1	90	110			
Nitrate-N	5.04	0.500	5.000	0	101	90	110			
Sulfate	29.9	3.00	30.00	0	99.8	90	110			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.

Work Order: 1408053

Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140807B

The QC data in batch 65111 applies to the following samples: 1408053-11B, 1408053-12B, 1408053-13B, 1408053-14B, 1408053-15B, 1408053-16B, 1408053-17B, 1408053-18B

Sample ID	MB-65111		Batch ID:	65111		TestNo:	E300		Units:	mg/L	
SampType:	MBLK		Run ID:	IC2_140807B		Analysis Date:	8/7/2014 2:06:12 PM		Prep Date:	8/7/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-65111			Batch ID:	65111			TestNo:	E300			Units:	mg/L		
SampType:	LCS			Run ID:	IC2_140807B			Analysis Date:	8/7/2014 2:20:46 PM			Prep Date:	8/7/2014		
Analyte				Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

Bromide	20.1	1.00	20.00	0	100	90	110			
Chloride	9.69	1.00	10.00	0	96.9	90	110			
Nitrate-N	4.91	0.500	5.000	0	98.3	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Sample ID	LCSD-65111	Batch ID:	65111	TestNo:	E300	Units:	mg/L			
SampType:	LCSD	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 2:35:21 PM	Prep Date:	8/7/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.5	1.00	20.00	0	103	90	110	2.12	20	
Chloride	9.89	1.00	10.00	0	98.9	90	110	1.98	20	
Nitrate-N	5.03	0.500	5.000	0	101	90	110	2.33	20	
Sulfate	30.2	3.00	30.00	0	101	90	110	1.60	20	

Sample ID	1408054-01AMS			Batch ID:	65111			TestNo:	E300			Units:	mg/L		
SampType:	MS			Run ID:	IC2_140807B			Analysis Date:	8/7/2014 3:36:02 PM			Prep Date:	8/7/2014		
Analyte				Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

Nitrate-N	13.2	0.500	4.516	8.992	92.7	90	110			
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Sample ID	1408054-01AMSD		Batch ID:	65111		TestNo:	E300		Units:	mg/L	
SampType:	MSD		Run ID:	IC2_140807B		Analysis Date:	8/7/2014 3:50:37 PM		Prep Date:	8/7/2014	
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Nitrate-N	13.2	0.500	4.516	8.992	92.5	90	110	0.066	20	
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Sample ID	1408054-01AMS			Batch ID:	65111			TestNo:	E300			Units:	mg/L		
SampType:	MS			Run ID:	IC2_140807B			Analysis Date:	8/7/2014 4:05:11 PM			Prep Date:	8/7/2014		
Analyte				Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140807B

Sample ID	1408054-01AMS	Batch ID:	65111	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 4:05:11 PM	Prep Date:	8/7/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	206	10.0	200.0	0	103	90	110			
Chloride	380	10.0	200.0	198.6	90.5	90	110			
Sulfate	259	30.0	200.0	57.17	101	90	110			

Sample ID: 1408054-01AMSD	Batch ID: 65111	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC2_140807B	Analysis Date: 8/7/2014 4:19:46 PM	Prep Date: 8/7/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	209	10.0	200.0	0	104	90	110	1.14	20	
Chloride	382	10.0	200.0	198.6	91.6	90	110	0.544	20	
Sulfate	260	30.0	200.0	57.17	102	90	110	0.737	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140807B

Sample ID	ICV-140807	Batch ID:	R74853	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 10:38:49 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	49.8	1.00	50.00	0	99.5	90	110			
Chloride	23.8	1.00	25.00	0	95.0	90	110			
Nitrate-N	12.3	0.500	12.50	0	98.0	90	110			
Sulfate	73.4	3.00	75.00	0	97.9	90	110			

Sample ID	CCV1-140807	Batch ID:	R74853	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 1:48:36 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.8	1.00	20.00	0	104	90	110			
Chloride	10.1	1.00	10.00	0	101	90	110			
Nitrate-N	5.12	0.500	5.000	0	102	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID	CCV2-140807	Batch ID:	R74853	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 7:50:07 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.4	1.00	20.00	0	102	90	110			
Chloride	10.0	1.00	10.00	0	100	90	110			
Nitrate-N	5.05	0.500	5.000	0	101	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	CCV3-140807	Batch ID:	R74853	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_140807B	Analysis Date:	8/7/2014 10:15:51 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.5	1.00	20.00	0	102	90	110			
Chloride	9.99	1.00	10.00	0	99.9	90	110			
Nitrate-N	5.02	0.500	5.000	0	100	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	CCV4-140807	Batch ID:	R74853	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_140807B	Analysis Date:	8/8/2014 12:41:35 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.3	1.00	20.00	0	102	90	110			
Chloride	9.95	1.00	10.00	0	99.5	90	110			
Nitrate-N	4.93	0.500	5.000	0	98.6	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140808A

The QC data in batch 65117 applies to the following samples: 1408053-12B, 1408053-16B

Sample ID	MB-65117	Batch ID:	65117	TestNo:	E300	Units:	mg/L				
SampType:	MBLK	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 8:48:51 AM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide		<0.300	1.00								
Nitrate-N		<0.100	0.500								

Sample ID	LCS-65117	Batch ID:	65117	TestNo:	E300	Units:	mg/L				
SampType:	LCS	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 9:03:26 AM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide		20.1	1.00	20.00	0	101	90	110			
Nitrate-N		4.93	0.500	5.000	0	98.7	90	110			

Sample ID	LCSD-65117	Batch ID:	65117	TestNo:	E300	Units:	mg/L				
SampType:	LCSD	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 9:18:01 AM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide		20.5	1.00	20.00	0	102	90	110	1.74	20	
Nitrate-N		4.99	0.500	5.000	0	99.7	90	110	1.05	20	

Sample ID	1408047-04AMS	Batch ID:	65117	TestNo:	E300	Units:	mg/L				
SampType:	MS	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 10:53:05 AM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide		31.2	1.00	20.00	2.087	146	90	110			S
Nitrate-N		5.02	0.500	4.516	0	111	90	110			S

Sample ID	1408047-04AMSD	Batch ID:	65117	TestNo:	E300	Units:	mg/L				
SampType:	MSD	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 11:07:39 AM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide		31.1	1.00	20.00	2.087	145	90	110	0.346	20	S
Nitrate-N		5.00	0.500	4.516	0	111	90	110	0.405	20	S

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140808A

Sample ID	ICV-140808	Batch ID:	R74801	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC2_140808A	Analysis Date:	8/8/2014 8:27:58 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	50.6	1.00	50.00	0	101	90	110			
Nitrate-N	12.4	0.500	12.50	0	99.5	90	110			

Sample ID	CCV1-140808			Batch ID:	R74801		TestNo:	E300		Units:	mg/L	
SampType:	CCV			Run ID:	IC2_140808A		Analysis Date:	8/8/2014 12:07:25 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Bromide	20.1	1.00	20.00	0	101	90	110			
Nitrate-N	4.90	0.500	5.000	0	98.0	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140811A

The QC data in batch 65150 applies to the following samples: 1408053-01B, 1408053-02B, 1408053-03B, 1408053-04B, 1408053-05B, 1408053-06B, 1408053-07B, 1408053-08B, 1408053-09B, 1408053-10B, 1408053-11B, 1408053-12B, 1408053-13B, 1408053-14B, 1408053-15B, 1408053-16B, 1408053-17B, 1408053-18B

Sample ID MB-65150	Batch ID: 65150	TestNo: M2320 B	Units: mg/L @ pH 4.43
SampType: MBLK	Run ID: TITRATOR_140811A	Analysis Date: 8/11/2014 11:54:00 AM	Prep Date: 8/11/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID LCS-65150	Batch ID: 65150	TestNo: M2320 B	Units: mg/L @ pH 3.88
SampType: LCS	Run ID: TITRATOR_140811A	Analysis Date: 8/11/2014 11:57:00 AM	Prep Date: 8/11/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	59.0	20.0	50.00	0	118	74	129			

Sample ID 1408053-01B DUP	Batch ID: 65150	TestNo: M2320 B	Units: mg/L @ pH 4.52
SampType: DUP	Run ID: TITRATOR_140811A	Analysis Date: 8/11/2014 12:34:00 PM	Prep Date: 8/11/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	772	20.0	0	770.5				0.259	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	772	20.0	0	770.5				0.259	20	

Sample ID 1408080-02B DUP	Batch ID: 65150	TestNo: M2320 B	Units: mg/L @ pH 4.52
SampType: DUP	Run ID: TITRATOR_140811A	Analysis Date: 8/11/2014 4:09:00 PM	Prep Date: 8/11/2014

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	434	20.0	0	432.8				0.162	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	434	20.0	0	432.8				0.162	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140811A

Sample ID	ICV-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	ICV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 11:52:00 AM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	15.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	83.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	98	102			

Sample ID	CCV1-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.5	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 1:53:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	28.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	71.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Sample ID	CCV2-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.49	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 3:50:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	26.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	70.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	96.7	20.0	100.0	0	96.7	90	110			

Sample ID	CCV3-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 4:15:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	15.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	82.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.1	20.0	100.0	0	98.1	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140812B

The QC data in batch 65196 applies to the following samples: 1408053-01B, 1408053-02B, 1408053-03B, 1408053-04B, 1408053-05B, 1408053-06B, 1408053-07B, 1408053-08B, 1408053-09B, 1408053-10B, 1408053-11B, 1408053-12B, 1408053-13B, 1408053-14B

Sample ID	MB-65196		Batch ID:	65196		TestNo:	M2540C		Units:	mg/L	
SampType:	MBLK		Run ID:	WC_140812B		Analysis Date:	8/13/2014 9:22:00 AM		Prep Date:	8/12/2014	
Analyte			Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID	LCS-65196		Batch ID:	65196		TestNo:	M2540C		Units:	mg/L	
SampType:	LCS		Run ID:	WC_140812B		Analysis Date:	8/13/2014 9:22:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 762 10.0 745.6 0 102 90 113

Sample ID	1408053-01B-DUP		Batch ID:	65196		TestNo:	M2540C		Units:	mg/L	
SampType:	DUP		Run ID:	WC_140812B		Analysis Date:	8/13/2014 9:22:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 11300 200 0 11260 0.531 5

Sample ID	1408053-14B-DUP		Batch ID:	65196		TestNo:	M2540C		Units:	mg/L	
SampType:	DUP		Run ID:	WC_140812B		Analysis Date:	8/13/2014 9:22:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 11000 200 0 11000 0.182 5

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL
DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140812C

The QC data in batch 65197 applies to the following samples: 1408053-15B, 1408053-16B, 1408053-17B, 1408053-18B

Sample ID	MB-65197	Batch ID:	65197	TestNo:	M2540C	Units:	mg/L
SampType:	MBLK	Run ID:	WC_140812C	Analysis Date:	8/13/2014 10:56:00 AM	Prep Date:	8/12/2014
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit HighLimit %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID	LCS-65197	Batch ID:	65197	TestNo:	M2540C	Units:	mg/L
SampType:	LCS	Run ID:	WC_140812C	Analysis Date:	8/13/2014 10:56:00 AM	Prep Date:	8/12/2014
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit HighLimit %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filtera 755 10.0 745.6 0 101 90 113

Sample ID	1408073-01C-DUP	Batch ID:	65197	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_140812C	Analysis Date:	8/13/2014 10:56:00 AM	Prep Date:	8/12/2014
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit HighLimit %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filtera 1930 50.0 0 1920 0.519 5

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408053
Project: RRC-Wendkirk

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	mg/L	mg/L
Bromide	0.300	1.00
Chloride	0.300	1.00
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: M2320 B	MDL	MQL
Analyte	µg/L @ pH 4.4	µg/L @ pH 4.4
Alkalinity, Bicarbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Carbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Hydroxide (As CaCO ₃)	10.0	20.0
Alkalinity, Total (As CaCO ₃)	20.0	20.0

TestNo: SW6020A	MDL	MQL
Analyte	mg/L	mg/L
Calcium	0.100	0.300
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2540C	MDL	MQL
Analyte	mg/L	mg/L
Total Dissolved Solids (Residue, Filt	10.0	10.0



September 22, 2014

Shannon Hoover
TRC Environmental Corp.
505 East Huntland Drive
Suite 250
Austin, Texas 78752
TEL: (512) 329-6080
FAX (512) 329-8750
RE: RRC-Wendkirk

Order No.: 1408080

Dear Shannon Hoover:

DHL Analytical, Inc. received 13 sample(s) on 8/8/2014 for the analyses presented in the following report.

Revision Number 1 for Work Order 1408080: This revision consists of correcting the sample identificaiton for Sample 4313605. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read "John DuPont".

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-14-12



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3

Sample Receipt Checklist

Client Name TRC Environmental Corp.

Date Received: 8/8/2014

Work Order Number 1408080

Received by MD

Checklist completed by:

Signature

8/8/2014

Date

Reviewed by

Initials

8/8/2014

Date

Carrier name Hand Delivered

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 ☐	1.8 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH<2 acceptable upon receipt?	Yes ☒	No ☐	NA ☐ LOT # 8086
	Adjusted? <u>no</u>		Checked by <u>DL</u>
Water - pH>9 (S) or pH>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☒ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc.							
Laboratory Review Checklist: Reportable Data							
Project Name: RRC-Wendkirk				Date: 8/18/2014			
Reviewer Name: Angie O'Donnell				Laboratory Work Order: 1408080			
Prep Batch Number(s): See Prep Dates Report				Run Batch: See Analytical Dates Report			
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
		Chain-of-Custody (C-O-C)					
R1	OI	1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				R1-01
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and Quality Control (QC) Identification					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test Reports					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	Surrogate Recovery Data					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	Test Reports/Summary Forms for Blank Samples					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MQL?	X				
R6	OI	Laboratory Control Samples (LCS):					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R7-03
		4) Were MS/MSD RPDs within laboratory QC limits?		X			R7-04
R8	OI	Analytical Duplicate Data					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	Method Quantitation Limits (MQLs):					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other Problems/Anomalies					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data
Project Name: RRC-Wendkirch

Date: 8/18/2014

Reviewer Name: Angie O'Donnell

Laboratory Work Order: 1408080

# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
S1	OI	Initial Calibration (ICAL)					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?		X			S2-02
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	Mass Spectral Tuning:					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal Standards (IS):					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw Data (NELAC Section 5.5.10)					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual Column Confirmation					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively Identified Compounds (TICs):					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) Results:					
		1) Were percent recoveries within method QC limits?	X				
S9	I	Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
S10	OI	Method Detection Limit (MDL) Studies					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSSs?	X				
S11	OI	Proficiency Test Reports:					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards Documentation					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/Analyte Identification Procedures					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of Analyst Competency (DOC)					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/Validation Documentation for Methods (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory Standard Operating Procedures (SOPs):					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC Chapter 5,
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 6-10, 2013. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director


Signature

09/22/14

Date

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Lab Order: 1408080

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 8/8/2014. A total of 13 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03 and R7-04

For Anions Analysis, the recoveries of Bromide and/or Nitrate-N for the Matrix Spike and Matrix Spike Duplicate(s) (1408080-06, -09 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These anions were within method control limits in the associated LCS. The reference samples selected for the QC were from this workorder. No further corrective action was taken.

For Metals Analysis, the recoveries/RPDs of four analytes for the Matrix Spike (1408010-01 MS) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. The reference sample selected for the QC Sample was from this workorder. No further corrective action was taken.

Exception Report S2-02

For Metals Analysis, performed on 8/14/2014, the recovery of Sodium for the Low Level Calibration Verifications (LCVL7-10-140814) was above the method control limits. These area flagged accordingly in the QC Summary Report. This analyte was detected in the associated samples at greater than 10x the amount detected in the LCVLs. No further corrective actions were taken.

Exception Report S9-01

For Metals Analysis, the recoveries of Calcium and Potassium for the Serial Dilution (1408080-06 SD) were slightly above the method control limit. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated Post Digestion Spike. No further corrective action was taken.

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Lab Order: 1408080

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1408080-01	MW-13		08/07/14 08:50 AM	8/8/2014
1408080-02	MW-9		08/07/14 09:15 AM	8/8/2014
1408080-03	MW-8		08/07/14 11:20 AM	8/8/2014
1408080-04	MW-14		08/07/14 11:30 AM	8/8/2014
1408080-05	MW-7		08/07/14 12:00 PM	8/8/2014
1408080-06	RS-15		08/07/14 12:20 PM	8/8/2014
1408080-07	Milford-01		08/07/14 01:00 PM	8/8/2014
1408080-08	Milford-02		08/07/14 01:25 PM	8/8/2014
1408080-09	MW-6		08/07/14 04:05 PM	8/8/2014
1408080-10	4313608		08/07/14 04:45 PM	8/8/2014
1408080-11	4313603		08/07/14 05:15 PM	8/8/2014
1408080-12	4313605		08/07/14 06:10 PM	8/8/2014
1408080-13	DUP-3		08/07/14	8/8/2014

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408080-01A	MW-13	08/07/14 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	MW-13	08/07/14 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-01B	MW-13	08/07/14 08:50 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-13	08/07/14 08:50 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-13	08/07/14 08:50 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-13	08/07/14 08:50 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-13	08/07/14 08:50 AM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-02A	MW-9	08/07/14 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	MW-9	08/07/14 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-02B	MW-9	08/07/14 09:15 AM	Aqueous	M2320 B	Alkalinity Preparation	08/11/14 08:33 AM	65150
	MW-9	08/07/14 09:15 AM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	MW-9	08/07/14 09:15 AM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	MW-9	08/07/14 09:15 AM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-03A	MW-8	08/07/14 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	MW-8	08/07/14 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-03B	MW-8	08/07/14 11:20 AM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	MW-8	08/07/14 11:20 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-8	08/07/14 11:20 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-8	08/07/14 11:20 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-8	08/07/14 11:20 AM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-04A	MW-14	08/07/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	MW-14	08/07/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-04B	MW-14	08/07/14 11:30 AM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	MW-14	08/07/14 11:30 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-14	08/07/14 11:30 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-14	08/07/14 11:30 AM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-14	08/07/14 11:30 AM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-05A	MW-7	08/07/14 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408080-05A	MW-7	08/07/14 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-05B	MW-7	08/07/14 12:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	MW-7	08/07/14 12:00 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	MW-7	08/07/14 12:00 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	MW-7	08/07/14 12:00 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-06A	RS-15	08/07/14 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	RS-15	08/07/14 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-06B	RS-15	08/07/14 12:20 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	RS-15	08/07/14 12:20 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	RS-15	08/07/14 12:20 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	RS-15	08/07/14 12:20 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	RS-15	08/07/14 12:20 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	RS-15	08/07/14 12:20 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	RS-15	08/07/14 12:20 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-07A	Milford-01	08/07/14 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-07B	Milford-01	08/07/14 01:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	Milford-01	08/07/14 01:00 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	Milford-01	08/07/14 01:00 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	Milford-01	08/07/14 01:00 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-08A	Milford-02	08/07/14 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-08B	Milford-02	08/07/14 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	Milford-02	08/07/14 01:25 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	Milford-02	08/07/14 01:25 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
1408080-09A	MW-6	08/07/14 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	MW-6	08/07/14 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-09B	MW-6	08/07/14 04:05 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	MW-6	08/07/14 04:05 PM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-6	08/07/14 04:05 PM	Aqueous	E300	Anion Preparation	08/08/14 12:47 PM	65131
	MW-6	08/07/14 04:05 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408080-10A	4313608	08/07/14 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	4313608	08/07/14 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-10B	4313608	08/07/14 04:45 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	4313608	08/07/14 04:45 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313608	08/07/14 04:45 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313608	08/07/14 04:45 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
	4313603	08/07/14 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-11A	4313603	08/07/14 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	4313603	08/07/14 05:15 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
1408080-11B	4313603	08/07/14 05:15 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313603	08/07/14 05:15 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313603	08/07/14 05:15 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313603	08/07/14 05:15 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
	4313605	08/07/14 06:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-12A	4313605	08/07/14 06:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	4313605	08/07/14 06:10 PM	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
1408080-12B	4313605	08/07/14 06:10 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313605	08/07/14 06:10 PM	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	4313605	08/07/14 06:10 PM	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213
	4313605	08/07/14 06:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
	4313605	08/07/14 06:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/11/14 10:59 AM	65160
1408080-13A	DUP-3	08/07/14	Aqueous	M2320 B	Alkalinity Preparation	08/12/14 08:11 AM	65167
	DUP-3	08/07/14	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
1408080-13B	DUP-3	08/07/14	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	DUP-3	08/07/14	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	DUP-3	08/07/14	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	DUP-3	08/07/14	Aqueous	E300	Anion Preparation	08/08/14 12:48 PM	65132
	DUP-3	08/07/14	Aqueous	M2540C	TDS Preparation	08/13/14 10:52 PM	65213

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408080-01A	MW-13	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:13 PM	ICP-MS4_140814B
	MW-13	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 02:57 PM	ICP-MS4_140814B
1408080-01B	MW-13	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 03:45 PM	TITRATOR_140811A
	MW-13	Aqueous	E300	Anions by IC method - Water	65131	10	08/08/14 01:57 PM	IC_140808B
	MW-13	Aqueous	E300	Anions by IC method - Water	65131	100	08/08/14 02:56 PM	IC_140808B
	MW-13	Aqueous	E300	Anions by IC method - Water	65131	1000	08/08/14 04:18 PM	IC_140808B
	MW-13	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-02A	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 02:59 PM	ICP-MS4_140814B
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:15 PM	ICP-MS4_140814B
1408080-02B	MW-9	Aqueous	M2320 B	Alkalinity	65150	1	08/11/14 03:59 PM	TITRATOR_140811A
	MW-9	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 02:03 PM	IC2_140808B
	MW-9	Aqueous	E300	Anions by IC method - Water	65132	100	08/08/14 05:08 PM	IC2_140808B
	MW-9	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-03A	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:01 PM	ICP-MS4_140814B
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:17 PM	ICP-MS4_140814B
1408080-03B	MW-8	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 08:59 AM	TITRATOR_140812A
	MW-8	Aqueous	E300	Anions by IC method - Water	65131	10	08/08/14 02:12 PM	IC_140808B
	MW-8	Aqueous	E300	Anions by IC method - Water	65131	100	08/08/14 03:10 PM	IC_140808B
	MW-8	Aqueous	E300	Anions by IC method - Water	65131	1000	08/08/14 04:32 PM	IC_140808B
	MW-8	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-04A	MW-14	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:19 PM	ICP-MS4_140814B
	MW-14	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:03 PM	ICP-MS4_140814B
1408080-04B	MW-14	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:10 AM	TITRATOR_140812A
	MW-14	Aqueous	E300	Anions by IC method - Water	65131	10	08/08/14 02:26 PM	IC_140808B
	MW-14	Aqueous	E300	Anions by IC method - Water	65131	100	08/08/14 03:25 PM	IC_140808B
	MW-14	Aqueous	E300	Anions by IC method - Water	65131	1000	08/08/14 04:47 PM	IC_140808B
	MW-14	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-05A	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:05 PM	ICP-MS4_140814B

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408080-05A	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	50	08/14/14 04:21 PM	ICP-MS4_140814B
1408080-05B	MW-7	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:15 AM	TITRATOR_140812A
	MW-7	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 02:17 PM	IC2_140808B
	MW-7	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 05:23 PM	IC2_140808B
	MW-7	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-06A	RS-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	10	08/14/14 02:53 PM	ICP-MS4_140814B
	RS-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:09 PM	ICP-MS4_140814B
1408080-06B	RS-15	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:20 AM	TITRATOR_140812A
	RS-15	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 02:32 PM	IC2_140808B
	RS-15	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 05:52 PM	IC2_140808B
	RS-15	Aqueous	E300	Anions by IC method - Water	65132	100	08/08/14 06:07 PM	IC2_140808B
	RS-15	Aqueous	E300	Anions by IC method - Water	65132	1000	08/08/14 06:21 PM	IC2_140808B
	RS-15	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-07A	Milford-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:06 PM	ICP-MS4_140814B
1408080-07B	Milford-01	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:27 AM	TITRATOR_140812A
	Milford-01	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 02:46 PM	IC2_140808B
	Milford-01	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 04:36 PM	IC2_140808B
	Milford-01	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-08A	Milford-02	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:08 PM	ICP-MS4_140814B
1408080-08B	Milford-02	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:29 AM	TITRATOR_140812A
	Milford-02	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 03:01 PM	IC2_140808B
	Milford-02	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-09A	MW-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:10 PM	ICP-MS4_140814B
	MW-6	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:23 PM	ICP-MS4_140814B
1408080-09B	MW-6	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:38 AM	TITRATOR_140812A
	MW-6	Aqueous	E300	Anions by IC method - Water	65131	10	08/08/14 02:41 PM	IC_140808B
	MW-6	Aqueous	E300	Anions by IC method - Water	65131	1000	08/08/14 05:01 PM	IC_140808B
	MW-6	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C

Lab Order: 1408080
Client: TRC Environmental Corp.
Project: RRC-Wendkirk

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408080-10A	4313608	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:12 PM	ICP-MS4_140814B
	4313608	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	50	08/14/14 04:25 PM	ICP-MS4_140814B
1408080-10B	4313608	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:43 AM	TITRATOR_140812A
	4313608	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 03:15 PM	IC2_140808B
	4313608	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 06:36 PM	IC2_140808B
	4313608	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
1408080-11A	4313603	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	50	08/14/14 04:40 PM	ICP-MS4_140814B
	4313603	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:42 PM	ICP-MS4_140814B
1408080-11B	4313603	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 09:51 AM	TITRATOR_140812A
	4313603	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 03:30 PM	IC2_140808B
	4313603	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 06:50 PM	IC2_140808B
	4313603	Aqueous	E300	Anions by IC method - Water	65132	100	08/08/14 07:05 PM	IC2_140808B
	4313603	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
	4313605	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:44 PM	ICP-MS4_140814B
1408080-12A	4313605	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	50	08/14/14 04:42 PM	ICP-MS4_140814B
	4313605	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 10:21 AM	TITRATOR_140812A
1408080-12B	4313605	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 03:45 PM	IC2_140808B
	4313605	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 07:19 PM	IC2_140808B
	4313605	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
	4313605	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	5	08/14/14 03:45 PM	ICP-MS4_140814B
1408080-13A	DUP-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:44 PM	ICP-MS4_140814B
	DUP-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65160	500	08/14/14 04:44 PM	ICP-MS4_140814B
1408080-13B	DUP-3	Aqueous	M2320 B	Alkalinity	65167	1	08/12/14 10:02 AM	TITRATOR_140812A
	DUP-3	Aqueous	E300	Anions by IC method - Water	65132	1	08/08/14 03:59 PM	IC2_140808B
	DUP-3	Aqueous	E300	Anions by IC method - Water	65132	10	08/08/14 08:18 PM	IC2_140808B
	DUP-3	Aqueous	E300	Anions by IC method - Water	65132	100	08/08/14 08:32 PM	IC2_140808B
	DUP-3	Aqueous	E300	Anions by IC method - Water	65132	1000	08/08/14 08:47 PM	IC2_140808B
	DUP-3	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C
	DUP-3	Aqueous	M2540C	Total Dissolved Solids	65213	1	08/14/14 03:41 PM	WC_140813C

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: MW-13
Lab ID: 1408080-01
Collection Date: 08/07/14 08:50 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1100	50.0	150		mg/L	500	08/14/14 04:13 PM
Magnesium	492	50.0	150		mg/L	500	08/14/14 04:13 PM
Potassium	38.0	0.500	1.50		mg/L	5	08/14/14 02:57 PM
Sodium	4710	50.0	150		mg/L	500	08/14/14 04:13 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	23.3	3.00	10.0		mg/L	10	08/08/14 01:57 PM
Chloride	8470	300	1000		mg/L	1000	08/08/14 04:18 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 01:57 PM
Sulfate	3370	100	300		mg/L	100	08/08/14 02:56 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	1040	10.0	20.0		mg/L @ pH 4.46	1	08/11/14 03:45 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.46	1	08/11/14 03:45 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.46	1	08/11/14 03:45 PM
Alkalinity, Total (As CaCO ₃)	1040	20.0	20.0		mg/L @ pH 4.46	1	08/11/14 03:45 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	20000	200	200		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: MW-9
Lab ID: 1408080-02
Collection Date: 08/07/14 09:15 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	500	50.0	150		mg/L	500	08/14/14 04:15 PM
Magnesium	263	50.0	150		mg/L	500	08/14/14 04:15 PM
Potassium	21.0	0.500	1.50		mg/L	5	08/14/14 02:59 PM
Sodium	1910	50.0	150		mg/L	500	08/14/14 04:15 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	8.36	0.300	1.00		mg/L	1	08/08/14 02:03 PM
Chloride	3060	30.0	100		mg/L	100	08/08/14 05:08 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/08/14 02:03 PM
Sulfate	1530	100	300		mg/L	100	08/08/14 05:08 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	433	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:59 PM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:59 PM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:59 PM
Alkalinity, Total (As CaCO ₃)	433	20.0	20.0		mg/L @ pH 4.51	1	08/11/14 03:59 PM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	7500	200	200		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** MW-8
Lab ID: 1408080-03
Collection Date: 08/07/14 11:20 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	541	50.0	150		mg/L	500	08/14/14 04:17 PM
Magnesium	280	50.0	150		mg/L	500	08/14/14 04:17 PM
Potassium	94.8	0.500	1.50		mg/L	5	08/14/14 03:01 PM
Sodium	5790	50.0	150		mg/L	500	08/14/14 04:17 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/08/14 02:12 PM
Chloride	7170	300	1000		mg/L	1000	08/08/14 04:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 02:12 PM
Sulfate	7010	100	300		mg/L	100	08/08/14 03:10 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	465	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 08:59 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 08:59 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 08:59 AM
Alkalinity, Total (As CaCO ₃)	465	20.0	20.0		mg/L @ pH 4.52	1	08/12/14 08:59 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	28400	1000	1000		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** MW-14
Lab ID: 1408080-04
Collection Date: 08/07/14 11:30 AM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	571	50.0	150		mg/L	500	08/14/14 04:19 PM
Magnesium	369	50.0	150		mg/L	500	08/14/14 04:19 PM
Potassium	89.8	0.500	1.50		mg/L	5	08/14/14 03:03 PM
Sodium	5680	50.0	150		mg/L	500	08/14/14 04:19 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/08/14 02:26 PM
Chloride	5880	300	1000		mg/L	1000	08/08/14 04:47 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 02:26 PM
Sulfate	7150	100	300		mg/L	100	08/08/14 03:25 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	463	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:10 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:10 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:10 AM
Alkalinity, Total (As CaCO ₃)	463	20.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:10 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	24600	200	200		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** MW-7
Lab ID: 1408080-05
Collection Date: 08/07/14 12:00 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	141	5.00	15.0		mg/L	50	08/14/14 04:21 PM
Magnesium	45.3	0.500	1.50		mg/L	5	08/14/14 03:05 PM
Potassium	15.9	0.500	1.50		mg/L	5	08/14/14 03:05 PM
Sodium	403	5.00	15.0		mg/L	50	08/14/14 04:21 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<0.300	0.300	1.00		mg/L	1	08/08/14 02:17 PM
Chloride	244	3.00	10.0		mg/L	10	08/08/14 05:23 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/08/14 02:17 PM
Sulfate	746	10.0	30.0		mg/L	10	08/08/14 05:23 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	281	10.0	20.0		mg/L @ pH 4.49	1	08/12/14 09:15 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/12/14 09:15 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/12/14 09:15 AM
Alkalinity, Total (As CaCO ₃)	281	20.0	20.0		mg/L @ pH 4.49	1	08/12/14 09:15 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	2400	50.0	50.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: RS-15
Lab ID: 1408080-06
Collection Date: 08/07/14 12:20 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1580	50.0	150		mg/L	500	08/14/14 04:09 PM
Magnesium	868	50.0	150		mg/L	500	08/14/14 04:09 PM
Potassium	87.5	1.00	3.00		mg/L	10	08/14/14 02:53 PM
Sodium	9970	50.0	150		mg/L	500	08/14/14 04:09 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	31.3	3.00	10.0		mg/L	10	08/08/14 05:52 PM
Chloride	18900	300	1000		mg/L	1000	08/08/14 06:21 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 05:52 PM
Sulfate	3250	100	300		mg/L	100	08/08/14 06:07 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	148	10.0	20.0		mg/L @ pH 4.51	1	08/12/14 09:20 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/12/14 09:20 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/12/14 09:20 AM
Alkalinity, Total (As CaCO ₃)	148	20.0	20.0		mg/L @ pH 4.51	1	08/12/14 09:20 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	37400	1000	1000		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: Milford-01
Lab ID: 1408080-07
Collection Date: 08/07/14 01:00 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	11.0	0.500	1.50		mg/L	5	08/14/14 03:06 PM
Magnesium	1.01	0.500	1.50	J	mg/L	5	08/14/14 03:06 PM
Potassium	2.87	0.500	1.50		mg/L	5	08/14/14 03:06 PM
Sodium	14.4	0.500	1.50		mg/L	5	08/14/14 03:06 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<0.300	0.300	1.00		mg/L	1	08/08/14 04:36 PM
Chloride	23.9	0.300	1.00		mg/L	1	08/08/14 04:36 PM
Nitrate-N	5.34	0.100	0.500		mg/L	1	08/08/14 04:36 PM
Sulfate	19.4	1.00	3.00		mg/L	1	08/08/14 04:36 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.16	1	08/12/14 09:27 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.16	1	08/12/14 09:27 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.16	1	08/12/14 09:27 AM
Alkalinity, Total (As CaCO ₃)	<20.0	20.0	20.0		mg/L @ pH 4.16	1	08/12/14 09:27 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	140	10.0	10.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** Milford-02
Lab ID: 1408080-08
Collection Date: 08/07/14 01:25 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	22.4	0.500	1.50		mg/L	5	08/14/14 03:08 PM
Magnesium	1.43	0.500	1.50	J	mg/L	5	08/14/14 03:08 PM
Potassium	2.74	0.500	1.50		mg/L	5	08/14/14 03:08 PM
Sodium	15.2	0.500	1.50		mg/L	5	08/14/14 03:08 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<0.300	0.300	1.00		mg/L	1	08/08/14 03:01 PM
Chloride	21.6	0.300	1.00		mg/L	1	08/08/14 03:01 PM
Nitrate-N	5.53	0.100	0.500		mg/L	1	08/08/14 03:01 PM
Sulfate	44.1	1.00	3.00		mg/L	1	08/08/14 03:01 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	36.3	10.0	20.0		mg/L @ pH 4.47	1	08/12/14 09:29 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	08/12/14 09:29 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	08/12/14 09:29 AM
Alkalinity, Total (As CaCO ₃)	36.3	20.0	20.0		mg/L @ pH 4.47	1	08/12/14 09:29 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	202	10.0	10.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: MW-6
Lab ID: 1408080-09
Collection Date: 08/07/14 04:05 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	397	50.0	150		mg/L	500	08/14/14 04:23 PM
Magnesium	344	50.0	150		mg/L	500	08/14/14 04:23 PM
Potassium	64.0	0.500	1.50		mg/L	5	08/14/14 03:10 PM
Sodium	3430	50.0	150		mg/L	500	08/14/14 04:23 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<3.00	3.00	10.0		mg/L	10	08/08/14 02:41 PM
Chloride	6110	300	1000		mg/L	1000	08/08/14 05:01 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 02:41 PM
Sulfate	1140	10.0	30.0		mg/L	10	08/08/14 02:41 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	349	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:38 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:38 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:38 AM
Alkalinity, Total (As CaCO ₃)	349	20.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:38 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	12200	200	200		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14

CLIENT: TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080

Client Sample ID: 4313608
Lab ID: 1408080-10
Collection Date: 08/07/14 04:45 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	57.6	5.00	15.0		mg/L	50	08/14/14 04:25 PM
Magnesium	35.8	0.500	1.50		mg/L	5	08/14/14 03:12 PM
Potassium	11.7	0.500	1.50		mg/L	5	08/14/14 03:12 PM
Sodium	221	5.00	15.0		mg/L	50	08/14/14 04:25 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	<0.300	0.300	1.00		mg/L	1	08/08/14 03:15 PM
Chloride	215	3.00	10.0		mg/L	10	08/08/14 06:36 PM
Nitrate-N	0.229	0.100	0.500	J	mg/L	1	08/08/14 03:15 PM
Sulfate	130	1.00	3.00		mg/L	1	08/08/14 03:15 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	314	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:43 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:43 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:43 AM
Alkalinity, Total (As CaCO ₃)	314	20.0	20.0		mg/L @ pH 4.52	1	08/12/14 09:43 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	1100	50.0	50.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** 4313603
Lab ID: 1408080-11
Collection Date: 08/07/14 05:15 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	133	5.00	15.0		mg/L	50	08/14/14 04:40 PM
Magnesium	87.2	0.500	1.50		mg/L	5	08/14/14 03:42 PM
Potassium	18.5	0.500	1.50		mg/L	5	08/14/14 03:42 PM
Sodium	677	5.00	15.0		mg/L	50	08/14/14 04:40 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	0.740	0.300	1.00	J	mg/L	1	08/08/14 03:30 PM
Chloride	995	30.0	100		mg/L	100	08/08/14 07:05 PM
Nitrate-N	0.120	0.100	0.500	J	mg/L	1	08/08/14 03:30 PM
Sulfate	435	10.0	30.0		mg/L	10	08/08/14 06:50 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	342	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 09:51 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 09:51 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 09:51 AM
Alkalinity, Total (As CaCO ₃)	342	20.0	20.0		mg/L @ pH 4.5	1	08/12/14 09:51 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	3520	50.0	50.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** 4313605
Lab ID: 1408080-12
Collection Date: 08/07/14 06:10 PM
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	105	5.00	15.0		mg/L	50	08/14/14 04:42 PM
Magnesium	67.9	0.500	1.50		mg/L	5	08/14/14 03:44 PM
Potassium	17.4	0.500	1.50		mg/L	5	08/14/14 03:44 PM
Sodium	453	5.00	15.0		mg/L	50	08/14/14 04:42 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	0.509	0.300	1.00	J	mg/L	1	08/08/14 03:45 PM
Chloride	419	3.00	10.0		mg/L	10	08/08/14 07:19 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/08/14 03:45 PM
Sulfate	442	10.0	30.0		mg/L	10	08/08/14 07:19 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	423	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 10:21 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 10:21 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/12/14 10:21 AM
Alkalinity, Total (As CaCO ₃)	423	20.0	20.0		mg/L @ pH 4.52	1	08/12/14 10:21 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	1880	50.0	50.0		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.**Date:** 22-Sep-14**CLIENT:** TRC Environmental Corp.
Project: RRC-Wendkirk
Project No: 219394
Lab Order: 1408080**Client Sample ID:** DUP-3
Lab ID: 1408080-13
Collection Date: 08/07/14
Matrix: AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A		Analyst: RO			
Calcium	1660	50.0	150		mg/L	500	08/14/14 04:44 PM
Magnesium	912	50.0	150		mg/L	500	08/14/14 04:44 PM
Potassium	82.1	0.500	1.50		mg/L	5	08/14/14 03:45 PM
Sodium	10500	50.0	150		mg/L	500	08/14/14 04:44 PM
ANIONS BY IC METHOD - WATER		E300		Analyst: AV			
Bromide	31.8	3.00	10.0		mg/L	10	08/08/14 08:18 PM
Chloride	18500	300	1000		mg/L	1000	08/08/14 08:47 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/08/14 08:18 PM
Sulfate	3260	100	300		mg/L	100	08/08/14 08:32 PM
ALKALINITY		M2320 B		Analyst: LM			
Alkalinity, Bicarbonate (As CaCO ₃)	146	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 10:02 AM
Alkalinity, Carbonate (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 10:02 AM
Alkalinity, Hydroxide (As CaCO ₃)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/12/14 10:02 AM
Alkalinity, Total (As CaCO ₃)	146	20.0	20.0		mg/L @ pH 4.5	1	08/12/14 10:02 AM
TOTAL DISSOLVED SOLIDS		M2540C		Analyst: MK			
Total Dissolved Solids (Residue, Filterable)	47200	1000	1000		mg/L	1	08/14/14 03:41 PM

Qualifiers: ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT**RunID: ICP-MS4_140814B**

The QC data in batch 65160 applies to the following samples: 1408080-01A, 1408080-02A, 1408080-03A, 1408080-04A, 1408080-05A, 1408080-06A, 1408080-07A, 1408080-08A, 1408080-09A, 1408080-10A, 1408080-11A, 1408080-12A, 1408080-13A

Sample ID	MB-65160		Batch ID:	65160		TestNo:	SW6020A		Units:	mg/L	
SampType:	MBLK		Run ID:	ICP-MS4_140814B		Analysis Date:	8/14/2014 2:45:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	<0.100	0.300								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID	LCS-65160		Batch ID:	65160		TestNo:	SW6020A		Units:	mg/L		
SampType:	LCS		Run ID:	ICP-MS4_140814B		Analysis Date:	8/14/2014 2:47:00 PM		Prep Date:	8/11/2014		
Analyte			Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.98	0.300	5.00	0	99.6	80	120			
Magnesium	5.21	0.300	5.00	0	104	80	120			
Potassium	5.16	0.300	5.00	0	103	80	120			
Sodium	5.13	0.300	5.00	0	103	80	120			

Sample ID	LCSD-65160	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCSD	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 2:49:00 PM	Prep Date:	8/11/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.03	0.300	5.00	0	101	80	120	0.960	15	
Magnesium	5.18	0.300	5.00	0	104	80	120	0.657	15	
Potassium	5.15	0.300	5.00	0	103	80	120	0.199	15	
Sodium	5.20	0.300	5.00	0	104	80	120	1.50	15	

Sample ID	1408080-06A SD	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L			
SampType:	SD	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 2:55:00 PM	Prep Date:	8/11/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Potassium	75.4	15.0	0	87.5				14.8	10	R
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Sample ID: 1408080-06A PDS	Batch ID: 65160	TestNo: SW6020A	Units: mg/L							
SampType: PDS	Run ID: ICP-MS4_140814B	Analysis Date: 8/14/2014 3:14:00 PM	Prep Date: 8/11/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Potassium	138	3.00	50.0	87.5	101	80	120			
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Qualifiers: B Analyte detected in the associated Method Blank
 J Analyte detected between MDL and RL
 ND Not Detected at the Method Detection Limit
 RL Reporting Limit
 J Analyte detected between SDL and RL

DF Dilution Factor
 MDL Method Detection Limit
 R RPD outside accepted control limits
 S Spike Recovery outside control limits
 N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID	1408080-06A MS	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L				
SampType:	MS	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 3:16:00 PM	Prep Date:	8/11/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		1820	3.00	5.00	1890	-1280	80	120			S
Magnesium		891	3.00	5.00	928	-745	80	120			S
Potassium		90.2	3.00	5.00	87.5	54.0	80	120			S
Sodium		10300	3.00	5.00	10800	-10500	80	120			S

Sample ID	1408080-06A MSD	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L				
SampType:	MSD	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 3:18:00 PM	Prep Date:	8/11/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		1810	3.00	5.00	1890	-1580	80	120	188	15	SR
Magnesium		910	3.00	5.00	928	-365	80	120	190	15	SR
Potassium		92.8	3.00	5.00	87.5	106	80	120	154	15	R
Sodium		10400	3.00	5.00	10800	-7420	80	120	199	15	SR

Sample ID	1408080-06A SD	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L			
SampType:	SD	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:11:00 PM	Prep Date:	8/11/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1840	750	0	1580				15.3	10	R
Magnesium	858	750	0	868				1.09	10	
Sodium	10400	750	0	9970				4.46	10	

Sample ID	1408080-06A PDS	Batch ID:	65160	TestNo:	SW6020A	Units:	mg/L			
SampType:	PDS	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:27:00 PM	Prep Date:	8/11/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4220	150	2500	1580	106	80	120			
Magnesium	3590	150	2500	868	109	80	120			
Sodium	12400	150	2500	9970	97.5	80	120			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID	ICV-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	ICV	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 10:19:00 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.52	0.300	2.50	0	101	90	110			
Magnesium	2.71	0.300	2.50	0	109	90	110			
Potassium	2.67	0.300	2.50	0	107	90	110			
Sodium	2.72	0.300	2.50	0	109	90	110			

Sample ID	LCVL-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	LCVL	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 10:23:00 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.103	0.300	0.100	0	103	70	130			
Potassium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.124	0.300	0.100	0	124	70	130			

Sample ID	CCV6-140814			Batch ID:	R74918		TestNo:	SW6020A		Units:	mg/L	
SampType:	CCV			Run ID:	ICP-MS4_140814B		Analysis Date:	8/14/2014 2:37:00 PM		Prep Date:		
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.97	0.300	5.00	0	99.3	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Potassium	5.00	0.300	5.00	0	100	90	110			
Sodium	5.16	0.300	5.00	0	103	90	110			

Sample ID	LCVL6-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	LCVL	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 2:41:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.104	0.300	0.100	0	104	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Potassium	0.112	0.300	0.100	0	112	70	130			
Sodium	0.118	0.300	0.100	0	118	70	130			

Sample ID	CCV7-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 3:22:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.87	0.300	5.00	0	97.5	90	110			
Magnesium	5.08	0.300	5.00	0	102	90	110			
Potassium	5.05	0.300	5.00	0	101	90	110			
Sodium	5.32	0.300	5.00	0	106	90	110			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID	LCVL7-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 3:26:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.119	0.300	0.100	0	119	70	130			
Magnesium	0.110	0.300	0.100	0	110	70	130			
Potassium	0.113	0.300	0.100	0	113	70	130			
Sodium	0.267	0.300	0.100	0	267	70	130			S

Sample ID	CCV8-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 3:53:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.07	0.300	5.00	0	101	90	110			
Magnesium	5.23	0.300	5.00	0	105	90	110			
Potassium	5.16	0.300	5.00	0	103	90	110			
Sodium	5.41	0.300	5.00	0	108	90	110			

Sample ID	LCVL8-140814			Batch ID:	R74918		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCVL			Run ID:	ICP-MS4_140814B		Analysis Date:	8/14/2014 3:57:00 PM		Prep Date:		
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.126	0.300	0.100	0	126	70	130			
Magnesium	0.129	0.300	0.100	0	129	70	130			
Potassium	0.122	0.300	0.100	0	122	70	130			
Sodium	0.276	0.300	0.100	0	276	70	130			S

Sample ID	CCV9-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:29:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.88	0.300	5.00	0	97.6	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Sodium	5.07	0.300	5.00	0	101	90	110			

Sample ID	LCVL9-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:35:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.109	0.300	0.100	0	109	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.164	0.300	0.100	0	164	70	130			S

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID	CCV10-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:52:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.87	0.300	5.00	0	97.4	90	110			
Magnesium	5.14	0.300	5.00	0	103	90	110			
Sodium	5.15	0.300	5.00	0	103	90	110			

Sample ID	LCVL10-140814	Batch ID:	R74918	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_140814B	Analysis Date:	8/14/2014 4:56:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.101	0.300	0.100	0	101	70	130			
Magnesium		0.106	0.300	0.100	0	106	70	130			
Sodium		0.148	0.300	0.100	0	148	70	130			S

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140808B

The QC data in batch 65131 applies to the following samples: 1408080-01B, 1408080-03B, 1408080-04B, 1408080-09B

Sample ID	MB-65131		Batch ID:	65131		TestNo:	E300		Units:	mg/L	
SampType:	MBLK		Run ID:	IC_140808B		Analysis Date:	8/8/2014 1:08:31 PM		Prep Date:	8/8/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-65131			Batch ID:	65131			TestNo:	E300			Units:	mg/L		
SampType:	LCS			Run ID:	IC_140808B			Analysis Date:	8/8/2014 1:23:07 PM			Prep Date:	8/8/2014		
Analyte				Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

Bromide	19.7	1.00	20.00	0	98.6	90	110			
Chloride	9.65	1.00	10.00	0	96.5	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID	LCSD-65131	Batch ID:	65131	TestNo:	E300	Units:	mg/L				
SampType:	LCSD	Run ID:	IC_140808B	Analysis Date:	8/8/2014 1:37:44 PM	Prep Date:	8/8/2014				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.6	1.00	20.00	0	98.2	90	110	0.448	20	
Chloride	9.55	1.00	10.00	0	95.5	90	110	1.10	20	
Nitrate-N	5.04	0.500	5.000	0	101	90	110	0.996	20	
Sulfate	29.5	3.00	30.00	0	98.3	90	110	1.00	20	

Sample ID	1408080-09BMS	Batch ID:	65131	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC_140808B	Analysis Date:	8/8/2014 5:16:30 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	288	10.0	200.0	0	144	90	110			S
Nitrate-N	46.3	5.00	45.16	0	102	90	110			
Sulfate	1340	30.0	200.0	1137	104	90	110			

Sample ID	1408080-09BMSD			Batch ID:	65131		TestNo:	E300		Units:	mg/L	
SampType:	MSD			Run ID:	IC_140808B		Analysis Date:	8/8/2014 5:31:07 PM		Prep Date:	8/8/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Bromide	292	10.0	200.0	0	146	90	110	1.28	20	S
Nitrate-N	46.6	5.00	45.16	0	103	90	110	0.763	20	
Sulfate	1340	30.0	200.0	1137	101	90	110	0.467	20	

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140808B

Sample ID	1408080-09BMS	Batch ID:	65131	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC_140808B	Analysis Date:	8/8/2014 5:45:43 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25100	1000	20000	6107	94.9	90	110			

Sample ID: 1408080-09BMSD	Batch ID: 65131	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC_140808B	Analysis Date: 8/8/2014 6:00:20 PM	Prep Date: 8/8/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24700	1000	20000	6107	92.8	90	110	1.71	20	

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140808B

Sample ID	ICV-140808	Batch ID:	R74857	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC_140808B	Analysis Date:	8/8/2014 8:30:06 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	50.2	1.00	50.00	0	100	90	110			
Chloride	24.3	1.00	25.00	0	97.0	90	110			
Nitrate-N	12.8	0.500	12.50	0	102	90	110			
Sulfate	74.3	3.00	75.00	0	99.0	90	110			

Sample ID	CCV1-140808			Batch ID:	R74857		TestNo:	E300		Units:	mg/L	
SampType:	CCV			Run ID:	IC_140808B		Analysis Date:	8/8/2014 12:29:03 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Bromide	20.0	1.00	20.00	0	99.8	90	110			
Chloride	9.91	1.00	10.00	0	99.1	90	110			
Nitrate-N	5.06	0.500	5.000	0	101	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID	CCV2-140808			Batch ID:	R74857			TestNo:	E300			Units:	mg/L		
SampType:	CCV			Run ID:	IC_140808B			Analysis Date:	8/8/2014 3:57:08 PM			Prep Date:			
Analyte				Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

Bromide	19.8	1.00	20.00	0	98.8	90	110			
Chloride	9.78	1.00	10.00	0	97.8	90	110			
Nitrate-N	5.16	0.500	5.000	0	103	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	CCV3-140808	Batch ID:	R74857	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC_140808B	Analysis Date:	8/8/2014 6:14:56 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	19.6	1.00	20.00	0	98.1	90	110			
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.

Work Order: 1408080

Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140808B

The QC data in batch 65132 applies to the following samples: 1408080-02B, 1408080-05B, 1408080-06B, 1408080-07B, 1408080-08B, 1408080-10B, 1408080-11B, 1408080-12B, 1408080-13B

Sample ID	MB-65132		Batch ID:	65132		TestNo:	E300		Units:	mg/L	
SampType:	MBLK		Run ID:	IC2_140808B		Analysis Date:	8/8/2014 1:13:06 PM		Prep Date:	8/8/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-65132	Batch ID:	65132	TestNo:	E300	Units:	mg/L			
SampType:	LCS	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 1:27:41 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.2	1.00	20.00	0	101	90	110			
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Nitrate-N	4.95	0.500	5.000	0	99.0	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID	LCSD-65132	Batch ID:	65132	TestNo:	E300	Units:	mg/L			
SampType:	LCSD	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 1:42:15 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.5	1.00	20.00	0	102	90	110	1.24	20	
Chloride	9.96	1.00	10.00	0	99.6	90	110	1.58	20	
Nitrate-N	5.00	0.500	5.000	0	100	90	110	1.04	20	
Sulfate	30.4	3.00	30.00	0	101	90	110	1.17	20	

Sample ID	1408080-06BMS			Batch ID:	65132		TestNo:	E300		Units:	mg/L	
SampType:	MS			Run ID:	IC2_140808B		Analysis Date:	8/8/2014 9:01:56 PM		Prep Date:	8/8/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Bromide	209	10.0	200.0	31.30	88.8	90	110			S
Nitrate-N	31.7	5.00	45.16	0	70.1	90	110			S

Sample ID	1408080-06BMSD			Batch ID:	65132		TestNo:	E300		Units:	mg/L	
SampType:	MSD			Run ID:	IC2_140808B		Analysis Date:	8/8/2014 9:16:30 PM		Prep Date:	8/8/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Bromide	210	10.0	200.0	31.30	89.3	90	110	0.482	20	S
Nitrate-N	31.8	5.00	45.16	0	70.4	90	110	0.427	20	S

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140808B

Sample ID	1408080-06BMS	Batch ID:	65132	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 9:31:04 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	5350	300	2000	3248	105	90	110			

Sample ID: 1408080-06BMSD	Batch ID: 65132	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC2_140808B	Analysis Date: 8/8/2014 9:45:39 PM	Prep Date: 8/8/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	5330	300	2000	3248	104	90	110	0.425	20	

Sample ID	1408080-06BMS	Batch ID:	65132	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 10:00:13 PM	Prep Date:	8/8/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	37500	1000	20000	18870	93.3	90	110			

Sample ID: 1408080-06BMSD	Batch ID: 65132	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC2_140808B	Analysis Date: 8/8/2014 10:14:48 PM	Prep Date: 8/8/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	37300	1000	20000	18870	92.3	90	110	0.518	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140808B

Sample ID	ICV-140808	Batch ID:	R74858	TestNo:	E300	Units:	mg/L				
SampType:	ICV	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 8:27:58 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	50.6	1.00	50.00	0	101	90	110			
Chloride	24.1	1.00	25.00	0	96.6	90	110			
Nitrate-N	12.4	0.500	12.50	0	99.5	90	110			
Sulfate	74.2	3.00	75.00	0	98.9	90	110			

Sample ID	CCV1-140808	Batch ID:	R74858	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 12:07:25 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.1	1.00	20.00	0	101	90	110			
Chloride	9.78	1.00	10.00	0	97.8	90	110			
Nitrate-N	4.90	0.500	5.000	0	98.0	90	110			
Sulfate	29.9	3.00	30.00	0	99.7	90	110			

Sample ID	CCV2-140808	Batch ID:	R74858	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 4:51:16 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.3	1.00	20.00	0	101	90	110			
Chloride	10.1	1.00	10.00	0	101	90	110			
Nitrate-N	4.91	0.500	5.000	0	98.2	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	CCV3-140808	Batch ID:	R74858	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 7:49:03 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.4	1.00	20.00	0	102	90	110			
Chloride	10.0	1.00	10.00	0	100	90	110			
Nitrate-N	4.98	0.500	5.000	0	99.6	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID	CCV4-140808	Batch ID:	R74858	TestNo:	E300	Units:	mg/L				
SampType:	CCV	Run ID:	IC2_140808B	Analysis Date:	8/8/2014 10:43:57 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Bromide	20.1	1.00	20.00	0	101	90	110			
Chloride	9.96	1.00	10.00	0	99.6	90	110			
Nitrate-N	4.86	0.500	5.000	0	97.2	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140811A

The QC data in batch 65150 applies to the following samples: 1408080-01B, 1408080-02B

Sample ID	MB-65150		Batch ID:	65150		TestNo:	M2320 B		Units:	mg/L @ pH 4.43	
SampType:	MBLK		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 11:54:00 AM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID	LCS-65150		Batch ID:	65150		TestNo:	M2320 B		Units:	mg/L @ pH 3.88	
SampType:	LCS		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 11:57:00 AM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Total (As CaCO3)	59.0	20.0	50.00	0	118	74	129			
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Sample ID	1408053-01B DUP			Batch ID:	65150		TestNo:	M2320 B		Units:	mg/L @ pH 4.52	
SampType:	DUP			Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 12:34:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Alkalinity, Bicarbonate (As CaCO3)	772	20.0	0	770.5				0.259	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	772	20.0	0	770.5				0.259	20	

Sample ID: 1408080-02B DUP	Batch ID: 65150	TestNo: M2320 B	Units: mg/L @ pH 4.52							
SampType: DUP	Run ID: TITRATOR_140811A	Analysis Date: 8/11/2014 4:09:00 PM	Prep Date: 8/11/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	434	20.0	0	432.8				0.162	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	434	20.0	0	432.8				0.162	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140811A

Sample ID	ICV-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	ICV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 11:52:00 AM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	15.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	83.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	98	102			

Sample ID	CCV1-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.5	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 1:53:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	28.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	71.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Sample ID	CCV2-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.49	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 3:50:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	26.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	70.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	96.7	20.0	100.0	0	96.7	90	110			

Sample ID	CCV3-140811		Batch ID:	R74877		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	CCV		Run ID:	TITRATOR_140811A		Analysis Date:	8/11/2014 4:15:00 PM		Prep Date:	8/11/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	15.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	82.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.1	20.0	100.0	0	98.1	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140812A

The QC data in batch 65167 applies to the following samples: 1408080-03B, 1408080-04B, 1408080-05B, 1408080-06B, 1408080-07B, 1408080-08B, 1408080-09B, 1408080-10B, 1408080-11B, 1408080-12B, 1408080-13B

Sample ID	MB-65167		Batch ID:	65167		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	MBLK		Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 8:42:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID	LCS-65167			Batch ID:	65167		TestNo:	M2320 B		Units:	mg/L @ pH 3.81		
SampType:	LCS			Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 8:46:00 AM		Prep Date:	8/12/2014		
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Alkalinity, Total (As CaCO3)	60.7	20.0	50.00	0	121	74	129			
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Sample ID	1408080-06B DUP			Batch ID:	65167		TestNo:	M2320 B		Units:	mg/L @ pH 4.51	
SampType:	DUP			Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 9:25:00 AM		Prep Date:	8/12/2014	
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	147	20.0	0	148.0				0.610	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	147	20.0	0	148.0				0.610	20	

Sample ID: 1408080-12B DUP	Batch ID: 65167	TestNo: M2320 B	Units: mg/L @ pH 4.51							
SampType: DUP	Run ID: TITRATOR_140812A	Analysis Date: 8/12/2014 10:28:00 AM	Prep Date: 8/12/2014							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	417	20.0	0	423.2				1.57	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	417	20.0	0	423.2				1.57	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140812A

Sample ID	ICV-140812		Batch ID:	R74878		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	ICV		Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 8:40:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	18.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	80.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	98	102			

Sample ID	CCV1-140812		Batch ID:	R74878		TestNo:	M2320 B		Units:	mg/L @ pH 4.48	
SampType:	CCV		Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 9:57:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	23.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	90	110			

Sample ID	CCV2-140812		Batch ID:	R74878		TestNo:	M2320 B		Units:	mg/L @ pH 4.49	
SampType:	CCV		Run ID:	TITRATOR_140812A		Analysis Date:	8/12/2014 10:34:00 AM		Prep Date:	8/12/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Alkalinity, Bicarbonate (As CaCO3)	19.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	80.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140813C

The QC data in batch 65213 applies to the following samples: 1408080-01B, 1408080-02B, 1408080-03B, 1408080-04B, 1408080-05B, 1408080-06B, 1408080-07B, 1408080-08B, 1408080-09B, 1408080-10B, 1408080-11B, 1408080-12B, 1408080-13B

Sample ID	MB-65213		Batch ID:	65213		TestNo:	M2540C		Units:	mg/L	
SampType:	MBLK		Run ID:	WC_140813C		Analysis Date:	8/14/2014 3:41:00 PM		Prep Date:	8/13/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID	LCS-65213		Batch ID:	65213		TestNo:	M2540C		Units:	mg/L	
SampType:	LCS		Run ID:	WC_140813C		Analysis Date:	8/14/2014 3:41:00 PM		Prep Date:	8/13/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 761 10.0 745.6 0 102 90 113

Sample ID	1408080-05B-DUP	Batch ID:	65213	TestNo:	M2540C	Units:	mg/L			
SampType:	DUP	Run ID:	WC_140813C	Analysis Date:	8/14/2014 3:41:00 PM	Prep Date:	8/13/2014			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 2380 50.0 0 2400 0.627 5

Sample ID	1408080-13B-DUP		Batch ID:	65213		TestNo:	M2540C		Units:	mg/L	
SampType:	DUP		Run ID:	WC_140813C		Analysis Date:	8/14/2014 3:41:00 PM		Prep Date:	8/13/2014	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 47100 1000 0 47200 0.212 5

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: TRC Environmental Corp.
Work Order: 1408080
Project: RRC-Wendkirk

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	mg/L	mg/L
Bromide	0.300	1.00
Chloride	0.300	1.00
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: M2320 B	MDL	MQL
Analyte	µg/L @ pH 4.4	µg/L @ pH 4.4
Alkalinity, Bicarbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Bicarbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Carbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Carbonate (As CaCO ₃)	10.0	20.0
Alkalinity, Hydroxide (As CaCO ₃)	10.0	20.0
Alkalinity, Hydroxide (As CaCO ₃)	10.0	20.0
Alkalinity, Total (As CaCO ₃)	20.0	20.0
Alkalinity, Total (As CaCO ₃)	20.0	20.0

TestNo: SW6020A	MDL	MQL
Analyte	mg/L	mg/L
Calcium	0.100	0.300
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2540C	MDL	MQL
Analyte	mg/L	mg/L
Total Dissolved Solids (Residue, Filt	10.0	10.0

ATTACHMENT 3

Analytical Data Review/Data Validation Checklist



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QA Data Evaluation Results RRC – Wendkirk BMP

August 2014 Analytical Data

Background

Water samples were collected from August 6 through 7, 2014. The samples were submitted to DHL Analytical in Round Rock, Texas for analysis. Results for the following methods are reported:

- ☐ Anions (Bromide, Chloride, Nitrate, and Sulfate) by EPA Method 300.0
- ☐ Alkalinity (Carbonate, Bicarbonate, Hydroxide, and Total) by Standard Methods 2320B.
- ☐ Cations (Calcium, Magnesium, Potassium, and Sodium) by SW-846 Method 6020A
- ☐ Total Dissolved Solids (TDS) by Standard Methods 2540C

TRC quality assurance (QA) staff performed a review of quality control (QC) data associated with the samples to ensure that the reported analytical results are valid, accurate, and sufficient to meet quality objectives. Data were reviewed for compliance with the requirements given in *Investigation and Mitigation of Produced Water Contamination into the Upper Colorado River Basin Downstream of E. V. Spence Reservoir (Segment 1426) Ballinger Seep/Wendkirk Oil Field Quality Assurance Project Plan* (QAPP: Railroad Commission of Texas, Oil and Gas Division, Site Remediation Section, July 11, 2014). In order to ensure that the analytical methodologies are capable of achieving the data quality objectives (DQOs), measurement performance criteria were set for the analytical measurements in terms of accuracy, precision, representativeness, completeness, sensitivity, and comparability. The measurement performance criteria were established for each parameter reviewed during the data evaluation process and included sample integrity, blank analyses, spike recoveries, duplicate precision, and limits of quantitation (LOQs or reporting limits [RLs]). Samples reviewed to prepare this evaluation are presented in Table 1.

The following is a discussion of the QC analyses performed with the site samples and any potential data limitations associated with the results of these analyses.

Sample Integrity

All samples were adequately preserved, received with an acceptable cooler temperature, and analyzed within method-defined holding times.

Blank Analyses

Target analytes were not detected in the method blanks associated with the Wendkirk samples indicating that laboratory contamination did not impact analytical results.

Spike Recoveries

All reported LCS recoveries fall within QAPP-specified QC limits. These results are indicative of adequate laboratory measurement control in the absence of potential matrix interferences at the time of sample analyses.

Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on samples MW-3 and RS-15 for calcium, magnesium, potassium, sodium, bromide, nitrate, sulfate, and chloride. MS/MSD analyses were performed on sample MW-6 for bromide, nitrate, sulfate, and chloride.

Recoveries were outside of the acceptance limits (90-110%) for anions bromide (85%/85%), nitrate (86%/86%), and chloride (79%/78%) in the MS/MSD analyses performed on sample MW-3. Recoveries for bromide (144%/146%) were outside of the acceptance limits (90-110%) in the MS/MSD analyses performed on sample MW-6. Potential uncertainty exists for the bromide results in all Wendkirk groundwater samples due to both low and high recoveries. Since there is no AWRL for bromide, there was no adverse effect on the usability of these data based on the potential uncertainty. Potential low bias exists for the nitrate and chloride results in all groundwater samples except MW-6 due to the low recoveries. Since there is no AWRL for nitrate, there was no adverse effect on the usability of these data based on the potential low bias. Since all results for chloride were detected at concentrations above the AWRL, there was no adverse effect on the usability of these data based on the potential low bias.

Recoveries were outside of the acceptance limits (90-110%) for bromide (89%/89%) and nitrate (70%/70%) in the MS/MSD analyses performed on sample RS-15. Potential low bias exists for the bromide and nitrate results in surface water sample RS-15. Since there is no AWRL for bromide, there was no adverse effect on the usability of these data for bromide based on the potential low bias. The nondetect result for nitrate in sample RS-15 should be used with caution due to the potential low bias.

Recoveries were outside of the acceptance limits for cations calcium, magnesium, and sodium in the MS/MSD analyses performed on sample MW-3. Since the concentrations of these cations in

the unspiked sample were greater than 4x the concentration spiked, the recoveries cannot be used to evaluate potential matrix effects. A review of the PDS showed the recoveries were within the acceptance limits.

Recoveries were below the acceptance limits for cations calcium, magnesium, potassium, and sodium in the MS analysis performed on sample RS-15. Recoveries were below the acceptance limits for cations calcium, magnesium, and sodium in the MSD analysis performed on sample RS-15. Since the concentrations of these cations in the unspiked sample were greater than 4x the concentration spiked, the low recoveries cannot be used to evaluate potential matrix effects. A review of the PDS showed the recoveries were within the acceptance limits.

Duplicate Precision

The precision of duplicate samples is calculated by relative percent difference (RPD) using the following equation:

$$RPD = \left| \frac{(Amount\ in\ Sample\ 1 - Amount\ in\ Sample\ 2)}{0.5 (Amount\ in\ Sample\ 1 + Amount\ in\ Sample\ 2)} \times 100 \right|$$

RPDs for LCS/LCSD pairs are within the acceptance limits indicating that the laboratory achieved adequate precision in the absence of potential matrix interferences at the time of sample analysis.

RPD values associated with MS/MSD analyses performed on RS-15 were high for calcium, magnesium, potassium, and sodium. Since the concentrations of these cations in the unspiked sample were greater than 4x the concentration spiked, the RPDs cannot be used to evaluate potential matrix effects. RPD values associated with the other MS/MSD samples are within the acceptance limits indicating that the sample matrix has minimal impact, if any, on analytical precision.

Field split RPDs must be <30 for site samples. These criteria apply only if the sample and/or split results are >5x the limit of quantitation (LOQ); if both results are <5x the LOQ, the criterion will be doubled.

Sample DUP-1 was collected as a field duplicate of sample MW-3. Sample DUP-2 was collected as a field duplicate of sample MW-11. Sample DUP-3 was collected as a field duplicate of sample RS-15. Calculated RPD values for detected analytes in these analyses are presented in Table 2. Adequate precision is exhibited for all detected analytes and data interpretation issues are not indicated.

To test the precision of the laboratory measurements, the laboratory also performed laboratory duplicate (laboratory replicate) analyses of samples RS-15, 413605, MW-3 and MW-9 for bicarbonate alkalinity, carbonate alkalinity, hydroxide alkalinity, and total alkalinity; and samples MW-7, DUP-3, MW-3, and MW-17 for TDS. All RPDs were within the acceptance limits.

LOQs

The LOQs required in the QAPP were achieved for all samples prior to the application of dilution factors. In many cases, the elevated LOQs (after dilution) did not have an impact on the usability of the data because the associated analyte was detected. However, in some instances, nitrate and bromide were reported as nondetects with elevated LOQs due to the dilutions; dilutions were required for these samples due to the elevated concentrations of chloride. Since a groundwater AWRL does not exist for nitrate and bromide, there was no adverse effect on the usability of the data for the groundwater samples. The LOQ for nitrate (1.0 mg/L) in surface water sample RS-15 is above the AWRL (0.05 mg/L); the result for nitrate in this sample cannot be used to show the concentration is below the AWRL.

Conclusions

QC data associated with laboratory measurements indicate that data are defensible and that measurement data reliability is generally within expected limits of sampling and analytical error. None of the listed issues have an adverse effect on the usability of the data or the decision-making process with the following exception:

- The result for nitrate in surface water sample RS-15 cannot be used to show the concentration is below the AWRL due to an elevated LOQ and a potential low bias due to MS/MSD analyses.

Table 1. Evaluated Samples

TRC Sample ID	Collected	Matrix	DHL Sample ID
MW-3	08/06/2014	Groundwater	1408053-01
MW-2	08/06/2014	Groundwater	1408053-02
MW-1	08/06/2014	Groundwater	1408053-03
MW-15	08/06/2014	Groundwater	1408053-04
MW-16	08/06/2014	Groundwater	1408053-05
MW-11	08/06/2014	Groundwater	1408053-06
MW-10	08/06/2014	Groundwater	1408053-07
MW-5	08/06/2014	Groundwater	1408053-08
MW-12	08/06/2014	Groundwater	1408053-09
MW-18	08/06/2014	Groundwater	1408053-10
MAYS-02	08/06/2014	Groundwater	1408053-11
MW-20	08/06/2014	Groundwater	1408053-12
MW-19	08/06/2014	Groundwater	1408053-13
MW-17	08/06/2014	Groundwater	1408053-14
OW-1	08/06/2014	Groundwater	1408053-15
MW-4	08/06/2014	Groundwater	1408053-16
DUP-1	08/06/2014	Groundwater	1408053-17
DUP-2	08/06/2014	Groundwater	1408053-18
MW-13	08/07/2014	Groundwater	1408080-01
MW-9	08/07/2014	Groundwater	1408080-02
MW-8	08/07/2014	Groundwater	1408080-03
MW-14	08/07/2014	Groundwater	1408080-04
MW-7	08/07/2014	Groundwater	1408080-05
RS-15	08/07/2014	Surface water	1408080-06
Milford-01	08/07/2014	Groundwater	1408080-07
Milford-02	08/07/2014	Groundwater	1408080-08
MW-6	08/07/2014	Groundwater	1408080-09
4313608	08/07/2014	Groundwater	1408080-10
4313603	08/07/2014	Groundwater	1408080-11
4313605	08/07/2014	Groundwater	1408080-12
DUP-3	08/07/2014	Groundwater	1408080-13

Table 2. Calculated RPD Values for Field Split Analyses

Parent/Duplicate Sample IDs	Analyte	Parent Sample Result	Duplicate Sample Result	Units	RPD	Flag
MW-3 / DUP-1	Calcium	817	807	mg/L	1.23	
	Magnesium	1130	1,140	mg/L	0.88	
	Potassium	35.2	37.2	mg/L	5.52	
	Sodium	2300	2,240	mg/L	2.64	
	Bromide	<3.00	<3.00	mg/L	0	
	Chloride	3800	3,750	mg/L	1.32	
	Nitrate	<1.00	<1.00	mg/L	0	
	Sulfate	5470	5,550	mg/L	1.45	
	Bicarbonate Alkalinity	770	791	mg/L	2.69	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	770	791	mg/L	2.69	
	TDS	11,300	13,400	mg/L	17.00	
MW-11 / DUP-2	Calcium	1110	1,100	mg/L	0.90	
	Magnesium	439	435	mg/L	0.92	
	Potassium	74.3	76.2	mg/L	2.52	
	Sodium	7090	6,990	mg/L	1.42	
	Bromide	16.7	18.7	mg/L	11.30	
	Chloride	13,200	12,700	mg/L	3.86	
	Nitrate	<1.00	<1.00	mg/L	0	
	Sulfate	1780	1,800	mg/L	1.12	
	Bicarbonate Alkalinity	245	246	mg/L	0.41	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	245	246	mg/L	0.41	
	TDS	24,700	25,300	mg/L	2.40	
RS-15 / DUP-3	Calcium	1580	1,660	mg/L	4.94	
	Magnesium	868	912	mg/L	4.94	
	Potassium	87.5	82.1	mg/L	6.37	
	Sodium	9970	10,500	mg/L	5.18	
	Bromide	31.3	31.8	mg/L	1.58	
	Chloride	18,900	18,500	mg/L	2.14	
	Nitrate	<1.00	<1.00	mg/L	0	
	Sulfate	3250	3,260	mg/L	0.31	
	Bicarbonate Alkalinity	148	146	mg/L	1.36	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	148	146	mg/L	1.36	
	TDS	37,400	47,200	mg/L	23.17	